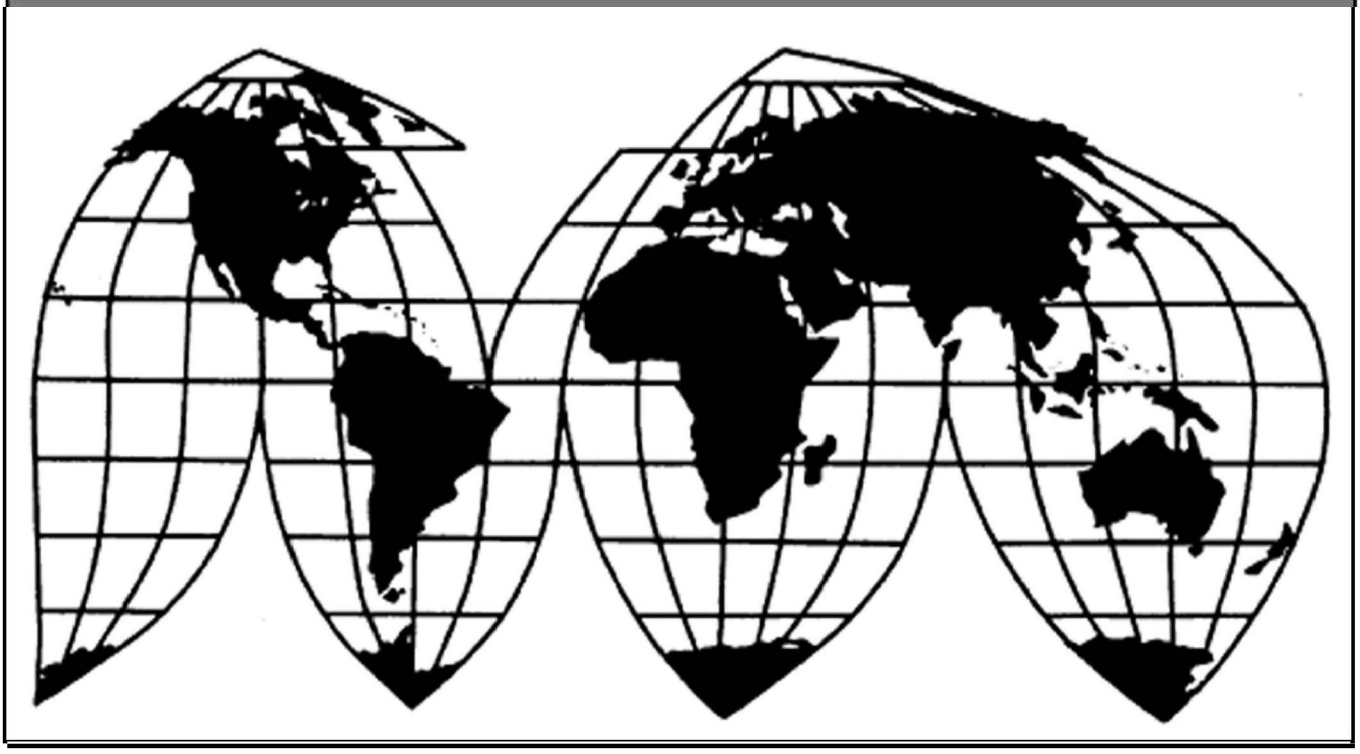
*In the Matter of*

# CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME

Investigation No. 337-TA-1148

**Publication 5287** **March 2022**

**U.S. International Trade Commission**



**Washington, DC 20436**

# U.S. International Trade Commission

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# U.S. International Trade Commission

Washington, DC 20436
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## *In the Matter of*

# CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME

Investigation No. 337-TA-1148


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**UNITED STATES INTERNATIONAL TRADE COMMISSION**
**Washington, D.C.**

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|---|---|
| **In the Matter of**<br><br>**CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME** | **Investigation No. 337-TA-1148** |

# NOTICE OF A COMMISSION DETERMINATION TO REVIEW IN PART A FINAL INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337 AND, ON REVIEW, TO AFFIRM THE FINDING OF NO VIOLATION; TERMINATION OF THE INVESTIGATION

**AGENCY**: U.S. International Trade Commission.

**ACTION**: Notice.

**SUMMARY**: Notice is hereby given that the U.S. International Trade Commission has determined to review in part the final initial determination (''ID'') issued by the presiding administrative law judge (''ALJ'') on May 22, 2020, finding no violation of section 337 in the above-referenced investigation and, on review, to affirm the finding of no violation. The investigation is terminated.

**FOR FURTHER INFORMATION CONTACT**: Michael Liberman, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, SW, Washington, D.C. 20436, telephone (202) 205-2392. Copies of non-confidential documents filed in connection with this investigation may be viewed on the Commission's electronic docket (EDIS) at *https://edis.usitc.gov*. For help accessing EDIS, please email EDIS3Help@usitc.gov. General information concerning the Commission may also be obtained by accessing its Internet server at *https://www.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

**SUPPLEMENTARY INFORMATION**: On March 15, 2019, the Commission instituted Inv. No. 337-TA-1148, *Certain Integrated Circuits and Products Containing the Same* under section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. 1337 ("section 337"), based on a complaint filed by Tela Innovations, Inc. of Los Gatos, California ("Tela"). 84 FR 9558-59 (Mar. 15, 2019). The complaint alleges a violation of section 337 by reason of infringement of certain claims of U.S. Patent Nos. 7,943,966 ("the '966 patent"); 7,948,012 ("the '012 patent"); 10,141,334 ("the '334 patent"); 10,141,335 ("the '335 patent"); and 10,186,523 ("the '523 patent"). The complainant also alleges the existence of a domestic industry. The notice of investigation names as respondents Acer, Inc. of New Taipei City, Taiwan; Acer America

Corporation of San Jose, California; AsusTek Computer Inc. of Taipai, Taiwan; Asus Computer International of Fremont, California; Intel Corporation of Santa Clara, California; Lenovo Group Ltd. of Beijing, China; Lenovo (United States) Inc. of Morrisville, North Carolina; Micro-Star International Co., Ltd. of New Taipei City, Taiwan; and MSI Computer Corp. of City of Industry, California (collectively, "Respondents"). *Id*. at 9559. The Commission's Office of Unfair Import Investigations ("OUII") is also named as a party in this investigation. *Id*.

The Commission has previously terminated the investigation as to the '966, '012 and '335 patents, and as to certain claims of the '334 and '523 patents. *See* Order No. 33 (Oct. 2, 2019), *unreviewed by* Notice (Oct. 22, 2019); Order No. 36 (Oct. 23, 2019), *unreviewed by* Notice (Nov. 15, 2019); and Order No. 44 (Jan. 6, 2020), *unreviewed by* Notice (Feb. 3, 2020).

On May 22, 2020, the ALJ issued his "Initial Determination on Violation of Section 337 and Recommended Determination on Remedy and Bond" ("ID/RD") finding that there is no violation of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain integrated circuits and products containing the same, in connection with the asserted claims of the '334 and '523 patents, and that a domestic industry in the United States that practices or exploits the asserted patents does not exist.

The ID finds that Respondents directly infringe claims 1, 2, and 5 of the '334 patent, and that claims 1, 2, 5, and 15 of the '334 patent have been shown to be invalid. The ID also finds that Tela's licensee has not been shown to practice any claims of the '334 patent, and that the domestic industry requirement is not satisfied with respect to the '334 patent. The ID finds that there is no violation of section 337 with respect to the '334 patent.

The ID further finds that Respondents directly infringe claims 1-11, 14-20, 25, and 26 of the '523 patent, and that no claims of the '523 patent have been shown to be invalid. The ID also finds that Tela's licensee has not been shown to practice any claims of the '523 patent, and that the domestic industry requirement is not satisfied with respect to the '523 patent. The ID finds that there is no violation of Section 337 with respect to the '523 patent.

All the parties to the investigation filed petitions for review of various portions of the ID. On June 8, 2020, OUII filed a petition seeking review of the ID's determination not to analyze whether the asserted domestic industry claims are invalid and, contingently, seeking review of the ID's infringement findings. Also on June 8, 2020, Respondents filed a petition contingently seeking review of the ID's infringement and validity findings.

On June 11, 2020, Tela filed a petition seeking review of the ID's findings concerning the validity and the technical prong of the domestic industry requirement. Tela also seeks contingent review of the ID's infringement findings and the ID's finding that Intel's 45 nm process is prior art under 35 U.S.C. 102(g)(2). In addition, Tela seeks review of Order No. 30 (Sept. 4, 2019), which granted-in-part Tela's motion for leave to supplement its contention interrogatory responses.

On June 18, 2020, the parties filed responses to the various petitions.

Having examined the record in this investigation, including the final ID, the petitions for review, and the responses thereto, the Commission has determined to review the ID in part to correct a legal error in the ID's domestic industry findings. On review, the Commission has determined to strike the paragraph relating to the '334 patent on pages 101-102 of the ID and certain sentences relating to the '523 patent on page 168 of the ID. The Commission takes no position on the issue of whether the asserted domestic industry claims, *i.e.*, claims 29-30 of the '334 patent and claims 27-28 of the '523 patent, are invalid. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984).

The Commission has also determined to review the ID in part on the issue of whether Tela satisfied the economic prong of the domestic industry requirement, *see* ID at 185-188, and to take no position on this issue. *See Beloit*, 742 F.2d at 1423.

The Commission has determined not to review the remainder of the ID, including the ID's finding of no violation of section 337 in this investigation. The Commission has also determined not to review Order No. 30.

The investigation is terminated.

The Commission vote for this determination took place on September 23, 2020.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. 1337, and in Part 210 of the Commission's Rules of Practice and Procedure, 19 CFR part 210.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: September 23, 2020

**CERTAIN INTEGRAGTED CIRCUITS AND PRODUCTS CONTAINING THE SAME** **Inv. No. 337-TA-1148**

## CONFIDENTIAL CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served via EDIS upon the Commission Investigative Attorney, **John Shin, Esq.**, and the following parties as indicated, on 9/23/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

**On Behalf of Complainant Tela Innovations, Inc.:**

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**On Behalf of Respondents Acer, Inc., Acer America Corp., Asustek Computer Inc., Asus Computer International, Intel Corporation, Lenovo Group Ltd., Lenovo (United States) Inc., Micro-Star International Co., Ltd., and MSI Computer Corp.:**

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**PUBLIC VERSION**

**UNITED STATES INTERNATIONAL TRADE COMMISSION**
**Washington, D.C.**

| | |
|---|---|
| **In the Matter of**<br><br>**CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME** | **Investigation No. 337-TA-1148** |

## COMMISSION OPINION

The Commission has determined that there has been no violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("section 337") in this investigation with respect to U.S. Patent Nos. 7,943,966 ("the '966 patent"); 7,948,012 ("the '012 patent"); 10,141,335 ("the '335 patent"); 10,186,523 ("the '523 patent"); and 10,141,334 ("the '334 patent") (collectively, "the Asserted Patents"). This opinion sets forth the Commission's reasoning in support of the Commission's determination. In addition, the Commission adopts the findings in the ID that are not inconsistent with this opinion.

## I. BACKGROUND

### A. Procedural History

The Commission instituted this investigation under section 337 on March 15, 2019, based on a complaint filed by Tela Innovations, Inc. of Los Gatos, California ("Tela"). 84 *Fed. Reg.* 9558-59 (Mar. 15, 2019). The complaint alleges a violation of section 337 by reason of infringement of certain claims of the '966 patent, the '012 patent, the '335 patent, the '523 patent, and the '334 patent. The notice of investigation names as respondents Acer, Inc. of New Taipei City, Taiwan; Acer America Corporation of San Jose, California (together, "Acer"); AsusTek

Computer Inc. of Taipai, Taiwan; Asus Computer International of Fremont, California (together, "Asus"); Intel Corporation of Santa Clara, California ("Intel"); Lenovo Group Ltd. of Beijing, China; Lenovo (United States) Inc. of Morrisville, North Carolina (together, "Lenovo"); Micro-Star International Co., Ltd. of New Taipei City, Taiwan; and MSI Computer Corp. of City of Industry, California (together, "MSI"), (all respondents collectively, "Respondents"). *Id*. at 9559. The Commission's Office of Unfair Import Investigations is also named as a party in this investigation. *Id*.

The Commission subsequently terminated the investigation as to all asserted claims of the '966, '012, and '335 patents, as well as to certain claims of the '334 patent and the '523 patent. *See* Order No. 33 (Oct. 2, 2019), *unreviewed by* Notice (Oct. 22, 2019); Order No. 36 (Oct. 23, 201), *unreviewed by* Notice (Nov. 15, 2019); Order No. 45, *unreviewed by* Notice (Feb. 3, 2020). At the hearing, Tela asserted claims 1, 2, 5, and 15 of the '334 patent and claims 1-11, 14-20, 25, and 26 of the '523 patent against the accused products. For the technical prong of the domestic industry requirement, Tela argued that the domestic industry products practiced claims 29-30 of the '334 patent and claims 27-28 of the '523 patent. ID at 5.

On July 17, 2019, the ALJ held a *Markman* hearing and, on October 2, 2019, issued Order No. 34 ("the *Markman* Order"), construing certain claim terms of the patents at issue. Order No. 34 (July 17, 2019).

On August 19, 2019, complainant Tela moved for leave to supplement its contention interrogatory responses concerning infringement, domestic industry, and the public interest. On August 28, 2019, Respondents and the Commission's investigative attorney ("the IA") filed responses opposing the motion in part. On September 4, 2019, the ALJ issued Order No. 30,

which partly granted and partly denied Tela's motion. Order No. 30 (Sep. 4, 2019).[1]

The evidentiary hearing took place on December 9-13, 2019. On May 22, 2020, the ALJ issued the final ID finding that there is no violation of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain integrated circuits and products containing the same, in connection with the remaining asserted claims of the '334 and '523 patents. ID at 204. In particular, the ID finds no domestic industry with respect to either patent. The ID's findings are summarized in the following table:

| **Asserted Patent** | **ID's Infringement Findings Per Claim** | **ID's Domestic Industry Findings Per Claim** | **ID's Validity Findings Per Claim** |
|---|---|---|---|
| The '334 patent | 1, 2, 5 – directly infringed<br>15 – not infringed | 29, 30 – not practiced | 1, 2, 5, 15 – shown to be invalid<br>29, 30 – the validity is not addressed [2] |
| The '523 patent | 1-11, 14-20, 25, 26 – directly infringed | 27, 28 – not practiced | 1-11, 14-20, 25, 26 – not shown to be invalid<br>27, 28 – the validity is not addressed [3] |

*See* ID at 5, 101, 168, 188.

Tela filed a petition for review of various portions of the ID and Order No. 30.[4] The IA

[1] For a detailed procedural history, *see* ID at 1-3.

[2] *See* discussion *infra* at III.

[3] *See* discussion *infra* at III.

[4] *See* Complainant Tela Innovations, Inc's Corrected Petition and Contingent Petition for Review (June 11, 2020) ("ComplPet").

likewise filed a petition for review of the ID in part.[5] Respondents filed a contingent petition for review.[6] The parties also filed responses to the various petitions.[7]

### B. Semiconductor Chip Technology and the Asserted Patents

The technology at issue relates to the design and manufacture of semiconductor chips with lithographic and epitaxial processes. ID at 5, 68. A semiconductor is a material that has electrical conductivity properties falling between that of a conductor and an insulator. ID at 5-6 (citing Joint Technology Tutorial ("JTT") at 2). The relevant transistor in the present investigation is a complementary metal oxide semiconductor, or CMOS. *Id*. (citing JTT at 11, 14). A CMOS transistor consists of four basic components: (1) a body; (2) a source region made of one type of semiconductor; (3) a drain region also made of that type of semiconductor; and (4) a gate made of metal and an oxide, where the gate oxide functions as an insulator by separating the gate metal from the other components. *Id*. (citing JTT at 10-14). The circuitry on a CMOS chip is formed through a multi-stage process, including layout, in which the size, shape, and spacing of the chip's features are specified, followed by photolithography. *Id*. at 6-7 (citing JTT at 17, 19; Respondents' Initial Claim Construction Brief, Ex. 6 at 6.). Further processing can then be used to build features on the wafer. The parties' experts provided lengthy overviews of the technology.

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[5] *See* Petition of the Office of Unfair Import Investigations for Review-in-Part of the Initial Determination on Violation of Section 337 (June 8, 2020) ("IAPet").

[6] *See* Respondents' Contingent Petition for Review of The Initial Determination (June 8, 2020) ("RespPet").

[7] *See* Complainant Tela Innovations, Inc.'s Response to Respondents' and Staff's Petitions for Review of The Initial Determination (June 18, 2020) ("ComplResp"); Response of The Office of Unfair Import Investigations to The Private Parties' Petitions for Review of The Final Initial Determination On Violation Of Section 337 (June 18, 2020) ("IAResp"); Respondents' Opposition to Complainant's Petition for Review of The Initial Determination (June 18, 2020) ("RespResp").

*See generally* CX-1144C (Foty WS) at Q/A 46-135; RX-14C (Subramanian WS) at Q/A 15-69.

The '334 patent is entitled "Semiconductor Chip Including Region Having Rectangular-Shaped Gate Structures and First-Metal Structures." '334 patent. The '334 patent issued on November 27, 2018. *Id*.

The '523 patent is entitled "Semiconductor Chip Having Region Including Gate Electrode Features Formed in Part From Rectangular Layout Shapes on Gate Horizontal Grid and First-Metal Structures Formed in Part From Rectangular Layout Shapes on at Least Eight First-Metal Gridlines of First-Metal Vertical Grid." '523 patent. The application leading to the '523 patent was filed on August 31, 2018, and claims priority, through a series of intervening continuation applications, to a provisional application, 60/781,288, filed on March 9, 2006. *Id*. The '523 patent issued on January 22, 2019.

The remaining Asserted Patents both relate to the design and manufacture of integrated circuits forming semiconductor chips. The '334 patent focuses on the shape and fabrication of "structures" on the resulting chip, *see, e.g.*, '334 patent at claim 1, while the '523 patent focuses on the "layout shapes" used as an input to a lithography process during fabrication of the chip, *see, e.g.*, '523 patent at claim 1. These patents aim to address the manufacturing problems created by the "lithographic gap," which is the "difference between the minimum feature size and the wavelength of light used in the photolithography process." '523 patent at 4:11-13.

### C. Accused Products

The accused products in this investigation are integrated circuits – central processing units ("CPUs") and chipsets – fabricated with respondent Intel's 14 nm and 10 nm manufacturing

processes, [8] and desktops, laptops, motherboards, and other computers manufactured and sold by respondents Acer, Asus, Lenovo, and MSI[9] containing those integrated circuits. ID at 10 (citing CIB at 8-9). The ID notes that the individual part and model numbers are too numerous to be reproduced in the ID but are listed in demonstratives to Tela's expert's testimony and attached to the ID as Appendix A. *Id*. (citing CX-1144C at Q/A 7- 11; CDX-0003; CDX-0004; CDX-0005; CDX-0006; CDX-0007). All of the products listed in these demonstratives are referred to as the "Accused Products." The 14 nm products listed in CDX-0003 from respondent Intel will be referred to as the "Intel 14 nm Products," and the 10 nm products will be referred to as the "Intel 10 nm Products." *See id*.

The ID further notes that Tela's expert, Dr. Foty, and Respondents' expert, Dr. Subramanian, have provided demonstratives associating subsets of the Intel 14 nm Products and Intel 10 nm Products with certain "cells"[10] used in Tela's infringement case. *Id*. These subsets, along with their associated cells, are listed below:

| **Intel 14 nm Products** | |
|---|---|
| *Product Family/Architecture* | *Associated Cells* |
| Broadwell;<br>Sky Lake; | [[ ]]<br>[[ ]] |

[8] The 14 nm and 10 nm manufacturing processes refer to the processes of making integrated circuits with certain characteristics, referred to as 14 nm and 10 nm products, respectively. *See* CX-1144C (Foty) at Q/A 7-11, 190, 606-614, 1881-1887, 1891-1892, 2358, 2401.

[9] *See supra* at I.A.

[10] "Typically the layout of an integrated circuit is constructed from smaller layout blocks called cells, which correspond to the layout of a particular function. An example of a cell is a flip-flop, which is a common element in an integrated circuit for storing data." CX-1144 (Foty) at Q/A 107.

| **Intel 14 nm Products** | |
|---|---|
| *Product Family/Architecture* | *Associated Cells* |
| Kaby Lake;<br>Coffee Lake | [[ ]] |
| Cascade Lake | [[ ]] |
| Goldmont;<br>Goldmont Plus | [[ ]]<br>[[ ]]<br>[[ ]] |
| Ice Lake Chipset;<br>Cannon Lake Chipset | [[ ]] |

| **Intel 10 nm Products** | |
|---|---|
| *Product Family/Architecture* | *Associated Cells* |
| Ice Lake; Cannon Lake | [[ ]]<br>[[ ]]<br>[[ ]] |

ID at 10-11 (citing CDX-0012C at *25-26; RDX-0016C at *37-39).

### D. Domestic Industry ("DI") Products

The domestic industry products in this investigation are integrated circuits, more specifically, 14 nm Exynos computer processors, made for mobile devices. ID at 8 (citing CIB at 9). Tela's licensee, Samsung Austin Semiconductor ("SAS"), performs front-end wafer fabrication in Austin, Texas. *Id.*; ComplPet at 30-32. Tela explains that these 14 nm Exynos processors are "fabricated using a version of Samsung's[11] 14 nm process technology –

[11] Hereinafter, "Samsung" stands for Samsung Electronics Co., Ltd. ID at 177.

LN14LPEM (14LPE), LN14LPPM (14LPP), or LN14LPCM (14LPC)." ID at 8 (citing CIB at 10 (citing CX-1144C at Q/A 1618-1622, 2692-1693; CX-0033C at 9; CX-1228C at 52:12-54:7)). The particular processors made by each of these processes and relied on by Tela to satisfy the technical prong of the domestic industry requirement, are listed below:

| **Tela's "DI Products"** | | | |
|---|---|---|---|
| **Code Name** | **Fab Part ID** | **Brand Name** | **Process Technology** |
| [[ ]] | S5E7420 | Exynos 7 Octa (7420) Mobile Processor | 14LPE |
| [[ ]] | S5E8890 | Exynos 8 Octa (8890) Mobile Processor | 14LPP |
| [[ ]] | S5E8890 | Exynos 8 Octa (8890) Mobile Processor | 14LPP |
| [[ ]] | S5E7880 | Exynos 7880 Mobile Processor | 14LPP |
| [[ ]] | S5E7570 | Exynos 7 Quad (7570) Mobile Processor | 14LPC |
| [[ ]] | S5E7870 | Exynos 7 Octa (7870) Mobile Processor | 14LPC |
| [[ ]] | S5E7883 | Exynos 7883 Mobile Processor | 14LPC |

*Id*. at 9 (citing CIB at 10) (internal citations omitted). These processors are referred together as the "DI Products."[12]

[12] In Order No. 30, the ALJ denied Tela's belated request to supplement its contention interrogatory responses; Tela had sought to add five Qualcomm processors to the DI Products. *See* Order No. 30 at 1-2. Tela now urges the Commission to reverse Order No. 30 and to consider the Qualcomm processors in its technical and economic prong analyses. *See generally* ComplPet at 46-60. The Commission declines Tela's request because Order No. 30 reflects a reasonable exercise of judicial discretion. Further, Order No. 30 appropriately considers the moving party's diligence and the prejudice to the non-moving party, which comports with similar orders. *See, e.g.*, *Certain Semiconductor Devices, Semiconductor Device Packages, and Products Containing Same*, Inv. No. 337-TA-1010, Order No. 58 at 3 (Jan. 17, 2017) (assessing the complainant's diligence and the prejudice to the respondent); *Certain Microelectromechanical Systems ("MEMS Devices") and Products Containing the Same*, Inv. No. 337-TA-876, Order No. 49 at 2 (Dec. 13, 2013) (finding that the respondent's lack of diligence undermined its ability to show good cause

Tela's evidentiary presentation regarding the economic prong of the domestic industry requirement and discussion of the relied upon investments is based on a separate, three-tiered classification of the DI Products, to accommodate situations in which less than all of them satisfy technical prong. *Id*. The tiers are as follows:

| **Tela's Economic Prong Groups** | |
|---|---|
| Group 1 | [[ ]] (7420) |
| Group 2 | Group 1 + [[ ]] (8890), [[ ]] (8890), [[ ]] (7880) |
| Group 3 | Group 1 + Group 2 + [[]] (7570) + [[ ]] (7870) + [[ ]] (7883) |

*Id*. (citing CIB at 160; RIB at 172-173).

## II. STANDARD ON REVIEW

Under Commission Rule 210.43, the Commission will review an ID where it appears that –

> (1) a finding or conclusion of material fact is clearly erroneous;
>
> (2) a legal conclusion is erroneous, without governing precedent, rule or law, or constitutes an abuse of discretion; or
>
> (3) the determination is one affecting Commission policy.

19 C.F.R. § 210.43.

The Commission may review an ID on the basis of a petition for review or on its own initiative. 19 C.F.R. §§ 210.43, 210.44. The party seeking review is required to specify the issues for which review is sought. Any issue that is not raised in the petition is deemed to have been abandoned and may be disregarded by the Commission, unless the Commission determines to

for supplementing an interrogatory response). Accordingly, the Commission has not included the Qualcomm processors in the DI products.

review the issue on its own initiative. Commission review will encompass those issues for which at least one participating Commissioner votes to review. *Id.*

Commission review of an initial determination is limited to the issues set forth in the notice of review and all subsidiary issues therein. *Certain Bar Clamps, Bar Clamp Pads, and Related Packaging Display and Other Materials*, Inv. No. 337-TA-429, Comm'n Op. at 3 (Jan. 4, 2001). Once the Commission determines to review an initial determination, its review is *de novo*. *Certain Polyethylene Terephthalate Yarn and Products Containing Same*, Inv. No. 337-TA-457, Comm'n Op. at 9 (Jun. 18, 2002). Upon review the "Commission has 'all the powers which it would have in making the initial determination,' except where the issues are limited on notice or by rule." *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, Comm'n Op. on the Issues Under Review and on Remedy, the Public Interest, and Bonding at 9-10 (Jun. 2, 1997), USITC Pub. 3046 (July 1997) (quoting *Certain Acid-Washed Denim Garments and Accessories*, Inv. No. 337-TA-324, Comm'n Op. at 5 (Nov. 1992)).

On review, "the Commission may affirm, reverse, modify, set aside or remand for further proceedings, in whole or in part, the initial determination of the administrative law judge. In addition, the Commission may take no position on specific issues or portions of the initial determination of the administrative law judge. The Commission may also make any findings or conclusions that in its judgment are proper based on the record in the proceeding." 19 C.F.R. § 210.45.

## III. ANALYSIS

While analyzing invalidity and other defenses raised by Respondents, the ID declines to analyze respondents' arguments concerning the invalidity of the asserted domestic industry

claims.[13] *See* ID at 101, 168. The IA sought review of the ID in part, arguing that the ID's decision not to analyze whether the asserted DI claims are invalid is a legal error. IAPet at 17. The Commission has determined to review the ID in part on this issue.

The ID states:

> Before turning to the[] merits [of various invalidity and unenforceability theories for the 334 patent], however, a few preliminary points are warranted. Two of the disputed claims, 29 and 30, are pertinent only to the technical prong of domestic industry. *See* RIB at 74-75; SIB at 83-84. In general, however, it is "Commission practice not to couple an analysis of domestic industry to a validity analysis." *Certain Soft-Edged Trampolines and Components Thereof*, Inv. No. 337-TA-908, Comm'n Op. at 53 (May 1, 2015). Indefiniteness is the only basis for invalidity that bears on whether the technical prong is met, because indefiniteness "ma[kes] it impossible for the complainant to demonstrate whether a patent claim [is] practiced." *Certain Silicon Microphone Packages and Products Containing the Same*, Inv. No. 337-TA-695, Notice at 3 (Jan. 21, 2011). But indefiniteness is not one of the asserted grounds of invalidity of these two claims. *See* RIB at 74-75; SIB at 83-84. Therefore, whether claims 29 and 30 of the 334 patent are invalid is not relevant, and the parties' dispute over these claims need not be resolved or otherwise addressed.

ID at 101-102. *See also id*. at 168 ("Claim 27 [of the '523 patent] is pertinent only to the technical prong of domestic industry. *See* RIB at 148; SIB at 83-84. Thus, because indefiniteness is not an asserted ground of invalidity of claim 27, the parties' dispute over that claim need not be resolved or otherwise addressed.") (citing *Silicon Microphone Packages*, Inv. No. 337-TA-695, Notice at 3).

We find that the ID's determination that the parties' dispute over validity of the asserted DI claims "need not be resolved or otherwise addressed" is legally erroneous. *See* ID at 102. While the ID correctly notes that it is "Commission practice not to couple an analysis of domestic industry to a validity analysis," ID at 101, this statement, correctly interpreted, indicates that a

[13] As noted previously, the asserted DI claims are: claims 29-30 of the '334 patent and claims 27-28 of the '523 patent.

technical prong analysis and a validity analysis coexist and one does not affect, or preclude, the other.

Commission precedent supports this interpretation. Where the technical prong is *otherwise* met because the DI claims read on the DI products, but the DI claims are invalid, there can be no violation because the domestic industry articles are not protected by the patent. *See* 19 U.S.C. § 1337(a)(2) (the DI articles must be "protected by the patent"). Thus, as the IA correctly points out, "the *Trampolines* line of cases merely clarifies that even if a domestic industry claim is invalid, such an invalidity finding does not preclude a finding that the complainant's domestic industry article has otherwise met the technical prong of the domestic industry requirement[,]" *i.e.*, by finding that the asserted DI products meet the limitations of the relevant claims. IAPet at 19.[14] In short, the question of whether the DI claims are valid is a separate question argued by the parties that the ID should have addressed.

We therefore strike the paragraph quoted above, *see* ID at 101-102, and the following sentences relating to the '523 patent:

> Claim 27 is pertinent only to the technical prong of domestic industry. *See* RIB at 148; SIB at 83-84. Thus, because indefiniteness is not an asserted ground of invalidity of claim 27, the parties' dispute over that claim need not be

[14] The IA's petition cites, *inter alia*, *Certain Silicon Microphone Packages and Products Containing the Same*, Inv. No. 337-TA-695, USITC Pub. No. 4293, Notice at 3 (Jan. 21, 2011) ("The Commission has determined to review and vacate the ID's conclusion that the technical prong of the domestic industry requirement, 19 U.S.C. § 1337(a)(2) & (a)(3), is not met where all the asserted patent claims are found invalid. It is Commission practice not to couple an analysis of domestic industry to a validity analysis.") (citation omitted); and *Certain Infotainment Systems, Components Thereof, and Automobiles Containing the Same*, Inv. No. 337-TA-1119, Comm. Op. at 27-44 (April 30, 2020)). *See* IAPet at 19-20. *See also Certain Microlithographic Machines and Components Thereof*, Inv. 337-TA-468, Initial Determination at 68, 447 (Jan. 29, 2003) (finding that the technical prong of the domestic industry requirement is satisfied with respect to the claims that were found to be invalid), *unreviewed by* Notice (March 17, 2003).

> resolved or otherwise addressed. *Silicon Microphone Packages*, Inv. No. 337-TA-695, Notice at 3.

ID at 168.[15]

We note Tela's assertion that "[d]espite requesting that the Commission review the ID's determinations regarding obviousness of the '523 DI claims, the Staff did not assert obviousness as to any DI claim before the ALJ. (ID at 168; SIB at 113-14.) Staff thus waived any arguments that the DI claims of the '523 Patent are obvious." ComplResp at 46. Tela's assertion, however, does not warrant a finding of waiver. The IA petitions for review of the ID's alleged legal errors unrelated to the merits of the underlying invalidity contentions regarding the DI claims, and, therefore, the IA is permitted to petition for review of the question of whether the ID made a legal error in its analysis to conclude that the parties' invalidity dispute need not be addressed. *See* IAPet at 21*; accord Myco Industries, Inc. v. BlephEx, LLC*, 955 F.3d 1, 11 n.4 (Fed. Cir. 2020) ("'While a party can waive his or her ability to appeal a ruling for failure to object, there can be no waiver here of the Judge's duty to apply the correct legal standard.'") (quotations omitted); *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1372 (Fed. Cir. 2016) ("In general, 'litigants waive their right to present new claim construction disputes if they are raised for the first time after trial.' . . . [T]his is not what happened here.") (internal citations omitted).

Accordingly, we find that the ID legally erred in concluding that a validity analysis does not need to be performed for claims that pertain only to the technical prong of the domestic

[15] We note that, in addition, the above two sentences appear to contain a clerical error and were likely meant to read as follows: "Claims 27 and 28 are pertinent only to the technical prong of domestic industry. . . . Thus, because indefiniteness is not an asserted ground of invalidity of claims 27 and 28, the parties' dispute over these claims need not be resolved or otherwise addressed." *See* ID at 168; *see also* IAPet at 18 n. 4. The Commission's decision to strike the above two sentences, however, renders this issue moot.

industry requirement. However, the ID found no violation of section 337 because Tela does not practice the asserted DI claims with respect to either the '334 or '523 patents. *See* ID at 188-89. The Commission has determined not to review the finding concerning the technical prong of the domestic industry requirement. In light of this determination, there is no need for the Commission in this instance to resolve whether the asserted DI claims (*i.e.*, claims 29-30 of the '334 patent and claims 27-28 of the '523 patent) are valid because this issue will not affect the ultimate determination that there is no violation of section 337. Accordingly, the Commission takes no position on the issue of whether claims 29-30 of the '334 patent and claims 27-28 of the '523 patent are valid. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984).

The Commission has also determined to review the ID in part on the issue of whether Tela satisfied the economic prong of the domestic industry requirement, *see* ID at 185-188, and to take no position on this issue. *See Beloit*, 742 F.2d at 1423.

## IV. CONCLUSION

For the reasons set forth herein, the Commission determines that complainant Tela has not established a violation of section 337 by Respondents with respect to the asserted claims of the '334 and '523 patents. Accordingly, the investigation is terminated with a finding of no violation of section 337.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: December 30, 2020

**CERTAIN INTEGRAGTED CIRCUITS AND PRODUCTS CONTAINING THE SAME** **Inv. No. 337-TA-1148**

## PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **OPINION, COMMISION** has been served via EDIS upon the Commission Investigative Attorney, **John Shin, Esq.**, and the following parties as indicated, on December 30, 2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
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**On Behalf of Respondents Acer, Inc., Acer America Corp., Asustek Computer Inc., Asus Computer International, Intel Corporation, Lenovo Group Ltd., Lenovo (United States) Inc., Micro-Star International Co., Ltd., and MSI Computer Corp.:**

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**UNITED STATES INTERNATIONAL TRADE COMMISSION**

**Washington, D.C.**

| | |
|---|---|
| **In the Matter of**<br><br>**CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME** | **Inv. No. 337-TA-1148** |

# INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Cameron Elliot

(May 22, 2020)

Pursuant to the Notice of Investigation and Rule 210.42(a) of the Rules of Practice and Procedure of the United States International Trade Commission, this is my Initial Determination in the matter of *Certain Integrated Circuits and Products Containing the Same*, Investigation No. 337-TA-1148.

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## TABLE OF ABBREVIATIONS

| | |
|---|---|
| CDX | Complainant's Demonstrative Exhibit |
| CIB | Complainant's Revised Initial Post-Hearing Brief |
| CPB | Complainant's Pre-Hearing Brief |
| CPX | Complainant's Physical Exhibit |
| CRB | Complainant's Reply Post-Hearing Brief |
| CX | Complainant's Exhibit |
| Dep. Tr. | Deposition Transcript |
| Hr'g Tr. | Hearing Transcript |
| JX | Joint Exhibit |
| RDX | Respondents' Demonstrative Exhibit |
| RIB | Respondents' Initial Post-Hearing Brief |
| RPB | Respondents' Pre-Hearing Brief |
| RPX | Respondents' Physical Exhibit |
| RRB | Respondents' Reply Post-Hearing Brief |
| RX | Respondents' Exhibit |
| SDX | Commission Investigative Staff's Demonstrative Exhibit |
| SIB | Commission Investigative Staff's Initial Post-Hearing Brief |
| SPB | Commission Investigative Staff's Pre-Hearing Brief |
| SPX | Commission Investigative Staff's Physical Exhibit |
| SRB | Commission Investigative Staff's Reply Post-Hearing Brief |
| SX | Commission Investigative Staff's Exhibit |

[redacted]

# I. INTRODUCTION

## A. Procedural Background

Complainant Tela Innovations, Inc. ("Tela" or "Complainant") filed the complaint underlying this Investigation on December 19, 2018, amended the complaint on February 7, 2019, and filed supplements to the amended complaint on February 13, 2019 and February 26, 2019. The amended complaint alleged respondents Acer, Inc., Acer America Corporation, AsusTek Computer Inc., Asus Computer International, Intel Corporation, Lenovo Group Ltd., Lenovo (United States) Inc., Micro-Star International Co., Ltd., and MSI Computer Corp. (altogether, "Respondents") import or sell in connection with an importation certain products that infringe one or more claims of U.S. Patent Nos. 7,943,966 ("the 966 patent"), 7,948,012 ("the 012 patent"), 10,141,334 ("the 334 patent"), 10,141,335 ("the 335 patent"), and 10,186,523 ("the 523 patent").

By publication of a notice in the *Federal Register* on March 15, 2019, the U.S. International Trade Commission ordered that:

> Pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, an investigation be instituted to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of products identified in paragraph (2) by reason of infringement of one or more of claims 2, 32, and 33 of the '966 patent; claims 2, 27, and 28 of the '012 patent; claims 1, 2, 5, 6, 9, 11, 15, 20, and 24 of the '334 patent; claims 1, 2, 5, 6,9, 11, 15, 20, and 24 of the '335 patent; and claims 1-12, 14-20, 22-24, and 26 of the '523 patent, and whether an industry in the United States exists as required by subsection (a)(2) of section 337[.]

43 Fed. Reg. 9559 (Mar. 15, 2019). On April 3, 2019, I set a target date of August 14, 2020 for completion of this investigation via initial determination. Order No. 4. Also on April 3, 2019, I set a *Markman* hearing date of July 8 and July 10, 2019 and the evidentiary hearing for December 9-13, 2019. Order No. 5. On April 11, 2019, at the request of the parties, the *Markman* hearing was moved to July 15 and July 17, 2019. Order No. 6.

On July 17, 2019, I held a technology tutorial and *Markman* hearing, and on October 2, 2019, issued Order No. 34, construing certain claim terms of the patents at issue.

On July 29, 2019, Respondents moved for summary determination of invalidity due to lack of written description and enablement (Motion No. 1148-024) which was denied on August 20, 2019 with Order No. 27.

On September 19, 2019, Tela moved to terminate the investigation with respect to all asserted claims of the 966 and 012 patents (Motion No. 1148-033), which was granted via initial determination on October 2, 2019 with Order No. 33.

On October 8, 2019, Respondents moved for summary determination of invalidity due to indefiniteness (Motion No. 1148-035) based on certain findings made in Order No. 34, but Respondents withdrew the motion on October 22, 2019 in light of Tela's co-pending motion to terminate the pertinent claims and patent from the investigation (Motion No. 1148-037). I granted Tela's motion via initial determination on October 23, 2019 with Order No. 36, which terminated the investigation as to all asserted claims of the 335 patent, claims 6, 11, and 20 of the 334 patent, and claim 12 of the 523 patent.

Also on October 8, 2019, Tela moved for summary determination that it satisfies the economic prong of domestic industry (1148-036). I denied Tela's motion on November 4, 2019 with Order No. 38, but treated certain facts as established under Commission Rule 210.18(e) related to this issue and discussed further below.

The evidentiary hearing took place over December 9-13, 2019. Following the hearing, on January 3, 2020, Tela moved to terminate the investigation in part as to claims 9 and 24 of the 334 patent, and claims 22-24 of the 523 patent (Motion No. 1148-054). I granted Tela's motion via initial determination on January 6, 2020 with Order No. 45. As of the date of this initial

determination, no motions are pending, and only the 334 patent and 523 patent remain asserted (hereafter, "the Asserted Patents").

Pursuant to the procedural schedule, the parties submitted initial and reply post-hearing briefs on January 6, 2020 and January 17, 2020, respectively. Finally, on February 19, 2020, I extended the target date by six weeks via initial determination with Order No. 47 due in part to the volume of contested issues in this investigation.

**B. The Parties**

Complainant Tela Innovations, Inc. is a United States corporation organized and existing under the laws of Delaware and having its principal place of business in Los Gatos, California. CPB at 7. Tela conducts engineering, research, and design related to integrated circuit design in areas such as performance, area, power consumption, and manufacturability characteristics. *See id.*

Respondent Intel Corporation ("Intel") is a corporation organized and existing under the laws of Delaware and having its principal place of business in Santa Clara, California. RIB at 5. Intel is a historically significant entity in the semiconductor industry with offices worldwide, developing and selling, among other things, central processing units and other processors for personal and server-level computers. *See generally id.*

Respondent Acer, Inc. is a foreign corporation organized and existing under the laws of Taiwan and having a principal place of business in New Taipei City 221, Taiwan. RIB at 5. Acer, Inc. designs and sells, among other things, personal computers containing Intel processors. *See id.* at 7. Respondent Acer America Corporation is a corporation organized and existing under the laws of California and having a principal place of business in San Jose, California. *Id.* at 5. Acer America Corporation is a subsidiary of Acer, Inc. (together, "Acer"). *Id.*

[redacted]

Respondent ASUSTek Computer, Inc. is a foreign corporation organized and existing under the laws of Taiwan and having a principal place of business in Beitou District Taipei 112, Taiwan. RIB at 5. ASUSTek Computer, Inc. designs and sells, among other things, personal computers containing Intel processors. *See id.* at 7. Respondent ASUS Computer International is a corporation organized and existing under the laws of California and having a principal place of business in Freemont, California. *Id.* at 5. ASUS Computer International is a subsidiary of ASUSTek Computer, Inc. (together, "ASUS"). *Id.*

Respondent Lenovo Group Ltd. is a foreign corporation organized and existing under the laws of China and having a principal place of business in Beijing, China. RIB at 6. Lenovo Group Ltd. designs and sells, among other things, personal computers containing Intel processors. *See id.* at 7. Respondent Lenovo (United States) Inc. is a corporation organized and existing under the laws of Delaware and having a principal place of business in Morrisville, North Carolina. *Id.* at 6. Lenovo (United States) Inc. is an "indirect subsidiary" of Lenovo Group Ltd. (together, "Lenovo"). *Id.*

Respondent Micro-Star International Co., Ltd. is a foreign corporation organized and existing under the laws of Taiwan and having a principal place of business in New Taipei City 235, Taiwan. RIB at 6. Micro-Star International Co., Ltd. designs and sells, among other things, personal computers containing Intel processors. *See id.* at 7. Respondent MSI Computer Corp. is a corporation organized and existing under the laws of California and having a principal place of business in City of Industry, California. *Id.* at 6. MSI Computer Corp. is a subsidiary of Micro-Star International Co., Ltd. (together, "MSI"). *Id.*

[redacted]

### C. The Asserted Patents and Claims

The Asserted Patents relate to semiconductor chips with gate structures and other feature layers arranged in a grid. The following claims are at issue in this investigation:

| Asserted Patent | Infringement Claims | Domestic Industry Claims |
|---|---|---|
| 10.141,334 | 1, 2, 5, 15 | 29, 30 |
| 10,186,523 | 1-11, 14-20, 25, 26 | 27, 28 |

*See* CIB at 11, 66, 101, 135.[1]

The 334 patent is entitled, "Semiconductor Chip Including Region having Rectangular-Shaped Gate Structures and First-Metal Structures." JX-0003 (also cited herein as "334 patent"). The application leading to the 334 patent was filed on August 28, 2017, and claims priority, through a series of intervening continuation applications, to a provisional application, 60/781,288, filed on March 9, 2006. *Id.* The 334 patent issued on November 27, 2018. *Id.*

The 523 patent is entitled, "Semiconductor Chip having Region including Gate Electrode Features Formed in part from Rectangular Layout Shapes on Gate Horizontal Grid and First-Metal Structures Formed in part from Rectangular Layout Shapes on at Least Eight First-Metal Gridlines of First-Metal Vertical Grid." JX-0005 (also cited herein as "523 patent"). The application leading to the 523 patent was filed on August 31, 2018, and claims priority, through a series of intervening continuation applications, to a provisional application, 60/781,288, filed on March 9, 2006. *Id.* The 523 patent issued on January 22, 2019.

By way of background, a semiconductor is a material that has electrical conductivity properties falling between that of a conductor and an insulator. Joint Technology Tutorial, EDIS

[1] Tela does not identify claim 25 as infringed, but it is implicated by asserted dependent claim 26.

[redacted]

Doc. ID 680838 at 2 ("JTT"). These conductive properties may be changed with the addition of impurities. *Id*. at 6. The addition of different types of impurities results in two different types of semiconductor, known as p-type and n-type. *Id*.

P-type and n-type semiconductors can be used with other materials to construct transistors. JTT at 10-13. The relevant transistor here is a complementary metal oxide semiconductor, or CMOS. *Id*. at 11, 14. A CMOS transistor is made of four basic components: (1) a body; (2) a source region made of one type of semiconductor; (3) a drain region also made of that type of semiconductor; and (4) a gate made of metal and an oxide, where the gate oxide functions as an insulator by separating the gate metal from the other components. *Id*. at 10-14. The source region and the drain region together constitute the diffusion region. 523 patent at 9:35-42 ("diffusion regions 203 represent selected regions of the base substrate 201 within which impurities are introduced" and "diffusion contacts 205 are defined to enable connection between source and drain diffusion regions 203").

When a voltage is applied to the gate an electric field is formed under it, causing a conductive channel connecting the source and drain to either appear or disappear, depending on the voltage and the type of semiconductor used to form the source and drain. JTT at 10-16. As a result, current can be made to either flow or not flow from source to drain, and the transistor in effect acts as an on/off switch. *Id*. at 10, 13. Logic circuits using this switching effect may be formed by connecting many transistors together. *See* JTT at 10. A set of such circuits disposed on a semiconductor substrate is called an integrated circuit, or chip. *Id.* at 2. A silicon wafer is the substrate material for a CMOS chip. *Id*. at 17.

The circuitry on a CMOS chip is formed through a multi-stage process, including layout, in which the size, shape, and spacing of the chip's features are specified, followed by

photolithography. JTT at 17, 19; *see* Respondents' Initial Claim Construction Brief, EDIS Doc. ID 678284, Ex. 6 at 6 ("A layout represents the size, shape, and spacing guidelines for a given layer in a transistor"). In photolithography, a material called photoresist is deposited on the wafer. JTT at 17. Photoresist undergoes chemical changes when exposed to light. *Id*. at 19. In one embodiment of the photolithography process, a pattern of opaque chrome material is placed on transparent quartz glass to form a photomask corresponding to at least a portion of the layout. *Id*. at 18. The photomask is placed over the wafer, ultraviolet light is shined through it, and the underlying photoresist chemically changes to match the photomask's pattern. *Id*. Application of a solvent then removes some of the photoresist, leaving the remaining photoresist in either a positive or negative pattern (depending on the photoresist) matching that of the photomask. *Id*. at 18-19.

Further processing can then be used to build features on the wafer; for example, in areas where photoresist has been removed, material may be added by deposition or removed by etching. *See* JTT at 19. Repeated application of photolithography and additional processing results in a "stack of layers" on the wafer. 523 patent at 9:14-15; *see generally* 523 patent at Fig. 2. Within these layers, the various features forming the integrated circuit include gates, gate electrodes, source and drain contacts, and other elements, all of which "enable . . . the desired circuit connectivity." *Id*. at 9:56-57; *see generally id*. at 9:30-49.

The density of circuitry can be increased by reducing feature size. JTT at 20. Historically, feature size has been shrinking, and in many cases features are smaller than the wavelength of the light used for photolithography. *Id*. Because of the small feature size, interference patterns are generated during fabrication as shapes on the photomask interact with the light. 523 patent at 4:16-

[redacted]

17. These interference patterns cause the fabricated feature shape to deviate from the designed feature shape, so much so that failure may result. *Id*. at 4:22-24.

In particular, when "two-dimensionally varying features are located in neighboring proximity to each other, the light used to expose the features will interact in a complex and generally unpredictable manner," and may result in, for instance, "layout feature shape distortion." 523 patent at 7:41-44, 8:25. Although "[c]orrection methodologies" exist to solve this problem, "semiconductor product yield is reduced as a result of . . . two-dimensionally varying features disposed in proximity to each other." *Id*. at 4:24, 8:17-21. The Asserted Patents claim a new such methodology focused on "topology," or feature shape. *Id*. at 7:36-37. Specifically, the Asserted Patents themselves assert that "layout feature shape enhancement can be realized if the layout feature shapes are rectangular, near the same size, and are oriented in the same direction." *Id*. at 9:8-9. It stands undisputed that Tela is the owner of the Asserted Patents. CIB at 155 (citing JX-0008; JX-0010; CX-1148C at Q/A 6-9), 11 (citing JX-0003; JX-0005; JX-0013; JX-0015); *see generally* RIB; SIB.

### D. Products at Issue

#### 1. Domestic Industry Products

The domestic industry products in this investigation are integrated circuits; more specifically, 14nm Exynos computer processors, made for mobile devices. CIB at 9. These processors are made by Samsung Austin Semiconductor ("SAS") in the United States. Tela explains how these 14nm Exynos processors are "fabricated using a version of Samsung's 14nm process technology—LN14LPEM (14LPE), LN14LPPM (14LPP), or LN14LPCM (14LPC)." *Id.* at 10 (citing CX-1144C at Q/A 1618-1622, 2692-1693; CX-0033C at *9; CX-1228C at 52:12-54:7). The particular processors made by each of these processes, and relied on by Tela for satisfaction of domestic industry, are listed below:

[redacted]

| Tela's "DI Products" | | | |
|---|---|---|---|
| **Code Name** | **Fab Part ID** | **Brand Name** | **14nm Process Technology** |
| [redacted] | S5E7420 | Exynos 7 Octa (7420) Mobile Processor | 14LPE |
| [redacted] | S5E8890 | Exynos 8 Octa (8890) Mobile Processor | 14LPP |
| [redacted] | S5E8890 | Exynos 8 Octa (8890) Mobile Processor | 14LPP |
| [redacted] | S5E7880 | Exynos 7880 Mobile Processor | 14LPP |
| [redacted] | S5E7570 | Exynos 7 Quad (7570) Mobile Processor | 14LPC |
| [redacted] | S5E7870 | Exynos 7 Octa (7870) Mobile Processor | 14LPC |
| [redacted] | S5E7883 | Exynos 7883 Mobile Processor | 14LPC |

CIB at 10 (citing, *inter alia*, CX-0033C at *9; CX-1145C at Q/A 32-40; CX-1144C at Q/A 2619-2629, 2692-2693); *see* CX-0629; CX-0630; CX-0631; CX-0632; CX-0633; CX-1230. These processors will be referred together in this initial determination as the "DI Products." Further, Tela's presentation of economic prong domestic industry and discussion of significant investment is based on a separate, three-tiered classification of the DI Products, to accommodate situations in which less than all of them satisfy technical prong. The tiers are as follows:

| Tela's Economic Prong Groups | |
|---|---|
| Group 1 | [redacted] (7420) |
| Group 2 | Group 1 + [redacted] |
| Group 3 | Group 1 + Group 2 + [redacted] |

CIB at 160; *see* RIB at 172-173.

[redacted]

### 2. Accused Products

The accused products in this investigation are integrated circuits—both CPUs and chipsets—fabricated on respondent Intel's 14nm and 10nm manufacturing processes, and also desktops, laptops, motherboards, and other computers manufactured and sold by respondents Acer, Asus, Lenovo, and MSI containing those integrated circuits. CIB at 8-9. The individual part and model numbers are too numerous to reproduce here but are listed in demonstratives to Tela's expert's testimony and attached to this initial determination as Appendix A. CX-1144C at Q/A 7-11; CDX-0003; CDX-0004; CDX-0005; CDX-0006; CDX-0007. All of the products listed in these demonstratives will be referred to in this initial determination as the "Accused Products"; while the 14nm products listed in CDX-0003 from respondent Intel will be referred to as the "Intel 14nm Products" and the 10nm products will be referred to as the "Intel 10nm Products."

Further, Tela's expert, Dr. Foty, and Respondents' expert, Dr. Subramanian, have provided demonstratives associating subsets of the Intel 14nm Products and Intel 10nm Products with certain "cells" used in Tela's infringement case. These subsets, along with their associated cells, are listed below:

| **Intel 14nm Products** | |
|---|---|
| *Product Family/Architecture* | *Associated Cells* |
| Broadwell;<br>Sky Lake;<br>Kaby Lake;<br>Coffee Lake | [redacted] |
| Cascade Lake | [redacted] |
| Goldmont;<br>Goldmont Plus | [redacted] |

[redacted]

| | |
|---|---|
| | [redacted] |
| Ice Lake Chipset;<br>Cannon Lake Chipset | [redacted] |
| **Intel 10nm Products** | |
| *Product Family/Architecture* | *Associated Cells* |
| Ice Lake;<br>Cannon Lake | [redacted] |

*See* CDX-0012C at *25-26; RDX-0016C at *37-39.

## II. STANDARDS OF LAW

### A. Standing

Commission Rule 210.12 states in relevant part "[f]or every intellectual property based complaint (regardless of the type of intellectual property involved), [the complaint must] include a showing that at least one complainant is the owner or exclusive licensee of the subject intellectual property." 19 C.F.R. § 210.12(a)(7). In determining whether this rule is met, the Commission looks to the standing requirement used by courts in patent infringement cases. *Certain Audio Processing Hardware, Software, and Products Containing the Same*, Inv. No. 337-TA-1026, Comm'n Op. at 9 (April 18, 2018) (citations omitted).

### B. Claim Construction

"The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000). Although most of the disputed

claim terms were construed in an earlier order, some of the issues presented below are only resolvable with additional claim construction.

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *see also Markman v. Westview Instr., Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc). As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the "ordinary and customary meaning of a claim term" as understood by a person of ordinary skill in art at the time of the invention. 415 F.3d at 1313. "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms." *Id.* at 1314; *see Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) ("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point [ ] out and distinctly claim [ ] the subject matter which the patentee regards as his invention."). The context in which a term is used in an asserted claim can be "highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.* "Courts do not rewrite claims; instead, we give

effect to the terms chosen by the patentee." *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316.

In addition to the claims and the specification, the prosecution history should be examined, if in evidence. *Phillips*, 415 F.3d at 1317; *see Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can "often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317; *see Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.").

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* "The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with

the construction mandated by the intrinsic evidence." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

The construction of a claim term is generally guided by its ordinary meaning. However, courts may deviate from the ordinary meaning when: (1) "the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention;" or (2) "the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history." *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009); *see GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("the specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."); *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) ("[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender."); *Rheox, Inc. v. Entact, Inc*., 276 F.3d 1319, 1325 (Fed. Cir. 2002) ("The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution."). Nevertheless, there is a "heavy presumption that a claim term carries its ordinary and customary meaning." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citations omitted). The standard for deviating from the plain and ordinary meaning is "exacting" and requires "a clear and unmistakable disclaimer." *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012); *see Epistar Corp. v. Int'l Trade Comm'n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (requiring "expressions of manifest exclusion or restriction,

representing a clear disavowal of claim scope" to deviate from the ordinary meaning) (citation omitted).

### C. Infringement

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman*, 52 F.3d at 976.

A patentee may prove infringement either literally or under the doctrine of equivalents. Infringement of either sort must be proven by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). A preponderance of the evidence standard "requires proving that infringement was more likely than not to have occurred." *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

Literal infringement, a form of direct infringement, is a question of fact. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). "To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly." *Microsoft Corp. v. GeoTag, Inc.*, 817 F.3d 1305, 1313 (Fed. Cir. 2016) (quoting *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995). If any claim limitation is absent, there is no literal infringement of that claim as a matter of law. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000).

Doctrine of equivalents is also a form of direct infringement. One rubric for evaluating if a claimed feature is not literally, but nonetheless equivalent to, a claimed feature is known as the function-way-result test. Under this test, the accused feature is equivalent to the claim limitation when "it performs substantially the same function in substantially the same way to obtain the same

result." *Duncan Parking Techs., Inc. v. IPS Grp., Inc.*, 914 F.3d 1347, 1362 (Fed. Cir. 2019) (quoting *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950)). Another test is known as the insubstantial differences test, where "[a]n element in the accused device is equivalent to a claim limitation if the only differences between the two are insubstantial." *Voda v. Gordia Corp.*, 536 F.3d 1311, 1139 (Fed. Cir. 2008). The Supreme Court has further instructed, "the proper time for evaluating equivalency . . . is at the time of infringement, not at the time the patent was issued." *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997).

### D. Domestic Industry

In an investigation based on a claim of patent infringement, Section 337 requires that an industry in the United States, relating to the articles protected by the patent, exist or be in the process of being established. 19 U.S.C. § 1337(a)(2). Under Commission precedent, the domestic industry requirement has been divided into (i) a "technical prong" (which requires articles covered by the asserted patent) and (ii) an "economic prong" (which requires certain levels of activity with respect to the protected articles or patent itself). *See Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Comm'n Op. at 6-7 (April 14, 2011) ("*Video Game Systems*").

#### 1. Technical Prong

The technical prong of the domestic industry requirement is satisfied when the complainant in a patent-based section 337 investigation establishes that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. §§ 1337 (a)(2), (3); *Certain Microsphere Adhesives, Process for Making Same and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 8 (U.S.I.T.C. Jan. 16, 1996). "In order to satisfy the technical prong of the domestic industry requirement, it is sufficient to show that the domestic industry practices any claim of that patent, not necessarily an asserted claim of that patent." *Certain Ammonium*

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*Octamolybdate Isomers*, Inv. No. 337-TA-477, Comm'n Op. at 55 (U.S.I.T.C. Aug. 28, 2003). Historically, the Commission permits the complainant's products, and those of its licensees, to be considered for technical prong purposes. *See Certain Magnetic Tape Cartridges and Components Thereof*, Inv. No. 337-TA-1058, Comm'n Op. at 28-29 (April 9, 2019).

The test for claim coverage for the purposes of the technical prong of the domestic industry requirement is the same as that for infringement. *See Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109 (U.S.I.T.C. May 21, 1990), *aff'd*, Views of the Commission at 22 (U.S.I.T.C. Oct. 31, 1990); *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). "First, the claims of the patent are construed. Second, the complainant's article or process is examined to determine whether it falls within the scope of the claims." *Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109. As with infringement, the technical prong of the domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Dynamic Sequential Gradient Devices and Component Parts Thereof*, Inv. No. 337-TA-335, ID at 44, Pub. No. 2575 (U.S.I.T.C. May 15, 1992). In short, the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent.

**2. Economic Prong**

The "economic prong" of the domestic industry requirement is satisfied when there exists in the United States, in connection with products practicing at least one claim of the patent at issue: (A) significant investment in plant and equipment; (B) significant employment of labor or capital; or (C) substantial investment in its exploitation, including engineering, research and development, and licensing. 19 U.S.C. § 1337(a)(3). Establishment of the "economic prong" is not dependent on any "minimum monetary expenditure" and there is no need for complainant "to define the industry itself in absolute mathematical terms." *Certain Stringed Musical Instruments and*

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*Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 25-26 (May 16, 2008) ("*Stringed Instruments*"). However, a complainant must substantiate the significance of its activities with respect to the articles protected by the patent. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 30 (Feb. 17, 2011) ("*Imaging Devices*"). Further, a complainant can show that its activities are significant by showing how those activities are important to the articles protected by the patent in the context of the company's operations, the marketplace, or the industry in question. *Id.* at 27-28. That significance, however, must be shown in a quantitative context. *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 886 (Fed. Cir. 2015). The Federal Circuit noted that when the ITC first addressed this requirement, it found the word "'significant' denoted 'an assessment of the *relative* importance of the domestic activities.'" *Id.* at 883-4 (internal citation omitted) (emphasis added). In general, "[t]he purpose of the domestic industry requirement is to prevent the ITC from becoming a forum for resolving disputes brought by foreign complainants whose only connection with the United States is ownership of a U.S. patent." *Certain Battery-Powered Ride-On Toy Vehicles*, Inv. No. 337-TA-314, USITC Pub. No. 2420, Initial Determination at 21 (Aug. 1991).

### E. Invalidity

#### 1. 35 U.S.C. § 102

Pursuant to 35 U.S.C. § 102, a patent claim is invalid as anticipated if:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant;
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States;
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application

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> for patent by another filed in the United States before the invention by the applicant for patent;"
>
> (g)(2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it.

35 U.S.C. § 102 (pre-AIA). "A patent is invalid for anticipation if a single prior art reference discloses each and every limitation of the claimed invention. Moreover, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference." *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (citations omitted); *see Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1354 (Fed. Cir. 2012). "A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'" *Upsher-Smith Labs., Inc. v. Pamlab, L.L.C.*, 412 F.3d 1319, 1322 (Fed. Cir. 2005) (citing *Schering Corp.*, 339 F.3d at 1322).

**2. 35 U.S.C. § 103**

Section 103 of the Patent Act states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103(a) (pre-AIA). "Obviousness is a question of law based on underlying questions of fact." *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1379 (Fed. Cir. 2008). The underlying factual determinations include: "(1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness." *Id.* (citing *Graham v. John Deere Co. of*

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*Kansas City*, 383 U.S. 1, 17-18 (1966)). These factual determinations are often referred to as the "Graham factors."

The critical inquiry in determining the differences between the claimed invention and the prior art is whether there is a reason to combine the prior art references. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-21 (2007). In *KSR*, the Supreme Court rejected the Federal Circuit's rigid application of the teaching-suggestion-motivation test. While the Court stated that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," it described a more flexible analysis:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue . . . . As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*Id.* at 418. Since *KSR*, the Federal Circuit has announced that, where a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device . . . and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 399 ("The proper question was whether a pedal designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to upgrading Asano with a sensor.").

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In addition to demonstrating that a reason exists to combine prior art references, the challenger must demonstrate that the combination of prior art references discloses all of the limitations of the claims. *Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1373-4 (Fed. Cir. 2010) (abrogated on other grounds by *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120 (2014)) (upholding finding of non-obviousness based on the fact that there was substantial evidence that the asserted combination of references failed to disclose a claim limitation); *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a requirement for a finding of obviousness is that "all the elements of an invention are found in a combination of prior art references").

An obviousness determination should also include a consideration of "secondary considerations" such as "commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." *Graham*, 338 U.S. at 17-18. "For [such] objective evidence to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention." *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995); *see Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 837 (Fed. Cir. 2015). "Where the offered secondary consideration actually results from something other than what is both claimed and novel in the claim, there is no nexus to the merits of the claimed invention." *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011).

**3. 35 U.S.C. § 112**

Pursuant to 35 U.S.C. § 112, a patent claim is invalid for lack of written description if the patent's specification fails to "reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "[T]he test requires an objective inquiry into

the four corners of the specification from the perspective of a person of ordinary skilled in the art" (*id.*), and "the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology" (*id.* (citing *Capon v. Eshar*, 418 F.3d 1349, 1357-58 (Fed. Cir. 2005))).

Additionally, under 35 U.S.C. § 112, a patent claim is invalid for indefiniteness if "its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus,* 134 S. Ct. at 2124. Indefiniteness can result from a single claim covering both an apparatus and a method of use of that apparatus, as "a manufacturer or seller of the claimed apparatus would not know from the claim whether it might also be liable for contributory infringement because a buyer or user of the apparatus later performs the claimed method using the apparatus." *IPXL Holdings v. Amazon.com*, 430 F.3d 1377, 1384 (Fed. Cir. 2005); *see UltimatePointer, L.L.C. v. Nintendo Co.*, 816 F.3d 816, 826 (Fed. Cir. 2016) (holding these types of claims may make it "unclear whether infringement . . . occurs when one creates an infringing system, or whether infringement occurs when the user actually uses the system in an infringing manner") (citation omitted). "[A]pparatus claims are not necessarily indefinite for using functional language," however, as in, for example, means-plus-function formatted claims. *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1313 (Fed. Cir. 2017) (citing *Microprocessor Enhancement Corp. v. Tex. Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008)). Another example may be when the claim merely recites "that the system 'possesses the recited structure which is capable of performing the recited functions.'" *Id.* at 1315-16 (quoting *Microprocessor Enhancement*, 520 F.3d at 1375). Overall, "the written description is *key* to determining whether a term of degree is indefinite." *Guangdong Alison Hi-Tech Co. v. Int'l Trade Comm'n*, 936 F.3d

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1353, 1361 (Fed. Cir. 2019) (citing *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1378 (Fed. Cir. 2017)) (emphasis in original).

Further, under 35 U.S.C. § 112, a patent specification must contain a description "of the manner and process of making and using" the invention. 35 U.S.C. § 112. This is referred to as the enablement requirement, and a patent claim is sufficiently enabled only when the specification teaches "those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation." *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). To determine whether the specification leaves a person of ordinary skill to perform undue experimentation, the Federal Circuit has identified the following factors to consider: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 585 F.2d 731, 737 (Fed. Cir. 1988). "[I]t is not necessary that a court review all the *Wands* factors to find a disclosure enabling. They are illustrative, not mandatory." *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991).

## III. IMPORTATION AND JURISDICTION

In its initial post-hearing brief, Tela asserts that "Respondents do not deny that they make the Accused Products over which the Commission has *in rem* jurisdiction." CIB at 10. Tela notes that respondent Intel stipulated that it imports, sells for importation, and sells after importation into the United States various generations of its portion of the Accused Products (*see id.* at 11 (citing JX-0017C; CDX-0003C)) and argues the other respondents also import, sell for importation, or sell after importation, their respective Accused Products. Respondents do not dispute the Commission's jurisdiction over this investigation or that the requisite importation or sales in

connection with importation of their respective Accused Products has taken place. *See* RIB at 13. Accordingly, the importation requirement under 19 U.S.C. § 1337(a)(1)(B) is satisfied, and the Commission has *in rem* jurisdiction over the Accused Products.

## IV. U.S. PATENT NO. 10,141,334

### A. Level of Ordinary Skill in the Art

In Order No. 34, I determined that a person having ordinary skill in the art of the 334 patent at the time of invention "would have: (1) a bachelor's degree in electrical engineering or computer engineering with at least three years of experience in the field of semiconductor layout technology and integrated circuit design; (2) a master's degree in electrical engineering or computer engineering with at least two years of experience in the same field; (3) a bachelor's degree in physics or materials science with at least five years of experience in the same field; or (4) a comparable combination of education and experience." Order No. 34 at 8. The parties do not challenge this determination (*see* RIB at 15; SIB at 24; *see generally* CIB; CRB; RRB; SRB), and it is applied throughout this initial determination.

### B. Claims-at-Issue

Claims 1, 2, 5, 15, 29, and 30 of the 334 patent are at issue in this investigation, either through allegations of infringement or of the domestic industry technical prong. *See* CIB at 11, 66. These claims are reproduced below along with additional claim limitation identifiers:

> 1. [1a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip,
>
> [1b] the gate structures positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,

[1c] wherein each gate gridline has at least one gate structure positioned thereon, wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,

[1d] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type,

[1e] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

[1f] a first-metal layer formed above top surfaces of the gate structures within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate structures, the first-metal layer separated from the top surfaces of the gate structures by at least one insulator material, adjacent metal layers in the stack of metal layers separated by at least one insulator material,

[1g] wherein the first-metal layer includes first-metal structures positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, each first-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline,

[1h] each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of first-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers; and

[1i] at least six contact structures formed within the region of the semiconductor chip, wherein at least six gate structures within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six contact structures,

[1j] each of the at least six contact structures having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in the x-direction, each of

the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact,

[1k] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein the logic circuit includes electrical connections that collectively include first-metal structures positioned on at least five of the at least eight first-metal gridlines.

2. [2a] The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures positioned in accordance with a second-metal horizontal grid, the second-metal horizontal grid including at least eight second-metal gridlines,

[2b] each second-metal structure in the region having at least one adjacent second-metal structure positioned next to each of its sides in accordance with an x-coordinate spacing of less than or equal to 193 nanometers, each second-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline,

[2c] wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure positioned thereon, wherein each pair of second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap,

[2d] wherein the second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the gate structures.

. . . .

5. The semiconductor chip as recited in claim 2, wherein the at least six contact structures are positioned in accordance with a contact vertical grid, the contact vertical grid including contact gridlines extending in the x-direction, each of the at least six contact structures positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six contact structures positioned to also extend lengthwise in the x-direction in a substantially centered manner along a corresponding first-metal gridline.

. . . .

15. The semiconductor chip as recited in claim 1, wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of at least one transistor within the region of the semiconductor chip has a substantially rectangular shape.

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. . . .

29. [29a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip, the gate structures positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon,

[29b] wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,

[29c] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type,

[29d] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

[29e] a number of contact structures formed within the region of the semiconductor chip, wherein each gate structure that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding contact structure having a substantially rectangular shape, wherein each contact structure that contacts a given gate structure that forms any transistor gate electrode does not contact another gate structure, wherein each contact structure having a corresponding length greater than or equal to a corresponding width is oriented to have its corresponding length extend in an x-direction, wherein each contact structure that contacts a corresponding gate structure is positioned to overlap at least one edge of the corresponding gate structure,

[29f] wherein each transistor within the region is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

[29g] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

[29h] wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a first gate structure forms both a gate electrode of the first transistor of the first transistor type and a gate electrode of the first transistor of the second transistor type.

30. [30a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip, the gate structures positioned in accordance with a gate horizontal grid that includes a number of gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon,

[30b] wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,

[30c] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type,

[30d] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

[30e] a number of contact structures formed within the region of the semiconductor chip, wherein each of at least six gate structures within the region has a respective top surface in physical and electrical contact with a

corresponding contact structure having a substantially rectangular shape, wherein each contact structure is centered in an x-direction on the gate structure with which it physical contacts,

[30f] wherein each contact structure that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in an x-direction, wherein each corresponding contact structure is in physical contact with only one gate structure, wherein each corresponding contact structure is positioned to overlap at least one edge of the gate structure contacted by the corresponding contact structure,

[30g] wherein each transistor within the region is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

[30h] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

[30i] wherein both a gate electrode of a transistor of a first transistor type and a gate electrode of a transistor of a second transistor type are formed by a same gate structure within the region.

*See* 334 patent at cls. 1, 2, 5, 15, 29, 30 (annotated).

### C. Claim Construction

As part of the *Markman* process, the following terms of the 334 patent were construed, either as agreed between the parties or as determined by Order No. 34:

| Claim Term | Construction |
|---|---|
| "gate electrode" | "that portion of a gate electrode feature that forms a transistor gate" |
| "gate electrode feature(s)" / "gate structure(s)" | "a feature comprising a transistor gate" |
| "diffusion region(s)" | "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor" |

| | |
|---|---|
| "[gate horizontal / first-metal vertical grid]; [second-metal horizontal] grid; [contact vertical] grid; [third-metal vertical] grid; [diffusion contact] grid" | "projected gridlines used at least during the fabrication stage of integrated circuit manufacturing" |
| "[gate / metal / contact] gridline(s)" | "one of the lines making up a grid" |
| "gate pitch" | "center-to-center separation distance between adjacent gate features" |

*See generally* Order No. 34 at 52, 55, 56, 59, 60, 62. Notably, for the reasons expressed in Order No. 34, "contact structure(s)" and "gate contact structure(s)" were not construed. *Id.* at 61. The parties do not now explicitly identify these terms, or any others, as requiring construction. *See* RIB at 15-16; SIB at 23-24; *see generally* CIB; CRB; RRB; SRB. Thus, the scope of "contact structure(s)" and "gate contact structure(s)" are addressed below in the infringement and validity determinations to the extent required.

**D. Infringement**

According to Tela's post-hearing briefing, the use, manufacture, or sale of the following Accused Products, and those computer products containing the same, are alleged to infringe the asserted claims of the 334 patent:

| **Claims** | **Accused Products Alleged to Infringe** |
|---|---|
| 1, 2, 5, 15 | Intel 14nm Products |
| 1, 2, 5, 15 | Intel 10nm Products |

*See* CIB at 11. Of these claims, claim 1 is independent and claims 2, 5, and 15 depend from it.

Respondents contest Tela's claims of infringement under claims 1 and 15. *See* RIB at 16-49; RRB at 3-27. The Staff contests infringement under these claims, along with claims 2 and 5.

[redacted]

*See* SIB at 45. For the reasons discussed below, Tela has not shown infringement by any of the Intel 10nm Products under any of the Asserted Claims. Tela has shown infringement for the Broadwell, Skylake, Kaby Lake, Coffee Lake, and Cascade Lake models of Intel 14nm Products under claims 1, 2, and 5. No Accused Products have been shown to infringe claim 15.

**1. Claim 1**

For reference, claim 1 of the 334 patent requires:

> 1. [1a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip,
>
> [1b] the gate structures positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,
>
> [1c] wherein each gate gridline has at least one gate structure positioned thereon, wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,
>
> [1d] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type,
>
> [1e] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;
>
> [1f] a first-metal layer formed above top surfaces of the gate structures within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate structures, the first-metal layer separated from the top surfaces of the gate structures by at least one insulator material, adjacent metal layers in the stack of metal layers separated by at least one insulator material,

[redacted]

> [1g] wherein the first-metal layer includes first-metal structures positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, each first-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline,
>
> [1h] each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of first-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers; and
>
> [1i] at least six contact structures formed within the region of the semiconductor chip, wherein at least six gate structures within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six contact structures,
>
> [1j] each of the at least six contact structures having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in the x-direction, each of the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact,
>
> [1k] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein the logic circuit includes electrical connections that collectively include first-metal structures positioned on at least five of the at least eight first-metal gridlines.

334 patent at cl. 1 (annotated). Several disputes exist between the parties concerning whether Tela has sufficiently shown the Accused Products meet various limitations of the claim. These are addressed below. In view of the testimony of Dr. Foty that the Accused Products meet those remaining limitations which are not in dispute, the Accused Products have been shown to meet them as alleged. *See* CX-1144C at Q/A 1460-1648, 2395-2525[2]; CIB at 11-52.

[2] Starting at Q/A 1853, the question and answer numbering of Dr. Foty's witness statement (CX-1144C) becomes disjointed, and then again at Q/A 2549, and then again at Q/A 2606. Out of an abundance of caution, citations in this initial determination to a particular numbered question

[redacted]

**a. Gate structures positioned in accordance with a gate horizontal grid**

First, Respondents and Staff dispute that "gate structures positioned in accordance with a gate horizontal grid" is met in the Intel 14nm Products and the Intel 10nm Products. RIB at 16-19, 46; SIB at 27-32. Order No. 34 construed "grid" as it is used in this limitation as "projected gridlines used at least during the fabrication stage of integrated circuit manufacturing." Order No. 34 at 59.

Tela contends, generally, that the limitation is met in the Accused Products because Intel utilizes a "1-D gridded approach" with "relevant layouts for the accused 14nm and 10nm Intel products [that] specify the size, shape, and spacing of gate structures so that those gate structures, when formed, have a substantially rectangular shape and are positioned in accordance with a gate horizontal grid as claimed" and "the claimed gate horizontal grid is, in fact, used (or 'projected') during manufacturing of the Intel 14nm and 10nm products pursuant to the ALJ's construction." *See* CIB at 12-13. Specifically, Tela argues "projected" in this construction "merely means that the grid is used to define the position of various features during the fabrication stage 'with no limitation on how that is achieved.'" *Id.* (citing Order No. 34 at 58; 334 patent at 30:4-5; 523 patent at 11:18-19). For both the Intel 14nm Products and the Intel 10nm Products, Tela argues that one fabrication step involves "[redacted]" *Id.* at 15 (citing CX-1144C at Q/A 390-391; CPX-0410C; JX-0210C at *87), 19 (citing CX-1144C at Q/A 414-419, 427; CPX-0030C). In its reply brief, Tela explains:

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and answer should be interpreted to apply to both the question bearing that number and the answer bearing that number.

[redacted]

Intel uses the gate grid in these further processing steps by [redacted] (CX-1144C (Foty) at Q/A 417-418; RX-0008C (Auth) at Q/A 103-105; Tr. (Auth) at 686:2-690:8 [redacted] 752:2-753:10 [redacted] The fact that one step of the fabrication stage allegedly does not use the grid does not preclude infringement, particularly where other parts of the fabrication stage do. *See Tate Access Floors v. Maxcess Techs.*, 222 F.3d 958, 970 (Fed. Cir. 2000) ("[O]ne cannot avoid infringement merely by adding elements if each element recited in the claims is found in in the accused device.").)

CRB at 4.

Tela provides the following SEM image of an Intel 14nm Product as evidencing the "grid":

[redacted]

JX-0210C at *87; *see* CIB at 16. Intel asserts "[a] simple, visual inspection of the layouts and resulting semiconductor shows that these features are formed along gridlines." CRB at 2 (citing JX-210C at *87).

[redacted]

Tela views Respondents' expert, Dr. Subramanian, as "tacitly admit[ing]" the "structures positioned in accordance with a gate horizontal grid" aspect of the limitation is met (CIB at 13 (citing Hr'g Tr. at 876:3-877:8)), although he also contends that "use of the word 'projected' changes that ordinary meaning and the scope of the claims"—an opinion Tela urges should be rejected as contrary to basic principles of claim construction (*id.*). Tela contends "[n]othing in the ALJ's construction of 'grid' requires a lithographic projection of gridlines [during fabrication]." CRB at 2 (citing Order No. 34 at 57), 4.

Respondents contend the limitation is not met in the Intel 14nm Products because "Tela's expert, Dr. Foty, offered *no* opinion in his witness statement or at the hearing regarding how any alleged gate grid is used during fabrication." RIB at 16. Respondents specify that "the ALJ's construction of 'grid' is not directed to lines arbitrarily drawn after the fact on layout files or the final chip. For the '334 patent the grid must be used during *fabrication*." *Id.* at 16-17 (emphasis in original). This is not done in either the Intel 14nm Products or Intel 10nm Products, Respondents argue, because "[a]ll the evidence in the record of projection during fabrication comes in the context of lithography . . . [yet] [redacted] in 14nm and 10nm process nodes. *See id.* at 17 (citing Hr'g Tr. at 424:19-425:9, 881:13-882:3; RX-0014C at Q/A 200-203, 299-303, 346-353; RX-0008C at Q/A 106, 110), 18 (citing RX-0008C at Q/A 119; RX-0012C at Q/A 18), 46 (citing RX-0014C at Q/A 408, 388-393); RRB at 4 (citing RX-0008C at Q/A101-107; RX-0014C at Q/A 300, 356-357; Hr'g Tr. at 283:14-284:3). Respondents add, "Tela also does not dispute that during fabrication, the centerlines of the gates are determined *not* according to any pre-existing grid, but by [redacted]" RRB at 3 (citing Hr'g Tr. at 283:14-284:3).

[redacted]

Further, while lithography is used by Intel to form the [redacted] structures, Respondents explain these are "not the gates themselves [but] [redacted] that actually form the gate shapes." *Id.* at 17 (citing RX-0014C at Q/A 309-310; RDX-0016C at *149). Respondents claim it is undisputed these [redacted] do not fall along the alleged "gate gridlines." *Id.* at 18 (citing RX-0014C at Q/A 405-410). Regardless, Respondents caution that in discussing these structures, Tela is attempting to contravene Order No. 42—an order denying Respondents' motion *in limine* but issued with the understanding that Tela would not be presenting an infringement case which treated the [redacted] structures as the "grid" in the 334 patent. RRB at 5-6 (citing, *inter alia*, Order No. 42 at 2).

The Staff agrees with Respondents' positions on this limitation. *See* SIB at 29 ("Tela improperly vies the claimed 'grid' as only requiring similar end result structure/functionality for the 'gate structures,' thereby contradicting the ALJ's claim construction of 'grid,' which requires a specific process limitation."), 31 ("Intel uses a new technique known as [redacted] but not the gates themselves. . . . it is undisputed that these [redacted] shapes do not fall along the alleged 'gate gridlines' or otherwise correspond to the supposed 'gate grid.'"); *see generally* SIB at 27-32; SRB at 4-8.

This limitation is met in the Accused Products. In short, Respondents' and Staff's position is based in the "projected" portion of Order No. 34's construction—"projected gridlines used at least during the fabrication stage of integrated circuit manufacturing"—and sees the absence of an actual, observable, emission of light (or other energy/substance) in the fabrication of the Accused Products as grounds for non-infringement. *See, e.g.*, Hr'g Tr. at 876:20-877:1 ("With respect to

[redacted]

the gate, I have not offered an opinion for non-infringement, with respect to the gridlines, for the purposes of the design rule analysis. However, I have offered the opinion that it is clear that there is no use of gate gridlines consistent with the claims with respect to the projection requirements associated therewith."), 878:2-23 ("With respect to the second part of the answer, where I was referring to fabrication, it would be you actually have a gate gridline projected during the fabrication process. So for example, if you're talking about lithography, I would expect gridlines to be lithographically projected. And that is not the case in the accused products."). This is not the meaning of the ordered construction: "[i]n short, the claims (as opposed to the specification) do not require projection of a 'grid' and do not require such projection to be either virtual or actual." Order No. 34 at 58. Further, as explained, the term "projected" was only put into the ordered construction because all parties incorporated it into their respective proposed constructions, and the term did appear at least once in the shared specification of the Asserted Patents. *See id.* at 56 (citing 523 patent at 11:18-19).

The clearest use of the term "projected" in the specification refers to "grid" in a virtual, or conceptual, sense:

> FIG. 3A is an illustration showing an exemplary base grid to be projected onto the dynamic array to facilitate definition of the restricted topology, in accordance with one embodiment of the present invention. The base grid can be used to facilitate parallel placement of the linear-shaped features in each layer of the dynamic array at the appropriate optimized pitch. Although not physically defined as part of the dynamic array, the base grid can be considered as a projection on each layer of the dynamic array. Also, it should be understood that the base grid is projected in a substantially consistent manner with respect to position on each layer of the dynamic array, thus facilitating accurate feature stacking and alignment.

334 patent at 13:1-13. Notably, there is no mention in either patent of what kind of equipment, or when in the tightly controlled fabrication process, an actual, observable emission of a grid would occur, or that it would even facilitate the act of positioning gate structures. *See generally* 334

[redacted]

patent; 523 patent. Obviously, the Accused Products and the like are not handmade, where projections of light would be used as guides for a human operator and their work tool.

Additionally, the patent discusses "defin[ing]" the grid with consideration for light interaction effects (effects that can be mathematically characterized by a "sinc function") such that "the spacing between gridpoints enables alignment of peaks in the sinc functions describing the light energy projected upon neighboring gridpoints." 334 patent at 13:33-45. Yet there is no discussion of how the light from a "projected" grid—if any—is also taken into account. In sum, the specification does not support interpreting the "grid" as an actual, observable projection of light.

Despite this, Respondents suggest that in a plain and ordinary sense—and for those skilled in the art—actual, observable projections of grids are used in "various" ways in processor fabrication, but that Intel simply does not use those techniques. Respondents state:

> Indeed, the unrebutted fact testimony of Intel witnesses is that Intel does not project any gridlines during fabrication. RX-0008C (Auth) at Q/A 119; RX-0012C (Kelleher) at Q/A 18. *Dr. Subramanian likewise testified that projected gridlines can be used during fabrication in various ways, but that Intel's fabrication process does not use those techniques*. RX-0014C (Subramanian) at Q/A 192-197; Tr. (Subramanian) at 881:13-882:3 ("I am interpreting projected for use during fabrication to simply mean that there are gridlines that are available, and are actually used during fabrication. And that is not the case.").

RIB at 18 (emphasis added). But the citation Respondents use to justify these "various" (*i.e.*, more than one) ways is the testimony of their expert, who was asked, "[h]ow might gridlines be projected?" RX-0014C at Q/193. And Dr. Subramanian, an expert in the field (*see* RX-0007C at Q/A 8-14), only observed that the 523 patent "claims at column 11, lines 19-23 that 'the base grid is projected in a substantially consistent manner with respect to position on each layer of the

dynamic array, thus facilitating accurate feature stacking and alignment'" (RX-0014C at Q/A 193).[3]

This is far from evidence that "projected gridlines can be used during fabrication in various ways," and the quoted intrinsic evidence (523 patent at 11:19-23) is not even a statement on "ways" in which projected gridlines are used. Rather, it is a statement on the benefits of consistent "projection"—*i.e.*, the facilitation of accurate feature alignment within the integrated circuit's many layers.

Dr. Subramanian's invalidity opinions reinforce the conclusion that actual, observable emissions of grids to facilitate gate placement during fabrication are not real processes. For the Intel 45nm Product prior art reference, Dr. Subramanian admits that no such projection takes place and so the limitation can only be taught if Tela's infringement theory succeeds:

> Under the Court's construction of "gate horizontal grid" and "gate gridlines," there must be a projected grid used during the fabrication stage of integrated circuit manufacturing. There is no such grid projected during fabrication. However, under Tela's infringement theory, any lines along which the structures corresponding to poly are defined are gridlines. Under this theory, Intel's 45nm products' gate structures are positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines.

RX-0014C at Q/A 385. For the Becker prior art reference, however, Dr. Subramanian asserts there is an explicit disclosure of a virtual grid which satisfies Order No. 34:

> Becker describes at paragraphs [0050] to [0052] and [0066] that a base grid facilitates parallel placements of the features that would include the polysilicon features on 1403A to 1403G. Becker describes at paragraph [0050] that the base grid is not a physical part of the dynamic array, so a

[3] Additionally, although not cited by Respondents, Dr. Subramanian's other testimony was inconsistent regarding gridline projection. He testified "[i]f I was looking specifically at the lithographic process, for example, one way to get gridlines during a lithographic process would be to project it through the mask." Hr'g Tr. at 881:21-24. But he also admitted this is not really something that is done: "[t]hat is not done in the accused products. *And in fact, there are no ways that I am aware of*, or that have been cited by Tela, that would establish that that is the case, that there are gridlines used during fabrication." *Id*. at 881:24-882:3 (emphasis added).

[redacted]

> POSITA would understand it is virtual. Further, Becker describes in that same paragraph that the base grid would be understood as a projection on each layer to facilitate accurate fabrication of features. For those reasons, the [] base grid satisfies the Court's construction of "gate grid" and "gridlines."

*Id.* at Q/A 848. But this latter position is in conflict with his opinions on the Intel 14nm Products, Intel 10nm Products, and Intel 45nm Product, to the effect that such virtual grids do not meet the ordered construction. *See* RX-0014C at Q/A 837-842. And Respondents take a similar inconsistent position in connection with invalidity. *See, e.g.*, RIB at 112-113 (stating "Tela does not dispute that Becker renders obvious each and every limitation of the '334 patent" and "it expressly discloses all elements, except for certain claimed ranges and spacings . . . .").

In sum, the record does not support finding that "projected" gridlines need be anything more than virtual, conceptual lines which "gate structures are positioned in accordance with." 334 patent at cl. 1. No actual, observable projections are required. In fact, Dr. Subramanian's explanation of "projected" at the hearing is not necessarily inconsistent with this conclusion. *See* Hr'g Tr. at 881:13-20 ("Q. And so you're interpreting projection to require an actual projection by projecting and moving onto a screen. Is that true? A. No. You asked me to provide an example, and I gave an example. I am interpreting projected for use during fabrication to simply mean that there are gridlines that are available, and are actually used during fabrication.").

So "projected," a term not found in claim 1 but incorporated into that claim's construction, includes virtual or conceptual lines, and the parties have waded into a construction of the construction, which the Commission disfavors. *See Certain Automated Teller Machines, ATM Modules, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-972, Comm'n Op. at 6 (Jan. 30, 2017) ("We find the claim constructions on review to be both more complicated, and less clear, than the claim terms themselves. Instead of focusing on interpreting the claim language, the parties invited the ALJ to construe the constructions, and then to construe

[redacted]

the constructions of the constructions. Doing so caused the constructions to lose sight of the claim language itself."). In any event, Dr. Foty persuasively testified how the gate structures in the Accused Products are "positioned in accordance with a gate horizontal grid that includes at least seven gridlines," where a grid is actual or virtual projected gridlines used at any point in the fabrication of an integrated circuit. In particular, the cited layout files for the Accused Products show the [redacted] (CDX-0009C at *8-13; CDX-0011C at *7-9) and teardown imagery shows the same (CDX-0009C at *20; CDX-0010C at *9). It does not matter that the *virtual* gridlines are only observable after gate creation and through controlling the [redacted] to create the transistor gates. *See* RRB at 3. Intel documentation shows this arrangement, or positioning, was "in accordance" with a planned layout (*i.e.*, not happenstance). *See* CX-1144C at Q/A 686 (citing CX-0661C at -56472, 56460), 1912-1915 (citing CX-0135 at -13, -23; CPX-042 at -1512). Thus, the limitation is met in all Accused Products.

**b. First-metal structures positioned in accordance with a first-metal vertical grid**

Second, Respondents and Staff dispute whether "first-metal structures positioned in accordance with a first-metal vertical grid" is met in the Intel 14nm Products and Intel 10nm Products. RIB at 19-20, 46; SIB at 27-32.

For this limitation, Tela contends the "M0 layer" in the Intel 14nm Products and the "M0 layer" in the Intel 10nm Products both include structures positioned "using a 1-D gridded approach" in satisfaction of the claims; where "M0" "refers to the first metal interconnect layer above the gates." CIB at 32, 34. Tela primarily relies on Intel's design rules as evidence of the "1-D gridded approach" (*id.* at 32-37 (citing, *inter alia*, CX-1144C at Q/A 330-367, 438-440, 889-891, 1540-1570, 2034-2036, 2456-2470; RX-0008C at Q/A 145; CPX-0497C; CPX-0341C; CPX-

[redacted]

0097C)) in addition to "SEM images of the M0 interconnects" (*id.* at 34 (citing CX-1144C at Q.A 901-904, 1558; CDX-0008C at *68), 37 (citing CX-1144C at Q/A 2027-2030, 2462-2463; CDX-0010C at *36)). As one example, Tela argues the design rules specify [redacted] *Id.* at 33 (citing, *inter alia*, CX-1144C at Q/A 270, 330, 709; CPX-0497C at *780-781), 35 (citing, *inter alia*, CX-1144C at Q/A 270, 367, 709; CPX-0097C at *5851-5856).

Tela views Respondents' non-infringement position as "premised upon a fixed pitch requirement" for any claimed "grid." *See* CIB at 38. Tela contends this cannot be correct, in part under principles of claim differentiation and the language of dependent claim 19, which recites "each first metal structure positioned on any first-metal gridline within the region is positioned next to and spaced apart from at least one other first-metal structure in accordance with a fixed pitch." *Id.* at 38-39 (citing 334 patent at cl. 19; Hr'g Tr. at 808:14-809:6, 812:16-20). Tela adds that Respondents' presentation of M0 layouts next to each other with varying line widths juxtaposes images that are not meant to be viewed together and not otherwise in conflict with the claims. *See id.* at 39 (citing RPB at 22; Hr'g Tr. at 681:19-25); CRB at 11. To the extent Respondents argue there is no "projected" grid in connection with fabrication of the first-metal layer, Tela incorporates its discussion of this issue in the "gate structures" limitation. CRB at 9.

In their initial brief, Respondents rely on their discussion of the same limitation in the context of the 523 patent and summarize:

> Intel's [redacted] is not gridded, nor are any Metal-0 structures positioned in accordance with a grid. Moreover, as with the gate grid limitation discussed above, Tela's expert offers no opinion at all regarding how any alleged first-metal grid is used during fabrication (as opposed to Tela's expert drawing alleged gridlines after the fact on layout shapes or the final structures).

[redacted]

RIB at 20. In the 523 patent discussion, Respondents first discuss an emphasis on placing features at an "optimized pitch." *Id.* at 132 (citing 523 patent at 11:14-17, 11:39-47, 15:21-35, Fig. 3A; RX-0014C at Q/A 211-218). Respondents then acknowledge [redacted] but stress the "metal-0" layer (that which is accused of being the "first-metal" layer in the claim) is not and its layout is left to designers. RIB at 134-135 (citing, *inter alia*, RPX-1990C at *059, 076; RPX-1991C at *100, 120; RX-0008C at Q/A 139-143; Hr'g Tr. at 723:22-726:8), 143. Respondents contend "[i]n other words, in the Metal-0 layers, there is no defined 'grid' that shapes must be positioned in accordance with—whether uniform pitch or otherwise [because] [redacted]" *Id.* at 135-136 (citing RX-0008C at Q/A 128-129; Hr'g Tr. at 722:4-21); *see id.* at 136 ("[redacted]"), 136-137 ("because Intel does not define any 'grid'—regular or irregular—for the Metal-0 shapes to be positioned in accordance with, the Accused Products do not meet the claimed requirement that the 'first-metal structure layout shapes are positioned in accordance with a …grid.'"), 138 ("Dr. Foty also attempts to rely on Intel layout files for Metal-0, such as the following, which [redacted]"), 139 ("these lines—added after-the-fact by Tela's expert—are not used by Intel."). Respondents summarize:

> As discussed above, the claim requires that there be a "first-metal vertical grid," with layout shapes "positioned in accordance with" that grid and, more specifically, "positioned to extend … in a substantially centered manner along" an associated gridline. However, instead of opining that there was a grid and that, during layout, Intel positioned shapes in accordance with it, Dr. Foty opined, in effect, that there were shapes and that an (irregular) grid could be drawn in accordance with those shapes after

[redacted]

> layout. His ex-post analysis inverts the claim language, getting it backward. RX-0014C (Subramanian) at Q/A 216-20; Tr. (Subramanian) at 806:5-17.

RIB at 140.

Respondents also incorporate their argument regarding gridlines that are "projected" as discussed with the prior limitation, "gate structures positioned in accordance with gate horizontal grid," noting "Intel does not project or otherwise use any such grid to position the Metal-0 layout shapes, [therefore] the Accused Products do not satisfy the ALJ's construction." RIB at 141 (citing RX-0014C at Q/A216-218; Hr'g Tr. at 723:9-15).

In their reply brief, Respondents contend Tela's expert, Dr. Foty, inappropriately relies only on layout drawings for this limitation, which are only relevant to the 523 patent under the constructions contained in Order No. 34. *See* RRB at 10-11 (citing CX-1144C at Q/A 2457-2467)). In this way, Respondents argue any allusion to [redacted] used during fabrication to meet this limitation are untimely and should be ignored under Ground Rule 13.1. *See id.*

The Staff's discussion of this limitation is incorporated into its discussions of "gate structures" and "grid" summarized above, and aligns with Respondents. *See* SIB at 27-34; SRB at 4-8.

The limitation is met. Much of the parties' dispute has been resolved with the prior limitation "gate structures positioned in accordance with a gate horizontal grid." Namely, no actual, observable projection of a grid is required, and the positioning of structures according to a documented plan indicates the positioning is "in accordance with" (*i.e.*, not happenstance).

Respondents' additional point that "grid" is not met by the Metal-0 (M0) structures because there are no "gridding rules" which Intel designers must abide by (*see* RIB at 135-137) is not accurate. Respondents do not challenge that Intel's design rules require [redacted]

[redacted] *See* CIB at 33, 35-36; *see, e.g.*, CX-1144C at Q/A 329-333, 358-367; CDX-0012C at *17 (citing CPX-0377C at -780); CPX-0497 at -780-781; Hr'g Tr. at 724:9-22; RPX-1991C at 120; RPX-0776C at 567. These are certainly rules, and their implementation results in the [redacted] and teardown imagery of the Accused Products, *i.e.*, a first-metal "grid." This makes certain testimony from Intel witness [redacted]—not credible. RIB at 141 (citing Hr'g Tr. at 722:1-732:7).

The fact that the rules for the metal-0 structures allow [redacted] does not defeat infringement as Respondents contend. *See* RIB at 138-141, 143; RRB at 11. The intrinsic evidence does not support reading this characteristic into a construction of "grid" under principles of claim differentiation. Specifically, claim 19, dependent on claim 1, explicitly requires a single, fixed pitch for the first-metal structures. *See* 334 patent at cl. 19 ("The semiconductor chip as recited in claim 1, wherein each first-metal structure positioned on any first-metal gridline within the region is positioned next to and spaced apart from at least one other first-metal structure in accordance with a fixed pitch."). Claims 13 and 18 are similar. *See* 334 patent at cls. 13 ("The semiconductor chip as recited in claim 2, wherein each first-metal structure in the region is positioned next to at least one other first-metal structure on a first side in accordance with a first-metal pitch and is positioned next to at least one other first-metal structure on a second side in accordance with the first-metal pitch"), 18 ("The semiconductor chip as recited in claim 1, wherein each of at least four of the first-metal gridlines has at least two first-metal structures positioned thereon within the region, wherein each

[redacted]

of the at least two first-metal structures positioned on the at least four of the first-metal gridlines is positioned next to and spaced apart from at least one other first-metal structure in accordance with a fixed pitch."). *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006) ("'[C]laim differentiation' refers to the presumption that an independent claim should not be construed as requiring a limitation added by a dependent claim."). This differentiation between claim 1, which does not explicitly require a fixed pitch, and other claims, which do, is not automatically dispositive but does weaken Respondents' reliance on the specification, which emphasizes structures placed at an "optimized pitch." *Interactive Gift Express*, 256 F.3d at 1331 ("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point [ ] out and distinctly claim [ ] the subject matter which the patentee regards as his invention."). Thus, irregular centerline-to-centerline distances between first-metal structures (*i.e.*, non-uniform pitch) cannot be a ground for non-infringement under claim 1. Indeed, Dr. Subramanian admitted at the hearing that fixed pitch was not a requirement. Hr'g Tr. at 808:18-809:5 (discussing similar limitation in 523 patent), 812:16-813:24 (discussing same).

Correspondingly, the fact that the rules, allowing for [redacted] (*see* RIB at 136; RRB at 72-73, 75) is not cause for concern, either. There is no restriction in the claims themselves, or that can be read in from the specification, that would limit where the grid is located. Indeed, the 334 patent discloses and illustrates that gridding systems may vary in different regions. 334 patent at Fig. 3B, 13:26-32. Regardless, the analysis here must be focused on the actual products at issue and not the full gamut of allowable designs under Intel's rulebook.

[redacted]

Images of the Accused Products demonstrate that the pertinent structures are "positioned in accordance with a first-metal vertical grid"; the upper two images relate to the Intel 14nm Products and the lower to the Intel 10nm Products:

CRB at 8 (citing JX-210C at *84; CPX-0100C at -2152);

CDX-0010C at *40, 39. As shown, the "first-metal" structures are positioned in a linear and parallel fashion. Thus, they are positioned in the 334 patent's "grid," albeit [redacted] which distinguishes them from the gate structures discussed above. And the arrangement is intentional (*i.e.*, not happenstance) so the arrangement satisfies the "in accordance with" requirement. Accordingly, the Accused Products meet this limitation.

[redacted]

**c. Each gate gridline has at least one gate structure positioned thereon**

Third, Respondents and Staff dispute whether "each gate gridline has at least one gate structure positioned thereon" is met in the Intel 10nm Products, while only Respondents challenge the limitation in the Intel 14nm Products. RIB at 20-22, 46-48; SIB at 35-39.

For this limitation, Tela refers to its discussion of "gate structures positioned in accordance with a gate horizontal grid" and adds, for all Accused Products, that when more than one gate structure is positioned on a given gate gridline in the region, the end-to-end separation is always less than or equal to 193 nanometers, as required by claim 1. CIB at 24 (citing, *inter alia*, CX-1144C at Q/A 724, 1492-1506, 1930, 2419-2423; CDX-0009C at *14-20; CDX-0011C at *10-12). Further, Tela contends the Intel 14nm Products' use of [redacted] on some gridlines does not defeat infringement, as Tela has:

> [I]dentified regions that include seven gate gridlines, each with at least one transistor gate positioned on each gridline. For example, [redacted] each include a region that includes seven gate gridlines, with each gate gridline having at least one transistor gate positioned thereon.

CIB at 25; CRB at 14, 16. Regardless, Tela contends that embodiments within the 334 patent show regions with non-dummy gate structures on six of seven lines, demonstrating that dummy gates can constitute "gate structures" required for this limitation. *Id.* at 26 (citing 334 patent at Fig. 5); CRB at 16. Tela claims that [redacted] are properly considered as dummy gates and thus meet the construction for "gate structures" in the same way. CRB at 17 (citing, *inter alia*, CX-1144C at Q/A 583-584).

[redacted]

Tela also disputes that it has in any way been inconsistent with its identification of regions and gridlines across claim elements. *See id.* at 25-26. In its reply brief, Tela discusses the 14nm [redacted] in particular, and alleges Respondents "identify a portion that was not relied on by Tela or Dr. Foty," noting that Tela instead "identified an infringing portion of the same cell with seven gate gridlines, each with at least one transistor gate positioned thereon (annotated in red)":

CRB at 14. For the Intel 10nm Products, Tela again contends Respondents identify a different set of gridlines than what it relied on for proving up the limitation:

[redacted]

CRB at 15. In sum, Tela takes the position:

> It is black letter law that "[t]he addition of features does not avoid infringement, if all the elements of the patent claims have been adopted." *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 945 (Fed. Cir. 1990). The fact that Respondents identified seven gate gridlines that allegedly do not infringe under their interpretation of "gate structure" elsewhere in the cell does not avoid the seven gate gridlines within the Intel 14nm Products that infringe, even under Respondents' interpretation requiring transistor gates on each gate gridline.

*Id.* at 14-15; *see id.* at 16 ("In other words, if the identified region includes seven gate gridlines where adjacent gate gridlines are separated by a gate pitch, then the claim is met. An eighth gridline that does not meet the claims is immaterial.").

In opposition, Respondents contend "[t]he claim term 'gate structure' has been construed to mean 'feature comprising a transistor gate.' But the alleged grids include multiple gridlines with no transistor gate positioned thereon." RIB at 20. For the Intel 14nm Products, Respondents argue "[f]or every 14nm cell Dr. Foty identifies, there is an alleged gridline that Dr. Foty numbers and relies on, but that [redacted] do not form transistor gates." *Id.* at 21-22 (citing RX-0014C at Q/A 242-245; CDX-0008C at *16-21; CDX-0009C at *14-20); RRB at 8-9 ("None

[redacted]

of the regions identified by Dr. Foty has a transistor gate on each gridline"). For the Intel 10nm Products, Respondents argue they use [redacted] *Id.* at 20. This technique results in [redacted]

*Id.* at 47-48 (citing RX-0014C at Q/A 233-234; CPX-0235C at *579; RPX-1704C; RPX-1708C). Respondents view Tela's attempt to use [redacted] as "gate structures" as improperly rearguing claim construction and as otherwise not supported by the specification. RRB at 9-10.

Additionally, for these products, as opposed to the Intel 14nm Products, Respondents argue Tela has inconsistently identified what the claimed "region" is across different limitations and improperly excluded gridlines that are otherwise present in the "region" which do not contain gate structures, all in an attempt to avoid non-infringement. *See* RIB at 48 (citing, *inter alia*, CDX-0011C at *10, 11, 12, 17, 18; RX-0014C at Q/A 235-236, 243-245; RDX-0016C at *16; DCX-0010C at *41).

As noted, the Staff finds this limitation is met by the Intel 14nm Products, but not for the Intel 10nm Products. The Staff agrees with Tela that [redacted] in the Intel 14nm Products, which lie along a gridline, sufficiently qualify as "feature[s] comprising a transistor gate":

[redacted]

> The claim term "gate structure" has been construed to mean "feature comprising a transistor gate." (Order No. 34). On its face, the formal construction does not explicitly allow for an inactive "dummy" transistor gate to replace an active, working transistor gate. But the ALJ's claim construction considered the arguments by all parties that inactive, "dummy" gates were permissible on gridlines based on the intrinsic evidence and thus did not intend to exclude "dummy" gates, as no party argued for such a narrow construction.

SIB at 35-36. The trenches used in the Intel 10nm Products, on the other hand, cannot be "gate structures" according to the Staff, and the Staff relies on the same cell layout image as Respondents (reproduced above) to show non-infringement. *See id.* at 36-38 (citing, *inter alia*, RX-0014C at Q/A 233-234); SRB at 10-11. Further, Tela's use of less than all gridlines in a "region" is improper, according to Staff, because "if more than seven gate gridlines exist in a selected region, then *every* gridline (not just seven) must be shown to have 'at least one gate structure positioned thereon.'" SRB at 9. Last, the Staff agrees with Respondents that Tela has inconsistently and improperly identified the "region" across claim limitations, again citing the same evidence as Respondents. *See* SIB at 39 (citing, *inter alia*, RX-0014C at Q/A 235-236, 243-245; RDX-0016C at *16; CDX-0010C at *41).

Unlike some other disputes, resolution of this one depends upon the details of each of the cells. For background, these include:

| Intel 14nm Products | | Intel 10nm Products |
|---|---|---|
| [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] |

*See, e.g.*, CDX-0009C; CDX-0011C; CIB at App'x B.

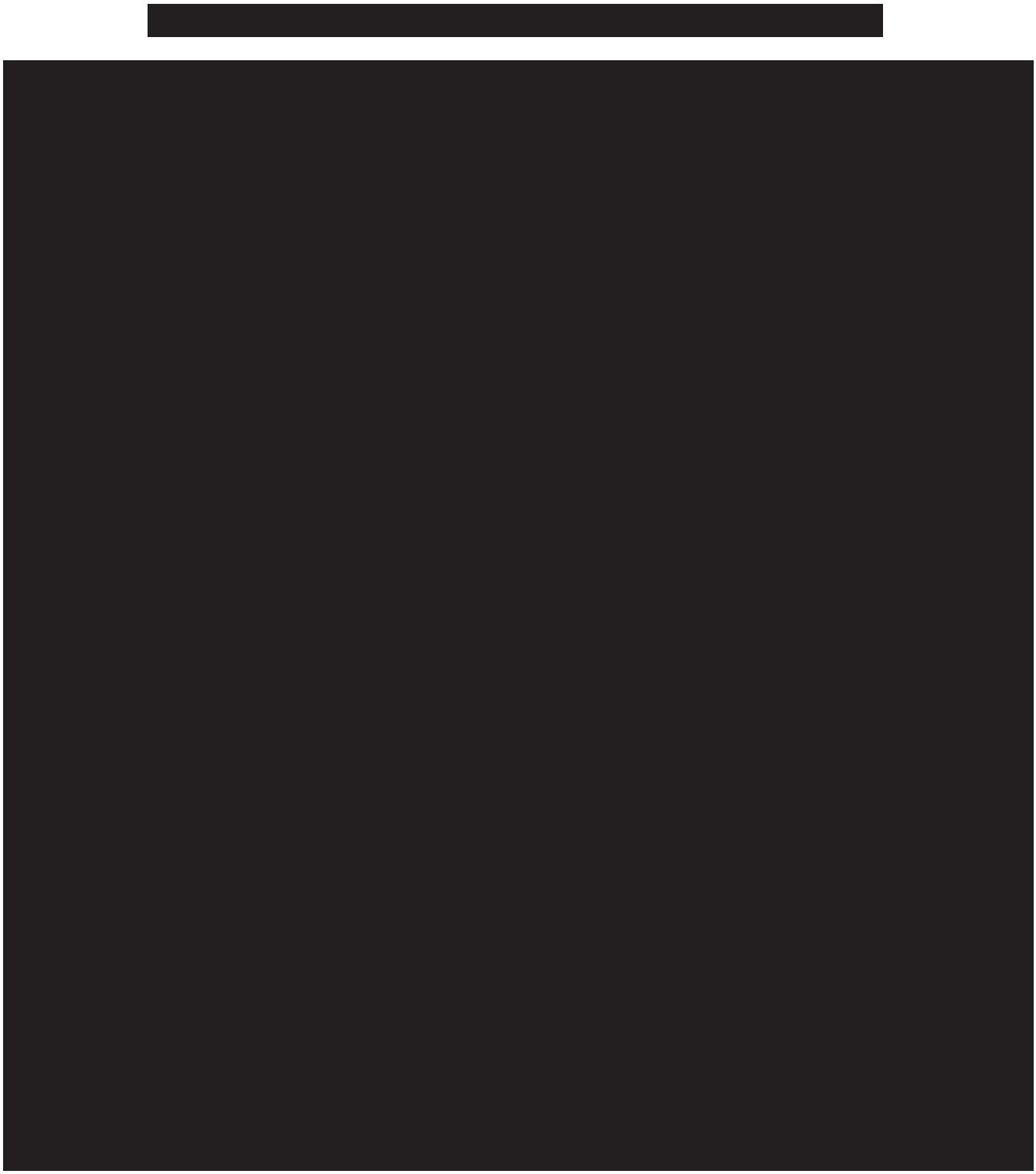
[redacted]

Resolution of this dispute also requires addressing two claim construction issues. First, Order No. 34 construed "gate structure" as a "feature comprising a transistor gate." Order No. 34 at 55. Thus, a feature in an Accused Product that does not, somewhere along its length, function as a transistor gate is not a "gate structure." *See* Order No. 34 at 54. Although Respondents' claim construction briefs proposed use of the term "dummy gate" to describe such a feature, that proposed term was not construed because "the dispute over how to precisely define a 'gate electrode feature' that does not form a transistor gate at all" had been rendered moot by the withdrawal of previously-asserted patents. *Id*. Although that dispute remains moot, because the term "dummy gate" is not used in the 334 patent, a "gate structure" still must "form[] a gate structure over at least some of its length," and a feature that otherwise appears to qualify as a gate structure, but does not because it does not form a transistor, will informally be referred to as a "dummy gate." *Id*.

Second, Tela contends that not all gate gridlines in a region must possess gate structures, so long as at least seven gridlines with gate structures can be identified. *See* CRB at 16 (an eighth gridline without a gate structure is "immaterial"). This is a question of claim construction that was not addressed in Order No. 34. The briefing on this point is sparse; Tela's only real argument is that its proposed construction must be proper because otherwise the embodiments shown in figures 5 and 14 of the 334 patent would be excluded. *See* CRB at 16. But these figures do not themselves match a host of other claim limitations, and patentees have the freedom to draft claims covering different embodiments. *See* RRB at 9-10 (citing *Intamin Ltd. v. Magnetar Techs. Corp.*, 483 F.3d 1328, 1337 (Fed. Cir. 2007)). Accordingly, the claim language "each gate gridline has at least one gate structure positioned thereon" is accorded its plain and ordinary meaning: each gate gridline within an identified region must have at least one gate structure positioned thereon.

[redacted]

Given these constructions, and with respect to the Intel 14nm Products, Respondents argue "[f]or every 14nm cell Dr. Foty identifies, there is an alleged gridline that Dr. Foty numbers and relies on, but that [redacted] do not form transistor gates." RIB at 22 (citing RX-0014C at Q/A 242-245; CDX-0008C at *16-21; CDX-0009C at *14-20). Based on the numbered annotations Dr. Foty provides and relies on to show how the limitation is met in each cell (*see* CX-1144C at Q/A 1495-1500; CDX-0009C at *14-19), some of the gridlines do include [redacted] This is shown in the cells below where there is no yellow or green substrate region on both sides of the orange structures (*see, e.g.*, CX-1144C at Q/A 267-269; RX-0014C at Q/A 230) on a numbered line:



[redacted]

Thus, these cells do not meet the limitation. The remaining cells for the Intel 14nm Products do not suffer from this problem and therefore do meet the limitation; this conclusion applies to [redacted] (CDX-0009C at *15) and [redacted] (CDX-0009C at *16).

Accordingly, the following cells from the Intel l4nm Products have not been shown to meet this limitation: [redacted] Dr. Foty's demonstratives indicate the latter three cells comprise the entirety of cells for the Goldmont, Goldmont Plus, Ice Lake Chipset, and Cannon Lake Chipset products. CDX-0012C at *25-26. Thus, the Accused Products including these models do not infringe. The remaining Intel 14nm Products use one or both of [redacted] so they meet the limitation.

With respect to the Intel 10nm Products, Respondents' and the Staff's argument that Intel's use of [redacted] "results in lines without any gate structures positioned thereon" (RIB at 47 (citing RX-0008C at Q/A 15; RX-0014C at Q/A 229-

[redacted]

331; RX-0157 at *10)) is not persuasive. Here, helpfully, Respondents and Dr. Subramanian are more specific and provide demonstratives for each of the three 10nm cells, showing the pertinent [redacted] These demonstratives, however, do not match the gridlines Tela and Dr. Foty identify and rely on to show the limitation is met (CX-1144C at Q/A 2420-2422 (citing CDX-0011C at *10-12)) as shown below:

[redacted]

[4] The demonstrative for this particular limitation for cell [redacted] omits the numerical annotations 1-9, but the identified gridlines are the same. *See* CDX-0011C at *10.

[redacted]

Tela's identification of gridlines in the [redacted] cell appears to include, and [redacted] *See* CDX-0011C at *7, 10; *see also* CDX-0012C at *38 (citing CPX-0237C at *3). Thus, this cell may not meet the limitation, if the layout files are taken at face value. But Dr. Auth and Dr. Subramanian testified unequivocally that the Intel 10nm Products [redacted] RX-0008C at Q/A 32, 135 ("[redacted]"); RX-0014C at Q/A 229-242; RX-0157 at *10. Therefore, what appears to be a [redacted] must instead be a gate structure. And although the image of this cell includes structures (on the right hand side) that, if considered part of the claimed "region," do not meet the claim limitation at issue, they are clearly not part of the nine gridlines Dr. Foty identifies in his analysis; nothing in Dr. Foty's testimony suggests that the "region" he analyzes is the entirety of the cell. *See* CDX-0011C at *4, *7, *10; CX-1144C at Q/A 2397 (the cell "shows a region of a semiconductor ship that includes gate structures," which have been "highlighted"). In other words, the dummy gates are extraneous to the claimed "at least seven gate gridlines" and Dr. Foty was not inconsistent in his identification of the "region" across

[redacted]

different claim elements, as Respondents and the Staff assert. *See* RIB at 48; SIB at 39. On balance, the totality of the evidence shows that the limitation is met in all of the Intel 10nm Products.

**d. Contact Structures**

Fourth, Respondents tersely dispute whether "at least six contact structures" is met in the Intel 10nm Products. *See* RIB at 40. The Staff alludes to the same dispute without specific discussion. *See* SIB at 39, 42. No party disputes the limitation is met in the Intel 14nm Products.

For this limitation, Tela contends at least six gate contract structures [redacted] are shown in the layout files of the Intel 10nm Products "that extend over a single gate similar to Figure 7B of the '334 Patent . . . ." CIB at 43 (citing CX-1144C at Q/A 2482-2484). Tela explains that after holes are patterned to expose the top surface of the gates, "[t]he [redacted]" *Id.* at 44 (citing CX-1144C at Q/A 315-320; RX-0014C at Q/A 167).

Tela views any argument that "contact structures" must be distinct from other claimed "first-metal structures" as inconsistent with Intel documentation and contrary to guidance provided in Order No. 34. CIB at 45 (citing Order No. 34 at 60-61); *see* CIB at 29 (citing, *inter alia*, CPX-0232C at -2503; CPX-0030C at -1493; CX-1144C at Q/A 436). Tela argues there is "nothing in the claims or the specification that requires the gate contact to be a separate structure or separately formed from the metal interconnect structure to which it connects." *Id.* at 31 (citing *Cannon Rubber Ltd. v. The First Years, Inc.*, 163 F. App'x 870, 877 (Fed. Cir. 2005)).

In opposition, Respondents argue "[i]nitially, the Accused 10nm Products do not include the claimed contacts at least because the claims separately recite contact and first-metal structures, but Dr. Foty does not identify any contact structure distinct from the [redacted] first-metal structures."

[redacted]

RIB at 40 (citing RX-0014C at Q/A 176). Respondents explain more specifically, "it is undisputed that the [redacted]" RRB at 11-12 (citing Hr'g Tr. at 312:8-21; RX-0008C at Q/A 160-163; RX-0014C at Q/A 170).

As noted, the Staff alludes to a similar dispute by identifying the specific claim language "contact structures" as limitation 1[i] (SIB at 39) and then asserting limitation 1[i] is not met (*id.* at 42), although its discussion focuses on a lack of "overlap."

This claim element was not previously construed. *See* Order No. 34 at 61. The Federal Circuit has held that separate claim elements do not necessarily require separate structures within an accused device or the prior art when there is nothing in the claims or specification to suggest such a restriction. *See Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231-32 (Fed. Cir. 2011); *Linear Tech. Corp. v. Int'l Trade Comm'n*, 566 F.3d 1049, 1055 (Fed. Cir. 2009) ("We agree with the Commission's construction of 'second circuit' and 'third circuit,' defining the terms broadly to not require entirely separate and distinct circuits. Indeed, there is nothing in the claim language or specification that supports narrowly construing the terms to require a specific structural requirement or entirely distinct 'second' and 'third' circuits. Rather, the 'second' and 'third' circuits must only perform their stated functions."). Nothing in the 334 patent suggests "contact structures" cannot be integral to or formed at the same time as the "first-metal structures," or that there would be an advantage to keeping them distinct. Respondents have certainly not explained, with reference to either the claims or the specification, why the restriction is appropriate. Therefore, this element is construed as including both structures integral to the first-metal structures and separate from the first-metal structures, so long as they contact the gate structures. And because the evidence shows that the [redacted] structures, which are formed [redacted]

[redacted] the higher-up, linear "first-metal structures," do contact the gate structures, they qualify as contact structures. Accordingly, the limitation is met in the Intel 10nm Products.

**e. Each of the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact**

Fifth, Respondents and Staff dispute whether "each of the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact" is met in the Intel 10nm Products. RIB at 40-46; SIB at 39-42. No party disputes the limitation is met in the Intel 14nm Products.

For this limitation, and the Intel 10nm Products in particular, Tela contends Intel's design rules "[redacted]" CIB at 47 (citing CPX-0341C at 5827-28; CX-1144C at Q/A 315-319, 1964, 1983, 2497-2498; CPX-0030C at 1493; CX-0662 at *7, 9). Tela adds:

> An example of a [redacted] overlapping both edges of the top surface of the gate structure is illustrated in teardown images of an Intel 10nm Product (Intel i3-8121U), which show a cross-section and top view of a [redacted] further confirming that this claim element is met. (CX-1144C (Foty) at Q/A 1990-95, 2497-98; CDX-0010C.27-28.)

*Id.* More specifically, Tela argues "[n]othing in claim 1 requires the bottom surface of the contact structure to overlap the edges of the top surface of the gate structure. And the [redacted] and as such is 'sized to overlap both edges of the top surface of the gate structure' as required by the claims." CRB at 18. Tela shows this upper-edge overlap in the below images:

[redacted]

CRB at 49. Tela rejects a claim interpretation which would require "the bottom surface of the contact that physically contacts the top of the gate must overlap the edges of the gate." *See id.* at 49-50.

In opposition, Respondents argue its [redacted] RIB at 41 (citing RX-0008C at Q/A 160, 161); RRB at 12. Thus, according to Respondents, there is no overlap as shown in teardown images:

[redacted]

RIB at 42-43 (citing RX-0014C at Q/A 168; JX-0220 at *1). Respondents argue Tela's reliance on layout file shapes cannot overcome the actual structure of the fabricated device (*see* RIB at 43; RRB at 12), and Tela's expert admitted that the green-box annotations in a demonstrative showing the required overlap between the first-metal layer and the gate structure were misleading (RIB at 44 (citing CDX-0010C at *28; Hr'g Tr. at 310:15-311:13, 305:9-313:1, 468:1-469:6)), as shown below:

[redacted]

(RIB at 45). Respondents contend the top of the yellow "T" shape in the above image cannot fulfill the requirement for "overlap" because "the claim language addresses overlap at the top surface of the gate—where the structures contact—not some flare-out of a broader Metal-0 structure far above the contact interface, as Dr. Foty argues." *Id.* (citing Hr'g Tr. at 312:22-313:1; 334 patent at 21:26-37). Respondents suggest Dr. Foty admitted at cross-examination that the claimed concept addresses the interface between the top of the gate and the bottom of the contact structure" (*id.* at 45-46 (citing Hr'g Tr. at 470:2-471:4)) and that the position was never properly noticed by Tela (RRB at 13-14 (citing CX-1144C at Q/A 318, 2492-99)). The Staff concurs with Respondents on all these points. *See* SIB at 39-42; SRB at 11-14.

Resolution of this dispute requires construction of claim language not previously interpreted. Under a plain reading of the claim, and as supported by the specification, the "overlap" must actually be at the interface between the gate structure and the contact structure. The claim states "each of the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact." 334 patent at cl. 1. Clearly the emphasis here is on contact (hence the name "contact structures") with the "top

[redacted]

surface" of the gate structure, *i.e.*, the interface between two dissimilar materials. A person of ordinary skill would surely understand the "overlap" to occur at this location, namely, the point of contact. The specification reinforces this view, stating, "it should be appreciated that in the present invention, the gate electrode contact 601 is oversized in the direction perpendicular to the gate electrode feature 501 to ensure overlap between the gate electrode contact 601 and the gate electrode feature 501." *Id*. at 17:50-55. At the hearing, Dr. Foty acknowledged misalignment between these two structures was a concern. *See* Hr'g Tr. at 470:2-471:1. Such misalignment can be seen in, for example, the red annotation to teardown imagery of one of the DI Products:

CX-1144C at Q/A 2652 (citing CX-0684 at -56335-51 (annotated)). It is clear that overlap at the point of interface would help ensure contact and alleviate misalignment between the structures. Tela's proposed T-shape for "overlap" would not do the same.

With this construction in mind, the evidence indisputably shows the limitation is not met in the actual Intel 10nm Products. As Tela itself explains, after holes are patterned to expose the top surface of the gates, [redacted] CIB at 44 (citing CX-1144C at Q/A 315-320; RX-0014C at Q/A 167).

[redacted]

Teardown imagery shows this results in coextensive (*i.e.*, no overlap) contact at the interface between the contact structure and the gate structure, as presented above. *See, e.g.*, RX-0014C at Q/A 168; JX-0220 at *1. Thus, the limitation is not met in the Intel 10nm Products.

**2. Claim 2**

For reference, claim 2 of the 334 patent requires:

> 2. [2a] The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures positioned in accordance with a second-metal horizontal grid, the second-metal horizontal grid including at least eight second-metal gridlines,
>
> [2b] each second-metal structure in the region having at least one adjacent second-metal structure positioned next to each of its sides in accordance with an x-coordinate spacing of less than or equal to 193 nanometers, each second-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline,
>
> [2c] wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure positioned thereon, wherein each pair of second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap,
>
> [2d] wherein the second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the gate structures.

334 patent at cl. 2. Claim 2 is not identified as in dispute by Respondents. *See generally* RIB. The Staff, however, asserts that claim 2's recitation of "grid(s)" and "gridlines" invokes the same grounds for non-infringement as discussed above in connection with claim 1. *See* SIB at 45. Although it is unclear to which "grid" limitation of claim 1 the Staff refers—"gate horizontal grid" or "first-metal grid"—as determined above the linear and parallel positioning of both corresponding elements (gate and M0 layers) within the Accused Products satisfies "positioned in accordance with a . . . grid." With no other elements of claim 2 in dispute, the Accused Products which infringe claim 1 have also been shown to meet the limitations of claim 2 by the testimony of Dr. Foty. CX-1144C at Q/A 1651-1709, 2527-2567.

[redacted]

### 3. Claim 5

For reference, claim 5 of the 334 patent requires:

> 5. The semiconductor chip as recited in claim 2, wherein the at least six contact structures are positioned in accordance with a contact vertical grid, the contact vertical grid including contact gridlines extending in the x-direction, each of the at least six contact structures positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six contact structures positioned to also extend lengthwise in the x-direction in a substantially centered manner along a corresponding first-metal gridline.

334 patent at cl. 5. Claim 5 is not identified as in dispute by Respondents. *See generally* RIB. Again, though, the Staff asserts that claim 5's recitation of "grid(s)" and "gridlines" invokes the same grounds for non-infringement as discussed above in connection with claims 1 and 2. *See* SIB at 45. And as with claims 1 and 2, although it is unclear from which of the two "grid" limitations the Staff is incorporating its argument, the Accused Products which infringe claim 1 have also been shown to meet the limitations of claim 5 by the testimony of Dr. Foty. CX-1144C at Q/A 1710-1730, 2568-2578.

### 4. Claim 15

Claim 15 of the 334 patent requires:

> 15. The semiconductor chip as recited in claim 1, wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of at least one transistor within the region of the semiconductor chip has a substantially rectangular shape.

334 patent at cl. 15. Several disputes exist between the parties concerning whether Tela has sufficiently shown the Accused Products meet the limitations of the claim.

#### a. Diffusion Region

First, Respondents and Staff dispute that the Intel 14nm Products or the Intel 10nm Products have a "diffusion region." RIB at 22-39, 49; SIB at 46-52.

[redacted]

Tela contends "[i]n the Intel 14nm Products, each transistor in the region is formed in part by a corresponding diffusion region, as evidenced by the diffusion region layout shapes that define the location of source and drain regions of the NMOS and PMOS transistors." CIB at 56 (citing CX-1144C at Q/A 253-263, 284-288, 392-393, 951-988, 1731-1749; JX-0210C at *218, 225; CPX-0096C at 3554-3555). Tela explains "Intel uses a process [redacted] to form the source or drain of a transistor." *Id.* at 57 (citing CX-1144C at Q/A 255, 258-259, 953, 1731-1734; RPX-1997 at 307, 319; RPX-2021 at 1048, 1060; Hr'g Tr. at 450:25-452:19; Hr'g Tr. at 450:25-252:19, 649:2-652:12). Tela continues:

[redacted] (CX-1144C (Foty) at Q/A74; *see also* Tr. (Foty) at 446:6-17.)

*Id.* Tela claims this meets Order No. 34's construction for "diffusion region" as "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor" because "the source and drain regions are heavily doped semiconductor regions occupy[ing] a portion of the area or region specified by a corresponding diffusion layout shape." *Id.* (citing, *inter alia*, CX-1144C at Q/A 267, 972-974, 1354-1362). Tela argues "the construction is silent as to how impurities are introduced" and suggests [redacted] is one such technique. CRB at 20 (citing CX-1144C at Q/A 61; Hr'g Tr. at 489:8-490:11), 21 (Hr'g Tr. at 237:8-238:3, 649:2-650:3); RX-1664C at 138:15-25), 22 (citing CX-1144C at Q/A 61). Tela

[redacted]

asserts that "if the source and drain regions were separate from the substrate, charge carriers would not be able to flow from the source and drain regions, rendering the transistor inoperable." CRB at 22 (citing CX-1144C at Q/A 69-74).

Tela observes that contemporaneous Intel documents "[redacted]" (CIB at 58 (citing Hr'g Tr. at 652:6-12, 654:3-12), 62 (citing CX-1144C at Q/A 127, 257, 267; CXP-0497C; CPX-0341C; Hr'g Tr. at 450:8-451:14); *see* CRB at 19) and "[a]s recently as 2017, [redacted]" (CRB at 212 (citing JX-0329 at *1, 3; Hr'g Tr. at 669:2-670:9)). Tela also argues that after the source and drain regions are [redacted]" CIB at 58 (citing Hr'g Tr. at 454:8-24), 63; CRB at 23 (citing Hr'g Tr. at 452:20-454:7; RPX-1997C at 308; RPX-2021C at 1048, 1063).

Should these [redacted] sources and drains not be found to literally meet "diffusion region," Tela contends they meet it under the doctrine of equivalents. *See* CIB at 60-61; CRB at 24-27. Tela claims the differences between Intel's [redacted] regions and "diffusion regions" are both insubstantial and substantially the same in function, way, and result. *See* CIB at 60-61 (citing CX-1144C at Q/A 875-988), 63-66; CRB at 24-27. And Tela contends the Intel 10nm Products are created by the same process, and thus infringe for the same reasons as the Intel 14nm Products. *See* CIB at 58-59.

In its reply brief, Tela appears to challenge the notion that "diffusion region" is limited to the exact structures which make up the source and drain of a transistor:

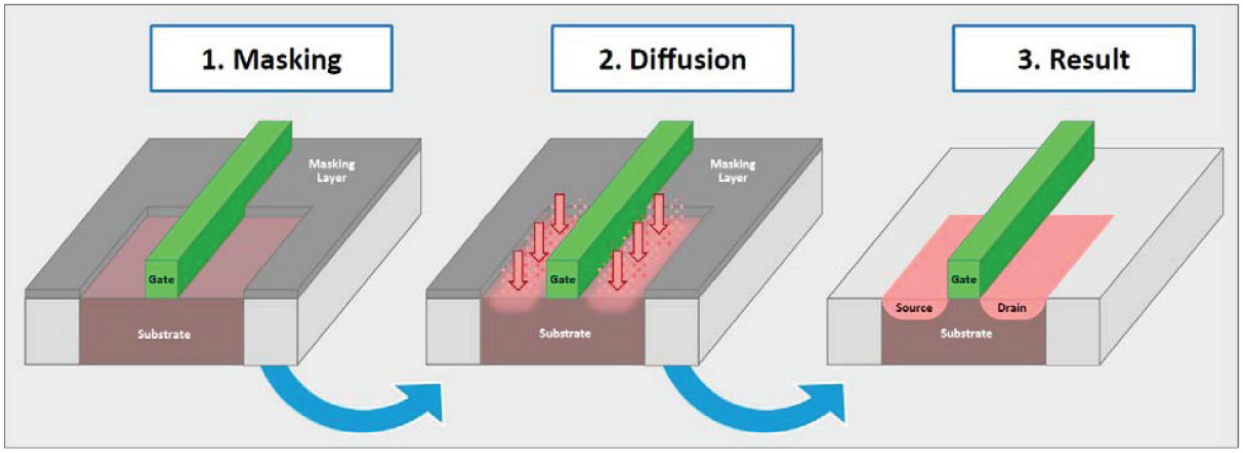
> Respondents suggest that Dr. Foty's reliance on the n-diffusion and p-diffusion layout shapes is irrelevant to the ALJ's construction of "diffusion

[redacted]

> region" because it "refers to the source or drain of the transistor, not to a layout shape." (RIB at 29.) Respondents appear to suggest that the ALJ's construction requires an exact correspondence between the area where the impurities are introduced and the area where the source and drain are formed. (*See id.* at 29-30.) There is no such requirement. The ALJ defined "diffusion region" as the portion (*i.e.* region or area) of the substrate where impurities are introduced and source or drain regions are formed as a result. (Order No. 34 at 56.) Respondents acknowledge that [redacted] and sources and drains are formed within those areas. (RIB at 30; JX-0329.0001, 3; *see also* Tr. (Auth) at 669:2-670:9).) This establishes that the ALJ's construction of "diffusion region" is met.

CRB at 20-21.

In opposition, Respondents argue that [redacted] cannot meet the construction for "diffusion region" given in Order No. 34: "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor." Put simply, Respondents contend the substrate in the Accused Products [redacted] RIB at 22, 26 (citing, *inter alia*, RX-0014C at Q/A 90-~~93~~, 100; RPX-1997C at *316-319; RX-0008C at Q/A 83), 31 (citing Hr'g Tr. 249:7-18, 661:16-17), 49. Respondents provide the following two diagrams showing this difference:




(RIB at 24 (citing RDX-0016C at *44; RX-0014C at Q/A 83-85; RX-0008C at Q/A 59-60));

[redacted]

[redacted]

(*id.* at 25 (citing RX-0008C at Q/A 62-70; RPX-1997C at *316; Hr'g Tr. at 235:19-236:2, 241:10-242:18)). Respondents also provide the following teardown image showing the bulbous shape of the epitaxially grown material:

[redacted]

RIB at 32 (citing RX-0008C at Q/A 75; PRX-2021C; Hr'g Tr. at 743:3-10).

Respondents claim "[f]orming sources/drains by [redacted]—was a critical innovation." RIB at 26. Respondents explain the innovation was needed to enable Intel's three-dimensional FinFET source

[redacted]

and drain structures because: 1) [redacted] *See generally* RIB at 26-29 (citing, *inter alia*, RX-0008C at Q/A 62, 73-79; Hr'g Tr. at 254:2-5). For these technical reasons, Respondents argue, the [redacted] sources and drains cannot be deemed equivalent to or interchangeable with "diffusion regions," either. *See* RIB at 33-39 (citing, *inter alia*, Hr'g Tr. at 236:12-238:19, 253:6-255:21, 737:16-742:3, 1114:15-19; RX-0008C at Q/A 75-83; RX-0014C at Q/A 117-118; *Freedman Seating Co. v. Am. Seating Co.*, 420 F.3d 1350, 1361 (Fed. Cir. 2005); *Minebea Co. v. Think Outside, Inc.*, 159 F. App'x 197, 204 (Fed. Cir. 2006)). Respondents claim "diffusion region" is a "'meaningful structural and functional limitation of the claim,' and the doctrine of equivalents cannot be used to erase it" (RIB at 35 (citing *Conopco, Inc. v. May Dep't Stores Co.*, 46 F.3d 1556, 1562 (Fed. Cir. 1994))) and point out the [redacted] regions are subject to their own issued patent (*id.* at 38 (citing RX-0167; RX-0014C at Q/A 122-123; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368, 1379-80 (Fed. Cir. 2007)). Respondents also contend the "doctrine of ensnarement" precludes application of the doctrine of equivalents for this limitation, claiming that since they raised it as a defense, the burden lies with Tela to "propose a hypothetical claim and prove that this claim did not ensnare the prior art"—a burden they have not and cannot meet with no expert testimony on the subject. *Id.* (citing *G. David Jang, M.D. v. Bos. Sci. Corp.*, 872 F.3d 1275, 1287 (Fed. Cir. 2017)).

As to Tela's evidence, Respondents argue n-diffusion and p-diffusion layout shapes cannot meet the limitation, as the ordered construction refers to the source and drain of a transistor, which

[redacted]

the shapes are not—as acknowledged by Dr. Foty. RIB at 29-30 (citing Hr'g Tr. at 227:20-228:21). Additionally, Respondents explain [redacted] and "does not indicate the actual use of diffusion in the layout shape area, and certainly not that diffusion is used to form the sources/drains." *Id.* at 30 (citing RX-0008C at Q/A 89-91). Respondents also dispute Dr. Foty's opinion that any material electrically connected to the substrate can be considered "substrate" (*see id.* at 30-31) and argue his opinion is largely conclusory (*see* RRB at 38-39 (citing CX-1144C at Q/A 976)).

Finally, Respondents address Tela's theory of [redacted] with the following:

> Tela raises a new argument for the first time in its Post-Hearing Brief that Intel somehow infringes because it uses [redacted] Tela's attempt to argue infringement based on this hypothetical unintentional by-product is neither timely nor credible, and it underscores the weakness of Tela's original theories. As a preliminary matter, because Tela did not raise this infringement theory until its Post- Hearing Brief, the theory has been waived. G.R. 13.1

RRB at 22. If the argument is not deemed waived, Respondents argue the unrebutted testimony in the record is that no diffusion takes place. *See id.* at 23-24 (citing RX-0008C at Q/A 98; Hr'g Tr. at 970:13-971:2).

The Staff agrees with Respondents' non-infringement positions, in both the literal and equivalence contexts. *See* SIB at 46-52, 56-58; SRB at 15-17, 18-20. The Staff summarizes, "[s]imply put, [redacted] process does not introduce impurities into the substrate to form sources or drains" (SIB at 50), and views a lack of interchangeability as precluding a finding of equivalence (SRB at 19).

[redacted]

The limitation is not literally met. The ordered construction for "diffusion region" is "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor." Order No. 34 at 56. The parties' proposals for this term all included the phrase "portions of the substrate" or "defined in the base substrate." *See id.* at 55. Within all Accused Products, Tela has identified the [redacted] source and drain structures, located along the fins created by FinFET processes, as the "diffusion region[s]." *See* CIB at 57 ("The diffusion regions in the Intel 14nm Products meet the ALJ's construction of 'diffusion region.' The [redacted] source and drain regions in the Intel 14nm Products are 'selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor . . . ."); *see* CRB at 19.

The record is clear, however, that the [redacted] structures cannot fairly be considered "substrate." The parties' experts both describe how these structures are first created by [redacted] Dr. Foty testified:

> The source and drain regions in the Intel 14nm and 10nm processors are formed [redacted]

CX-1144C at Q/A 255; *see* CX-1144C at Q/A 259, 392-393; CPX-0197C at -974-1043. Dr. Subramanian testified:

> Starting back at Intel's [redacted]

[redacted]

RX-0014C at Q/A 79; *see* RX-0014C at Q/A 87-97; RPX-2062C; RPX-2064C; RPX-1997C at -298-319; RPX-2021C at -11-60. The [redacted] is not a modification of existing material through the introduction of impurities, as required by the claim. Dr. Auth credibly explained that the "substrate" is simply that wafer material which is received from the wafer manufacturer:

> Q. Are Intel's [redacted] sources and drains a portion of the substrate?
>
> A. No. Our [redacted] as opposed to modifying the substrate.
>
> Q. Why don't you consider [redacted] to be a portion of the substrate?
>
> A. The substrate is the wafer we receive from the wafer manufacturer. Our [redacted]

RX-0008C at Q/A 81-82. This is a point on which Tela witness Mr. Gandhi agreed. RX-1662C at 103:17-22. Dr. Foty also described the growth as "a different way of creating a source/drain that's *electrically connected* to the substrate" (Hr'g Tr. at 254:14-21 (emphasis added)) as opposed to the previously discussed means of modifying the substrate itself (*see generally id.* at 235:19-254:13).

Tela offers a number of arguments as to why the [redacted] should still be considered "substrate" [redacted] but none are persuasive. For

[redacted]

example, Tela characterizes the [redacted]" (CIB at 57 (emphasis added)), but the cited expert testimony from Dr. Foty (*id.* (citing CX-1144C at Q/A 67-72, 393, 423)) never describes it as such. Tela also claims that the [redacted] (CIB at 57; CRB at 23), but this is not supported beyond the say-so of its expert (*see id.* (citing CX-1144C at Q/A 393, 423; Hr'g Tr. at 446:6-17); *see* CX-1144C at Q/A 425) and it is apparently disputed by Dr. Auth (RX-0008C at Q/A 80 (discussing [redacted]")). Moreover, [redacted] As stated by Dr. Subramanian, "the claim construction requires introducing impurities into the substrate, not into a material that 'matches' the substrate." RX-0014C at Q/A 107.

Relatedly, Tela's claim that [redacted] must be present "because without it, charge carriers could [not] flow between the source and drain regions of the transistor, rendering it inoperable" (CIB at 57; *see* CRB at 22 (citing CX-1144C at Q/A 74) is beside the point. Even assuming this assertion is true, at most it implies that [redacted] source and drain regions have [redacted] not that they are part of that substrate.

Moreover, that "Intel's technical witness and contemporaneous documents describe the portion of the substrate where impurities have been introduced using [redacted] (CIB at 58; *see* CRB at 21-22) is immaterial. The source and drain regions, in actuality, are [redacted], regardless of Intel's own terminology.

Lastly, Tela's additional argument concerning a "[redacted]

[redacted]

(*see, e.g.*, CIB at 58), is particularly revealing. The theory, if true, would avoid the substrate problem discussed above, because the "pre-existing portions of the fin" are indisputably substrate. But this contention was not disclosed in Tela's pre-hearing brief and has been waived under Ground Rule 13.1. *Compare* CPB at 14, 36 (all mentions of [redacted]) *with* Hr'g Tr. at 452:20–454:24. Moreover, there is no evidence that any [redacted] causes the relevant region of the substrate to "form the source or drain of a transistor," as required by claim 15. Order No. 34 at 56.

Accordingly, the Accused Products have not been shown to literally infringe because they literally lack the required "diffusion region(s)."

The limitation has been shown under the doctrine of equivalents, however. Admittedly, Dr. Foty's testimony on equivalence under an "insignificant differences" test is insufficient. It largely consists of generalities about processes that would allegedly be understood as insignificantly different, only to conclude with "[t]he source and drain regions in the Intel 14nm processor are highly doped n-type or p-type regions, which is the same as the source and rain regions in a transistor fabricated using a standard CMOS process in 2005." CX-1144C at Q/A 976. The opinion does not address on any technical level why those differences which might, and did, preclude literal infringement are insignificant. Accordingly, equivalence is not proven under this approach.

With respect to function-way-result analysis, Dr. Foty's discussion is more substantial and, ultimately, persuasive. As determined above, the Accused Products do not literally infringe because their sources and drains are formed through the introduction of impurities via [redacted]—and not into substrate as the limitation requires. *See* RX-0014C at Q/A 107, 119; RX-0008C at Q/A 65-71, 98. Thus, the issue is whether these latter sources and

[redacted]

drains, once created, are substantially the same in function, way, and result, as the former sources and drains.

Dr. Foty has persuasively explained how the functions of each type of source and drain are the same—to provide charge carriers in a transistor circuit. CX-1144C at Q/A 976. Respondents' expert, Dr. Subramanian, seems to acknowledge this shared function but then focuses on differences which are not material to the analysis, particularly the use of the [redacted] sources and drains in three sided-fin applications as opposed to planar layouts. RX-0014C at Q/A 118. Respondents' briefing similarly focuses too narrowly on attributes of Intel's epitaxially grown structures that enable certain levels of performance, and then describes them as the "function." *See* RIB at 36 ("[t]he function of Intel's [redacted] sources/drains is to act as sources/drains specifically for FinFET transistors and to achieve strained silicon").

Dr. Foty has also persuasively explained how the ways the functions are achieved are the same: "by including a [redacted] other than and in addition to those of the semiconductor material," which are referred to as dopants or impurities. CX-1144C at Q/A 976. Respondents' witnesses agree such impurities are introduced during [redacted] (albeit not introduced into the substrate). *See* RX-0014C at Q/A 107, 119; RX-0008C at Q/A 65-71. The record further shows these impurities are responsible for charge carrier creation by leaving electron "holes" in P-type semiconductors and providing extra electrons in N-type semiconductors. *See* CX-1144C at Q/A 69; RX-0014C at Q/A 119. Thus, the way involves different structures but is substantially the same.

Lastly, Dr. Foty has sufficiently explained substantially the same results from the functions, and ways of accomplishing those functions, between sources and drains formed from introducing impurities into an epitaxial growth and sources and drains formed from introducing impurities into

[redacted]

a substrate—namely, a functioning transistor. CX-1144C at Q/A 976. Respondents' emphasis on the [redacted] (*see* RIB at 37; RRB at 17-18) are all well taken; they lead to enhanced performance of the sources and drains, are no doubt necessary for smaller process nodes, and perhaps are entitled to separate protection under the patent laws.[5] Respondents call these "critical differences" (RIB at 39), yet none actually differentiate the function of the [redacted] as it pertains to the claimed invention (*i.e.*, to serve as source or drain), the way in which that function is accomplished (*i.e.*, electron vacancies due to first type of impurity, electron surplus due to second), or the result (functioning transistor) from the ordered construction of "diffusion region." Accordingly, the function-way-result test is satisfied.

Nor is doctrine of equivalents infringement precluded under ensnarement. True, "the burden of persuasion is on the patentee to establish . . . that the asserted scope of equivalency would not ensnare the prior art." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1323-24 (Fed. Cir. 2009); *see Intendis GMBH v. Glenmark Pharms. Inc., USA*, 822 F.3d 1355, 1363 (Fed. Cir. 2016). But Respondents have a burden of production to identify the prior art they contend is ensnared, and with sufficient specificity to identify what is in dispute. *See Intendis*, 822 F.3d at 1363 ("prior art introduced by the accused infringer [must be] assessed"). Respondents' only effort to meet this burden is a single sentence in their opening brief, where they assert that the doctrine of equivalents "would improperly ensnare the prior art, including Intel's prior art 45 nm process node." RIB at 38. This is too vague to trigger Tela's burden. It is also

[5] It appears the patent granted to Intel that Respondents' reference (RIB at 38 (citing RX-0167)) focuses on features other than the mere fact of epitaxial deposition (*see* RX-0014C at Q/A 122 (citing RDX-0016C at *58; RX-0167 at cl. 4)).

not clear that the Intel 45nm Products would even be ensnared because they lack other elements of the claim such as gate structures orthogonal to first-metal structures. *See, e.g.*, RX-0007C at Q/A 426, 610. Moreover, generation of a hypothetical claim, which Respondents contend Tela must do, is not the only method of demonstrating non-ensnarement. *See* RIB at 38; *see G. David Jang*, 872 F.3d at 1285 n.4 ("hypothetical claim analysis is not the only method" to evaluate ensnarement).

Accordingly, the "diffusion region" limitation is met in the Accused Products under the doctrine of equivalents.

**b. Substantially rectangular shape**

Second, Respondents and Staff allege that, should the Intel 14nm Products or the Intel 10nm Products have "diffusion region[s]," those regions have not been shown to have "a substantially rectangular shape." RIB at 39-40, 49; SIB at 52-56. This claim element was not previously construed. *See* Order No. 34 at 48-50.

Tela's position is that "[t]he identified regions have a substantially rectangular shape from a layout or top down view. This is evidenced by a top view illustration presented in Dr. Foty's demonstratives at CDX-0009C pages 127-131." CIB at 58 (citing Hr'g Tr. at 454:8-24; CX-1144C at Q/A 758-765, 1734), 59 (citing CX-1144C at Q/A 2578-2589; CDX-0011C at *72-74). Tela disputes that the "rectangular" shape can be evaluated from a side-perspective or vertical cross-section, as Respondents contend. CRB at 27-28 (citing Order No. 34 at 50). Tela also criticizes the Staff for alleging that, from a top-perspective, the source and drain regions are not rectangular. *See id*. at 28 (citing SIB at 54).

The limitation is not met. As defined in Order No. 34 and explained above, the "diffusion regions" of the claim must be a location within a substance (*i.e.*, the substrate) where the introduction of impurities causes the creation of a source or drain of a transistor. Even assuming

[redacted]

the [redacted] constitute the diffusion region, there is no evidence they are substantially rectangular from a top-perspective. *See, e.g.*, CDX-0012C at *8; CDX-0009C at *126-131. And Dr. Foty conceded he did not provide any opinions on this issue. Hr'g Tr. at 357:12-359:12, 389:13-391:22. Accordingly, this element is not satisfied by the Accused Products, and claim 15 overall has not been shown to be infringed by the Accused Products.

### E. Domestic Industry – Technical Prong

According to Tela's post-hearing briefing, the construction or use of the DI Products practices claims 29 and 30 of the 334 patent. *See* CIB at 66. For the reasons discussed below, I find Tela has not shown by a preponderance of the evidence that the DI Products practice the claims.

#### 1. Product Representativeness

As noted above, the DI Products consist of multiple processors from non-party SAS, made with varying processes designated LPE, LPP, and LPC. Tela explains Samsung's 14LPP and 14LPC processes are more recent variants of Samsung's 14nm FinFET process based on Samsung's 14LPE process (CIB at 69 (citing CX-1144C at q/A 2619-2622, 2684-2690; JX-0209; CX-0686C at *17)) and yet "[t]he differences between 14LPE, 14LPP, and 14LPC are not material to the technical prong analysis; the relevant features such as [redacted] are consistent between the three" (*id.* at 66 (citing CX-1144C at Q/A 2627)). In support, Tela references, *inter alia*, a 14LPP [redacted] (*id.* (citing CX-0728C at *9)), 14LPC design manuals (*id.* at 67-68 (citing CX-1144C at Q/A 2663-2674, 2685)), and 14LPP advertisements which mention a "lower cost option, 'without design rule changes or performance sacrifice'" (*id.* at 68 (citing CX-1614 at *1)).

Thus, according to Tela, "Samsung's 14nm FinFET process variants are representative of one another and individually and collectively show that the Exynos Products practice the '334

[redacted]

Patent claims 29 and 30." CIB at 69. Tela also claims, more specifically, that the particular logic circuit it located within the Exynos 7420 model, and relies on for technical prong domestic industry, is a 2:1 multiplexer and so common that it "is almost certainly found in the other Exynos Products. *Id.* at 69-70 (citing, *inter alia*, CX-1144C at Q/A 2691, 2953-2965, 3272-3278; Hr'g Tr. at 668:9-669:1). Tela observes that a similar [redacted] and argues Respondents and Staff ignore this industry practice of repeating transistor arrangements. *See id.* at 70 (citing CPX-0094C at -3546; CPX-0091C at -3533); *see also* CRB at 29-30 (citing CX-1144C at Q/A 2614-2694). Importantly, Tela takes the position that "Dr. Foty confirmed that the relevant features to his analysis of the Exynos 7420 (*e.g.*, rectangular gate shape, rectangular contacts, gate pitch) are found in the design rules for the subsequent Samsung 14LPP and 14LPC processes." CRB at 29-30 (citing CX-1144C at Q/A 2653-2694).

In its reply brief, Tela views Respondents' and Staff's arguments on this issue as strawmen—*i.e.*, immaterial to the claims—akin to discussions of fin height and voltage types. CRB at 30 (citing RX-1144C at 2626-2629); JX-0209 at *3), 33 ("Respondents identify design rules allowing [redacted] But this too has no effect on the technical prong claim analysis."). Tela argues, "[t]ellingly, Respondents and Staff never directly refute Dr. Foty's analysis as to representativeness. Instead, they merely observe that that the design rules allow [redacted] without explaining how those rules are material to the technical prong analysis." *Id.* at 32. In one example, Tela refers to a [redacted] for Samsung's "14nm processes" and argues that larger pitches, as Respondents suggest is possible, "would result in a larger, slower, more expensive chip that no longer qualified as '14nm.'" *Id.*

[redacted]

Respondents and the Staff challenge this representativeness. RIB at 49-59; SIB at 59-65. Respondents specifically note that besides the Exynos 7420, "Tela did not perform reverse engineering or obtain any technical discovery from Samsung on the Other DI Products,[6] and therefore Tela has no evidence that they actually practice the claims." RIB at 49; *see id.* at 56 (discussing Samsung manuals come from [redacted]

As to the particular logic circuit in the Exynos 7420 Tela has selected and claims is likely present in all other DI Products, Respondents view it as just "one specific configuration of 22 transistors in a chip with over a billion transistors" (*id.* at 50) and allege "Dr. Foty makes no attempt to show that this transistor configuration is present in any of the Other DI Products" (*id.* (citing RX-0014C at Q/A 439-4509)). Respondents contend Dr. Foty was misleading when he claimed to rely on SEM images for products other than the Exynos 7420 to determine physical layouts as "[t]here is no such reverse engineering of the Other DI Products in the record." *See id.* at 57 (citing CX-1144C at Q/A 2629; RX-0014C at Q/A 497). Respondents emphasize that showing the particular 22-transistor configuration from the Exynos 7420 is present in the other DI Products is critical to certain claim elements, as opposed to claim elements which may be shown through design manuals; claim elements such as "29(g), 29(h), 30(h), and 30(i) of the '334 patent and elements 27(m) and 28(m) of the '523 patent." RRB at 27-28.

As to the manufacturing processes 14LPE, 14LPP, and 14LPC, Respondents claim there is actually a fourth process, 14LPU, and within each, several different [redacted] with "significant impact" on arrangement of transistors and structure dimensions. *See* RIB at 50 (citing RX-0014C at Q/A 428; JX-0209 at 3), 55. At a more basic

[6] Respondents designate the S5E8890, S5E7880, S5E7570, S5E7870, and S5E7883 as the "Other DI Products." RIB at 49.

[redacted]

level, Respondents argue the 14LPP and 14LPC design manuals Tela relies on "are 'a set of parameters that specify certain geometric and connectivity restrictions'—they do *not* specify the actual design of the chip or configuration of the structures, which is what Tela must prove to show that the claims are practiced." *Id.* at 51 (citing RX-0014C at Q/A 438). Respondents allege "Samsung has explicitly stated that its 14LPE process used to manufacture the Exynos 7420 has a different "transistor structure" than the 14LPP process used for two of the other chips, and Samsung has distinguished the 14LPP and 14LPC processes used for the Other DI Products as an improvement over the LPE process." *Id.* at 52 (citing RX-0014C at Q/A 452-454; RX-0146 at *2; RX-0148 at *2). Respondents also point to different [redacted] in the 14LPP and 14LPC processes than are found in the Exynos 7420. *Id.* at 53 (citing RX-0014C at Q/A 461-466, 470-478; CX-0727C at 135, 146; CX-0726C at 165).

In their reply brief, Respondents criticize Tela's use of news articles to supplement the details found in the design manuals themselves (*see* RRB at 28-29) and observe that one article which Tela quotes is actually a comparison between LPP and LPC, and not between either with LPE (*see id.* at 29 (citing CX-1614 at *1)). Respondents also argue that the evidence regarding commonality of 2:1 multiplexers was based on "Mr. Becker's non-objective testimony, with no foundation, especially as to Samsung chips." *Id.* at 30 (citing Hr'g Tr. at 121:18-122:4). Respondents state flatly "[t]here is no evidence that the specific multiplexer identified in the Exynos 7420 was used in any of the Other DI Products" and add "[a] logic function by itself does not practice the claims—the logic circuit must be implemented into a semiconductor chip in a particular way." *Id.* at 30 (citing RX-0014C at Q/A 501-507).

The Staff echoes many of Respondents' points including the facts that "Tela did not obtain any technical discovery—no documents and no testimony—from Samsung or SAS. For example,

[redacted]

Samsung and SAS (and relevant third party Qualcomm) did not produce design layout files, mask layout files, or source code for any of the alleged DI Products" (SIB at 59; *see id.* at 61 (citations omitted)), and "Dr. Foty did not obtain or reverse-engineer any of the Other DI Products—consistent with his failure to obtain or personally reverse-engineer any of Intel's Accused Products—to provide any direct evidence for those newer semiconductor chips" (*id.* at 61). The Staff, relying on testimony from Dr. Subramanian, claims "[t]he evidence shows that these three processes are materially different and were released at different times" and the designs are "quite different" as between the Exynos 7420 and other DI Products. SIB at 63 (citing RX-0014C at Q/A 435); SRB at 21 (citing RX-0014C at Q/A 435, 448-509). Thus, the Staff takes the position that Tela and its expert, Dr. Foty, were not able to conduct a proper "representativeness" analysis and cannot meet their burden here. SIB at 61.

Tela has not met its burden of showing representativeness. *Certain LED Lighting Devices, LED Power Supplies, and Components Thereof*, Inv. No. 337-TA-1081, Comm'n Op., at 10 (July 23, 2019) (holding the complainant "must show by a preponderance of the evidence that the products its expert analyzed are indeed representative of unanalyzed products.") (citing *Certain Semiconductor Devices, Semiconductor Device Packages, and Products Containing Same*, Inv. No. 337-TA-1010, Order No. 77 (March 15, 2017)). Its collected evidence is of mixed nature and circumstantial at best. Tela obtained and analyzed an actual Exynos 7420 chip, but no corresponding LPE design rule document; and obtained LPP and LPC design rule documents for the remaining DI Products, but no chips. CX-1144C at Q/A 2683[7]; RX-0014C at Q/A 437; RDX-0016C at *176. Thus, Tela claims both: that the LPP and LPC design rule documents apply to the

[7] Dr. Foty refers to an Exynos 7240 throughout his testimony, which I understand should be 7420.

[redacted]

Exynos 7420, and that the identified transistor cell within the Exynos 7420 applies to products made under LPP and LPC processes. *See* CIB at 67 ("In particular, the analysis is based on a teardown of the Exynos 7420, teardown reports for the Exynos 7420, and design rules for Samsung's 14LPP and 14LPC processes. The two sets of design rules are substantially similar and the teardown analysis establishes that the relevant features of the Exynos 7420 conforms to both sets of design rules.").

Tela has not sufficiently shown the latter of the two claims, *i.e.*, that the particular cell it identifies and relies on within the Exynos 7420 (CX-1144C at Q/A 2701, 3122) exists within the other five models of DI Products. This is critical because there are claim limitations which require an arrangement of transistors that would come from the chip designer's chosen layout and not guaranteed to be present under the design rules. RRB at 27-28; *see* CRB at 30 ("The purpose of design rules is to tell layout designers what they can and cannot do – if the layouts fail to comply with these rules, they cannot be manufactured."). Respondents refer to limitations 29(g), 29(h), 30(h), and 30(i) of the 334 patent, reproduced below:

> [29g] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,
>
> [29h] wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a first gate structure forms both a gate electrode of the first transistor of the first transistor type and a gate electrode of the first transistor of the second transistor type.

(334 patent at cl. 29);

[redacted]

> [30g] wherein each transistor within the region is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,
>
> [30h] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch[.]

(*id.* at cl. 30). Considering it is the patentee's choice where to define the claimed "region" within an accused product, many other limitations could be added to this list including, for example, "wherein each gate gridline has at least one gate structure positioned thereon" and "a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region." 334 patent at cl. 29. It is entirely unclear how these limitations, as just two examples and in addition to those identified by Respondents, could be shown merely by design rules as opposed to an actual fabricated design. Indeed, Dr. Foty does not rely on design documents to show them. *See* CX-1144C at Q/A 3133, 3215-3218.

Moreover, in a discussion of gate contact structures, Tela actually emphasizes, and thereby acknowledges, that the content of the LPP and LPC design manuals is not the basis for practicing the claim. Rather, the basis is the actual circuit arrangement found in the Exynos 7420 and imputed to the other chips:

> Similarly, Respondents identify design rules allowing [redacted] But this too has no effect on the technical prong claim analysis. The multiplexer identified by Dr. Foty does not include [redacted] (*See, e.g.*, CDX-0013.14) Respondents' identification of a potential non-practicing structure does not undermine Dr. Foty's identification and analysis of a representative logic circuit in Exynos 7420.

CRB at 33.

[redacted]

Dr. Foty's opinion that the particular transistor arrangement is present in the other DI Products is therefore little more than speculation. He starts with a general observation that the semiconductor industry relies on cell libraries and jumps to the conclusion that the particular Exynos 7420 region is "almost certain[ly]" in *any* other 14nm Exynos processor:

> Q. How, if it all, do the SEM image that you reviewed relate to other Exynos processors?
>
> A. Based on my review of the SEM images, it is my understanding that the Samsung Exynos 7240 was laid out using cells from a cell library. In the industry, it is typical to reuse verified cell libraries at a given process node – once it has been shown that the cell (as specified in the layout) can be successfully manufactured with the desired performance characteristics. As such, the circuits in the SEM images that I analyzed for the Exynos 7240 are almost certain to also be found in other Exynos processors manufactured using Samsung's 14nm process.

CX-1144C at Q/A 2692. Tela implies additional testimony explains the connection beyond assertions of industry practice (*see* CRB at 29 (citing CX-1144C at Q/A 221-222, 2614-2694), 20 ("Respondents characterize the multiplexer cell as a '22-transitor arrangement' and allege that there is no evidence it is found in the other Exynos Products. . . . These allegations, however, are controverted by the evidence of standard industry practice."), 32-33 (citing CX-1144C at Q/A 2627, 2679-94)). But the testimony does not provide such additional support.

This is not enough on its own to satisfy Tela's burden, and even if it was, the record contains contradicting evidence. For example, Tela's identification of cells in the Accused Products shows that even with industry use of cell libraries (and the thousands of repetitions of cells within a certain model (*see* CIB at 70)), not all cells within a single process node are necessarily covered by the 334 patent's claims. For instance: the [redacted] cells for certain Intel 14nm Products (Broadwell, Sky Lake, Kaby Lake, Coffee Lake); the [redacted] cell for just one of the Intel 14nm Products (Cascade Lake); the [redacted] cells for another group of Intel 14nm

[redacted]

Products (Goldmont, Goldmont Plus); and, finally, the [redacted] cell for a last group (Ice Lake Chipset; Cannon Lake Chipset), as in the table below:

| **Intel 14nm Products** | |
|---|---|
| *Product Family/Architecture* | *Associated Cells* |
| Broadwell;<br>Sky Lake;<br>Kaby Lake;<br>Coffee Lake | [redacted] |
| Cascade Lake | [redacted] |
| Goldmont;<br>Goldmont Plus | [redacted] |
| Ice Lake Chipset;<br>Cannon Lake Chipset | [redacted] |

*See* CDX-0012C at *25-26; RDX-0016C at *37-39. Under Dr. Foty's reasoning on the DI Products, just one cell from this set of six could be representative of all the Intel 14nm Products. Clearly, however, this would not have sufficed as evidence of infringement.

Furthermore, Dr. Foty's opinion is generally not as well supported for this topic. At one point in his testimony, he states he "completely disagree[s]" with Dr. Subramanian's opinions on the materiality of Samsung's 14nm process variants because, in part, he "was able to observe the physical layout of the devices through the SEM images, and confirm my understanding as to how those features are placed in view of the design rules." CX-1144C at Q/A 2629. Yet in another portion he only mentions the Exynos 7420 as a physical product received and looked into:

[redacted]

> Q. Did you analyze any particular Samsung Exynos products as part of your consideration of the technical prong of domestic industry requirement?
>
> A. Yes, in forming my opinions regarding the technical prong of the domestic industry requirement, I analyzed the Samsung Exynos [7420] processor.
>
> Q. What is the Samsung Exynos [7420] processor?
>
> A. The Samsung Exynos [7420] processor is a processor fabricated using Samsung's LPE Process.
>
> Q. How did you perform your analysis of the Samsung [7420] processor?
>
> A. I analyzed teardown images of a Samsung Exynos processor, such as SEM images, which is fabricated using Samsung's LPE process. I also considered documents regarding the Samsung Exynos products such as the design rules we discussed earlier.

CX-1144C at Q/A 2680-2682. On this point, Respondents argue, and Tela does not dispute, that "Tela identifies—and its expert relies on—such images only for the Exynos 7420. . . . There is no such reverse engineering of the Other DI Products in the record." RIB at 57 (citing RX-0014C at Q/A 497).

As to other evidence, Tela's briefing refers to testimony on the extreme commonality of 2:1 multiplexers (CIB at 69; CRB at 30), but Respondents are persuasive when they note "a logic function by itself does not practice the claims—the logic circuit must be implemented into a semiconductor chip in a particular way. Indeed, there are a number of well-known 'circuits' that implement a 2:1 multiplexer, as well as a number of known implementations of a 2:1 multiplexer into a semiconductor chip that do not practice the DI claims" (RRB at 30-31 (citing, *inter alia*, RX-0014C at Q/A 500-507); *see* Hr'g Tr. at 1018:14-1019:21). Dr. Foty has not even attempted to refute this point.

In sum, the actual transistor arrangement within a chip is critical to satisfaction of the claims. Tela has no direct evidence showing the identified transistor arrangement of the Exynos

[redacted]

7420 is present in the other DI Products, however, and the circumstantial evidence regarding industry practices is particularly weak.

Accordingly, Tela has not shown the Exynos 7420 is representative of the other DI Products (S5E7570, S5E7870, S5E7880, S5E7883, and S5E8890) such that practice of the claims of the Asserted Patents by the Exynos 7420 suffices for all. Nevertheless, the following discussion of particular claim limitations assumes all products are represented by the Exynos 7420.

**2. Disputed Claims**

Respondents contest Tela's alleged practice of claims 29 and 30. *See* RIB at 59-62. The Staff takes the same position. SIB at 65-67. Tela has not shown practice of either claim.

**a. Claim 29**

For reference, claim 29 of the 334 patent requires:

> 29. [29a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip, the gate structures positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon,
>
> [29b] wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,
>
> [29c] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type,

[29d] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

[29e] a number of contact structures formed within the region of the semiconductor chip, wherein each gate structure that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding contact structure having a substantially rectangular shape, wherein each contact structure that contacts a given gate structure that forms any transistor gate electrode does not contact another gate structure, wherein each contact structure having a corresponding length greater than or equal to a corresponding width is oriented to have its corresponding length extend in an x-direction, wherein each contact structure that contacts a corresponding gate structure is positioned to overlap at least one edge of the corresponding gate structure,

[29f] wherein each transistor within the region is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

[29g] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

[29h] wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a first gate structure forms both a gate electrode of the first transistor of the first transistor type and a gate electrode of the first transistor of the second transistor type.

334 patent at cl. 29 (annotated). Several disputes exist between the parties concerning whether Tela has sufficiently shown the DI Products meet various limitations of the claim. These are addressed below. In view of the testimony of Dr. Foty that the DI Products practice those remaining limitations which are not in dispute, the DI Products have been shown to practice them as alleged. *See* CX-1144C at Q/A 3127-3290; CIB at 70-73.

[redacted]

**i. Gate structures positioned in accordance with a gate horizontal grid**

First, Respondents and Staff dispute that "gate structures positioned in accordance with a gate horizontal grid" is met in the DI Products. RIB at 62; SIB at 65-67.

For this limitation, Tela alleges:

> [T]he Samsung 14LPP and 14LPC design manuals specify [redacted] (CX-1144C (Foty) at Q/A 2786-96, 2823-25; CX-0727C.117, 120, 128, 132-33; CX-0726C.137, 156, 161-62.) Teardown analysis of the Exynos 7420 further show that the Exynos Products meet this claim limitation. (CX-1144C (Foty) at Q/A 3128-35; CDX-0013C.47-50; *see also* JX-0215.9-14.)

CIB at 70-71. In particular, Tela alleges Samsung's use of [redacted] results in the positioning of gate structures in accordance with a grid, and provides the following teardown image in support:

[redacted]

[redacted]

CRB at 35 (citing JX-0215 at *9). Tela claims "[t]his positioning and orientation is also consistent with the requirements of the 14LPP and 14[LPC] design rules." *Id.* (citing CX-1144C at Q/A 2642, 2671-2672, 2786-2793; CX-0726C at *156, 159, 177; CX-0727C at *128, 130, 146).

In opposition, Respondents argue "Tela . . . offers no documents, testimony, or any other evidence describing Samsung's fabrication stage at all, let alone establish that any such gridlines were used during fabrication." RIB at 62 (citing RX-0014C at Q/A 625-636); RRB at 33. The Staff argues similar points, claiming "Tela offers no evidence of any grid or gridlines, projected or otherwise, used during Samsung's fabrication process, and has failed to prove that this limitation is met for that reason alone." *See* SIB at 66; SRB at 23. The Staff asserts no equivalence has been shown, let alone alleged, for this element either. *See* SIB at 66-67; SRB at 23.

The limitation is met, under the same reasoning as applied to the Accused Products. Teardown images of the Exynos 7420 provided by Dr. Foty, reproduced above and below, show an unmistakable linear and parallel arrangement of gate structures:

CDX-0013 at *47 (citing CX-0723C). The most reasonable inference to draw is that these structures were positioned in accordance with a pre-planned grid (*i.e.*, not happenstance) during fabrication—despite Respondents' and the Staff's complaints over a lack of documentary or testimonial evidence. The proof is in the final product. Further, as discussed above in connection with the Accused Products, no actual, observable, projection of a grid is required. Accordingly, the DI Products practice this limitation.

**ii. Diffusion regions**

Second, Respondents and the Staff dispute that the DI Products have any "diffusion region[s]." RIB at 60; SIB at 67-71.

For this limitation, Tela notes that the Exynos Products use FinFET technology, and "design manuals, for example, show that the Exynos Products include an [redacted] diffusion regions." CIB at 72 (citing CX-1144C at

[redacted]

Q/A 2931-2936; CX-0727C at *38, 138, 141; CX-0726C at *46, 168, 171). In its reply brief, Tela highlights 14LPC and 14LPP design rules which, again, refer to the [redacted] as a diffused or diffusion region:

[redacted]

(CRB at 33 (citing CX-0726C at *46; CX-0727C at *38));

[redacted]

(*id.* (citing CX-0726C at *104; CX-0727C at *85)). Tela reasons, "[a]s such, a POSITA would understand that [redacted] source/drain regions in Exynos Products are diffusion regions." *Id.*

As with the Accused Products, [redacted] and therefore not "substrate" as literally required by the construction of "diffusion region." It does appear, however, that Tela asserts [redacted] source/drain regions are diffusion regions" for the DI Products under the doctrine of equivalents. *See* CRB at 33 (citing CRB at 19-28). And also as with the Accused Products, the evidence supports this assertion, so the DI products practice this limitation.

**iii. Substantially rectangular shape**

Third, Respondents and Staff argue that, should the DI Products have "diffusion region[s]," they have not been shown to possess "a substantially rectangular shape." RIB at 60-62; SIB at 67-71.

[redacted]

For this limitation, Tela alleges the [redacted] as shown and referred to in Exynos Product design manuals, [redacted] CIB at 72 (citing CX-1144C at Q/A 2931-2936; CX-0727C at *38, 138, 141; CX-0726C at *46, 168, 171; CX-1144C at Q/A 3255-3258; CDX-0013C at *61; JX-0215 at *11, 13, 15, 19, 21). Tela presents the following image from the 14LPP design rules to "show substantially rectangular diffusion regions":

CRB at 34 (citing CX-0726C at *170; CX-0727C at *38; CDX-0013 at *61). Tela continues:

[redacted] (*See* Tr. (Subramanian) 1012:3-1013:8; Tr. (Auth) at 660:18-25.)

*Id.* Dr. Foty's testimony relies similarly on layout shapes showing that "the [redacted] are rectangular":

[redacted]

[redacted]

CX-1144C at Q/A 2934 (citing CX-0272 at -00141).

The limitation is not met. There is a clear discrepancy between the [redacted] Dr. Foty analyzes for the "substantially rectangular" requirement (CX-1144C at Q/A 2934), and the more specific [redacted] sources and drains Tela asserts meet the "diffusion region" limitation (CRB at 33). This is problematic because only the [redacted] source and drain structures can meet Order No. 34's construction of "diffusion region," as discussed above with respect to the Accused Products, and so it is those structures which must be "substantially rectangular" from a top-perspective.

As Respondents suggest (RIB at 61), the likely reason for this discrepancy is that undisputed teardown imagery of the Exynos 7420 shows the epitaxially grown source and drain structures do not have a substantially rectangular shape from a top-perspective, as shown in the bottom image below:

[redacted]

[redacted]

(RIB at 60 (citing RX-0014C at Q/A 579); *see* JX-0215 at *15);

(CX-0684 at *26 (excerpted); CIB at 61 (citing RX-0014C at Q/A 580)). Accordingly, this limitation is not practiced by the DI Products.

**b. Claim 30**

For reference, claim 30 of the 334 patent requires:

> 30. [30a] A semiconductor chip, comprising: gate structures formed within a region of the semiconductor chip, the gate structures positioned in accordance with a gate horizontal grid that includes a number of gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon,
>
> [30b] wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers,
>
> [30c] wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second

transistor type and does not form a gate electrode of a transistor of the first transistor type,

[30d] wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

[30e] a number of contact structures formed within the region of the semiconductor chip, wherein each of at least six gate structures within the region has a respective top surface in physical and electrical contact with a corresponding contact structure having a substantially rectangular shape, wherein each contact structure is centered in an x-direction on the gate structure with which it physical contacts,

[30f] wherein each contact structure that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in an x-direction, wherein each corresponding contact structure is in physical contact with only one gate structure, wherein each corresponding contact structure is positioned to overlap at least one edge of the gate structure contacted by the corresponding contact structure,

[30g] wherein each transistor within the region is formed in part by a corresponding diffusion region, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

[30h] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

[30i] wherein both a gate electrode of a transistor of a first transistor type and a gate electrode of a transistor of a second transistor type are formed by a same gate structure within the region.

334 patent at cl. 30 (annotated). The parties largely treat claim 30 the same as claim 29, as both claims require "diffusion regions" with "a substantially rectangular shape," along with "gate structures positioned in accordance with a gate horizontal grid." *See* CIB at 73-74; RIB at 60-62; SIB at 65-71. For all of the same reasons discussed with respect to claim 29, Respondents and the

[redacted]

Staff dispute that claim 30 is practiced by the DI Products. As determined above the DI Products do not practice claim 29. Accordingly, the DI Products have not been shown to practice claim 30.

**F. Validity and Other Defenses**

Respondents and the Staff identify and discuss the following invalidity and unenforceability theories for the 334 patent:

| Claims | Theory |
|---|---|
| 1, 2, 5, 15, 29, 30 | Lack of written description 35 U.S.C. § 112, ¶ 1 |
| 1, 2, 5, 15, 29, 30 | Lack of enablement under 35 U.S.C. § 112, ¶ 1 |
| 1, 2, 5, 15, 29, 30 | Anticipated under 35 U.S.C. § 102(a), (b) by Intel's 14nm Products |
| 1, 2, 5, 15, 29, 30 | Rendered obvious under 35 U.S.C. § 103 by Kitabayashi (JX-0267) and/or Intel 45nm Products |
| 1, 2, 5, 15, 29, 30 | Rendered obvious under 35 U.S.C. § 103 by Becker (RX-0027) |
| 1, 2, 5, 15, 29, 30 | Rendered obvious under 35 U.S.C. § 103 by Becker (RX-0027) and Greenway (JX-0286) |
| 1, 2, 5, 15, 29, 30 | Unenforceable due to covenant not to sue |

*See generally* RIB at 62-121; SIB at 71-95. These theories are addressed in order below.

Before turning to their merits, however, a few preliminary points are warranted. Two of the disputed claims, 29 and 30, are pertinent only to the technical prong of domestic industry. *See* RIB at 74-75; SIB at 83-84. In general, however, it is "Commission practice not to couple an analysis of domestic industry to a validity analysis." *Certain Soft-Edged Trampolines and Components Thereof*, Inv. No. 337-TA-908, Comm'n Op. at 53 (May 1, 2015). Indefiniteness is the only basis for invalidity that bears on whether the technical prong is met, because indefiniteness

[redacted]

"ma[kes] it impossible for the complainant to demonstrate whether a patent claim [is] practiced." *Certain Silicon Microphone Packages and Products Containing the Same*, Inv. No. 337-TA-695, Notice at 3 (Jan. 21, 2011). But indefiniteness is not one of the asserted grounds of invalidity of these two claims. *See* RIB at 74-75; SIB at 83-84. Therefore, whether claims 29 and 30 of the 334 patent are invalid is not relevant, and the parties' dispute over these claims need not be resolved or otherwise addressed.

An additional threshold matter is the priority date of the 334 patent. In their motion for summary determination, Respondents argued that new matter had been added to the application resulting in the 334 patent, and that the 334 patent is consequently not entitled to the priority date Tela asserts. *See* Order No. 27 at 2. This argument was rejected because of the existence of genuine issues of material fact. *Id*. at 3. Respondents and the Staff now seemingly renew this argument. *See* RIB at 65; SIB at 73-74; JX-0003 at *3. Tela does not dispute that the 334 patent's grandparent application, U.S. Patent Application No. 14/711,731 (the "731 Application"), filed on May 13, 2015, contained a paragraph not found in any earlier filing in the chain of applications, but it characterizes that paragraph as "not new matter, but a recitation of the as-filed claims." CRB at 37; *see* CIB at 79; *see also* RX-0019 at *24-26; 334 patent at 5:49-7:24.

In general, "claims to subject matter in a later-filed application not supported by an ancestor application . . . do not receive the benefit of the earlier application's filing date." *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1346 (Fed. Cir. 2000). "Support" in this context means compliance with the first paragraph of 35 U.S.C. § 112. *Id*. (citing 35 U.S.C. § 120). One requirement of Section 112 is an adequate written description, meaning that the patent's disclosure "conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010)

(en banc) (citing 35 U.S.C. § 112). And one way that claimed subject matter may be conveyed, particularly for purposes of evaluating whether a disclosure contains "new matter," is if the subject matter is "inherently contained in the original application," that is, if it is "necessarily [] present in the original application's specification such that one skilled in the art would recognize the disclosure." *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1352 (Fed. Cir. 2001) (citation and internal quotation omitted); *TurboCare Div. of Demag Delavai Turbomachinery Corp. v. General Electric Co.*, 264 F.3d 1111, 1119 (Fed. Cir. 2001) (citing 35 U.S.C. § 120).

The subject matter at issue comprises two claim limitations recited in claim 1, from which claims 2, 5, and 15 depend: "a gate pitch of less than or equal to about 193 nanometers" and "gate structure[s] . . . with a width of less than or equal to about 45 nanometers." 334 patent at 30:7-11. The 334 patent specification (disregarding the new paragraph) addresses pitch and width dimensions in several places: "minimum feature sizes are approaching 45nm" (*id.* at 4:7-8); "current feature sizes are as small as 65 nm and are expected to soon approach sizes as small as 45nm" (*id.* at 9:4-6); "in a 90 nm process technology, *i.e.*, minimum feature size equal to 90 nm, the gridpoint pitch . . . is about [240 nm]" (*id.* at 14:67-15:2; *see also id.* at 17:35, 21:54); "grid spacing is [360 nm]" (*id.* at 17:16; *see also id.* at 17:32) "gate electrode track pitch is [360 nm]" and "metal 2 track pitch" is either 240 nm or 270 nm (*id.* at 23:3-10); "metal 2 pitch of 280 nm" and "[w]ith the via lithography issues removed . . . about 220 nm" (*id.* at 26:45-49); and "at 90 nm the metal 4 pitch is 280 nm" (*id.* at 29:11-12). That is, the smallest pitch mentioned in the 334 patent specification is 220 nm, and although a feature size of 45nm is referenced, it is entirely aspirational. And the 2006 Provisional Application contains even fewer references to width and pitch (*see generally* RX-1365), with 240 nm being the smallest pitch mentioned (*id*. at 12).

[redacted]

This is inadequate, even applying a broad understanding of "inherency." No person of ordinary skill would understand that the inventors of the 334 patent possessed the claimed subject matter—a width of 45 nanometers and a pitch of 193 nanometers, much less smaller dimensions—as of March 9, 2006, or at any time prior to May 13, 2015. The 45 nanometer width limitation is supported only by a "mere wish or hope," and the 193 nanometer pitch limitation is supported by literally nothing at all. *Nuvo Pharm. (Ireland) Designated Activity Co. v. Dr. Reddy's Labs. Inc.*, 923 1368, 1381 (Fed. Cir. 2019).

Tela's arguments against this conclusion are unavailing. Tela principally contends that the "disclosure of scalability combined with the established knowledge of a POSITA is more than sufficient to meet the written description requirement." CRB at 36 (citing *Streck, Inc. v. Research & Diagnostics Sys.*, 665 F.3d 1269, 1285 (Fed. Cir. 2012)). Certainly the written description requirement may be satisfied, in appropriate cases, by the combination of a patent's disclosure and the knowledge of a skilled artisan, as *Streck* holds. 665 F.3d at 1285 ("in some instances, a patentee can rely on information that is 'well-known in the art' to satisfy written description") (citation omitted). But Dr. Hook, one of Tela's experts, did not examine the 334 patent's prosecution history for the purpose of evaluating the priority date. Hr'g Tr. at 1135:8-1136:23, 1215:6-1216:20. And the patent flatly states that "current feature sizes are as small as 65 nm and are expected to soon approach sizes as small as 45nm." 334 patent at 9:4-6. This is essentially an acknowledgment that the inventors did not consider feature sizes of 45 nanometers to be a part of their invention as of March 9, 2006, regardless of the disclosure and the knowledge of a skilled artisan.

Nor does the disclosure of "scalability," combined with a skilled artisan's capacity to create feature sizes of 65 nanometers, contribute anything meaningful to the analysis. The 334

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patent states that "circuit chip area" is reduced by "approximately 50% every two years," and that this is achieved by "reducing the feature sizes between 25% and 30%." 334 patent at 3:60-64. But the patent is directed to "managing lithographic gap issues as technology continues to progress toward smaller semiconductor device feature[] sizes," not to actually achieving such smaller feature sizes. *Id*. at 4:31-33; *see* CIB at 76 (the patent is "directed to a layout methodology for use as semiconductor sizes continue to scale down"). The specification describes a layout methodology which would seemingly apply where gate widths are 45 nanometers and gate pitches are 193 nanometers, but it does not "teach[] how to scale gate layouts" to achieve those smaller widths and pitches, or otherwise provide any indication that the inventors even believed that such sizes were part of their invention. CIB at 77. That the "scaling has proven true in the industry," resulting in 2019 widths and pitches even smaller than 45 and 193 nanometers, respectively, does not mean that the inventors had possession of such small widths and pitches in 2006, or believed that those widths and pitches were a part of the invention. CRB at 36. In fact, although some of the listed prior art references use the term "scalable" or the like, the 334 patent itself does not even use the term "scalability." *E.g.*, JX-0003 at *12 (listing, *inter alia*, Baldi, et al., "A Scalable Single Poly EPROM Cell for Embedded Memory Applications").

Although not explicitly raised by Tela, there is evidence of the inventors' conception and reduction to practice pertaining specifically to the 2006 Provisional Application, and it is similarly unhelpful. CIB at 100-101. Specifically, for purposes of establishing the date of conception, Tela argues that the 2006 Provisional Application "discloses . . . features smaller than 45nm or 193 nm, as claimed." *Id*. at 101. But the evidence Tela relies on for this argument does not, in fact, support it. Dr. Hook's opinion that gate widths and pitches of less than 45 and 193 nanometers are so "disclose[d]" is based on Figure 1 of the 2006 Provisional Application, which shows an expected

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"feature size" of less than 45 nanometers beginning only some time after about 2012, and does not even reference gate pitch. *Compare* CX-1231C at Q/A 405 *with* RX-1365 at *15 (Figure 1 of the 2006 Provisional Application). And Mr. Becker's rebuttal testimony about feature sizes seems to be based entirely on hindsight: although he testified that at the time the 2006 Provisional Application was filed, "minimum feature sizes" were "less than or equal to about 45nm process technology," the application itself states only that minimum feature sizes were "approaching 45nm." CX-1233C at Q/A 39; RX-1365 at *4.

Tela also cites witness testimony to the effect that as of March 2006, "others in the industry had fabricated" devices with gate widths of 10 nanometers. CRB at 36-37; *see also* CIB at 76-77. Admittedly, Dr. Hook testified that "10 nm FinFET structures" had been described "in the early 2000's," and this does not appear to be genuinely disputed by Respondents. CX-1231C at Q/A 1761. But one exhibit cited as evidence for 10 nanometer FinFET structures, U.S. Patent No. 6,413,802, does not disclose any particular dimension size, and although Dr. Subramanian, one of its co-inventors, testified that it had "gate features in the tens of nanometer range," it also had a gate pitch of 75,000 nanometers, not 80-100 nanometers, as Tela claims (*see* CIB at 76 (citing JX-0271); Hr'g Tr. at 1007:5-17; CRB at 39 (citing JX-0302 at *47, which describes gates fabricated in 2011 with widths of 22 nm and pitches of 80-100 nm)). Also, Dr. Hook's testimony is based in part on CX-1315, a document not admitted in evidence. CX-1231C at Q/A 1761. That is, it may have been possible in 2006 to fabricate an individual transistor with a 10 nanometer gate width, but Tela cites no evidence that an entire chip could be fabricated with 10 nanometer widths and pitches of 193 nanometers or smaller, or, more to the point, that the inventors of the 334 patent viewed such dimensions as a part of their invention. *See* Hr'g Tr. at 1007:5-17 (Dr. Subramanian

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opined that a person of ordinary skill in 2006 would not have been able to make "a semiconductor chip with FinFET transistors").

Tela further cites testimony that the dimensions recited in the 334 patent refer to feature sizes "available in commercial products at that time." CRB at 36-37 (citing CX-1233C at Q/A 40 (Becker)); *see also* CIB at 76-77. The specification does not distinguish between what was known at the cutting edge of chip technology and what was commercially available, however; the disclosure merely states that feature sizes "are approaching 45nm"—demonstrating that a gate width of 10nm was simply not contemplated by the inventors except as an objective that might be reached years in the future, without regard to commercial viability. 334 patent at 4:8; *see also* 334 patent at 9:5-6. And Mr. Becker's testimony about feature sizes in 2006 being "less than or equal to about 45nm process technology" is inconsistent with the 334 patent itself, which (like the 2006 Provisional Application) only states that minimum feature sizes were "approaching 45nm." CX-1233C at Q/A 39; 334 patent at 4:8. In fact, even as of 2010 the International Technology Roadmap for Semiconductors ("ITRS") implied that 24 nanometer structures were expected to have known "[m]anufacturable solutions" by 2012, but that 10 nanometer structures were not. JX-0302 at *47; Hr'g Tr. at 1117:2-1119:24; *see* Hr'g Tr. at 1266:1-23 (products described in the ITRS with no known manufacturable solutions are "in research or early development phase").

Lastly, the Examiner's views on priority date, although not binding in this investigation, warrant mention. Notices of Allowability and of Allowance issued on April 12, 2018, and what is now the 334 patent received an issue date of June 5, 2018 as U.S. Patent No. 9,991,283. *See* RX-0019 at *7548-7552, 7579. On May 25, 2018, however, the applicants filed an Information Disclosure Statement containing a complaint, filed 10 days earlier in the United States District Court for the Northern District of California, in which Respondent Intel Corp. sued Complainant

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Tela for a declaratory judgment of invalidity and noninfringement of claims of other patents assigned to Tela, including patents previously asserted in this investigation. *See id*. at *7583-7610. In response, an Examiner Interview took place on May 31, 2018, in which the Examiner "suggest[ed] removing [the 45 nanometer width and 193 nanometer pitch] limitations from the specification" because they were "new matter." *Id*. at *7630. "No agreement was reached," however, and on August 8, 2018, the Examiner issued a "Corrected Notice of Allowability" that found every claim "not entitled to the benefit of the prior application," on the basis that the claimed width and pitch ranges had "no antecedent basis" in the prior-filed application. *Id*. at *7630-*7636. The applicants then traversed the notice of allowability and filed a declaration from Dr. Sunil P. Khatri, who opined that the ancestors of the 731 Application, including the 2006 Provisional Application, contained "written description support" for the width and pitch ranges at issue, essentially on the same basis Tela advances here. *Id*. at *7645-7659. The 334 patent eventually issued on November 27, 2018; although Tela argues from this that the Examiner "apparently agreed with Dr. Khatri," there is no documentary evidence of such agreement beyond the mere fact of issuance. *Id*. at *7660; CIB at 79.

In sum, the evidence demonstrates clearly and convincingly that the 334 patent's disclosure does not convey to those skilled in the art, either explicitly or inherently, that the inventors had possession of the entire subject matter of claim 1 as of March 9, 2006. So the claims at issue, claims 1, 2, 5, and 15, are only entitled to a priority date of May 13, 2015, the date the new matter was added to the 731 Application,

**1. 35 U.S.C. § 112, ¶ 1 (Written Description)**

Neither Respondents nor the Staff advance any substantive argument that the written description requirement is not satisfied by the 334 patent, in view of the 2015 priority date. They argue only that: (1) the "2015 amendment adding the Claimed Ranges *in ipsis verbis*" is

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inadequate; and (2) the 2015 priority date is unavailable because the 731 Application was a continuation, not a continuation-in-part. RIB at 65-66, 65 n.8; *see* SIB at 74-75. Neither argument is persuasive.

As to the first argument, the case law is clear that simply reciting the claim language in the specification is not enough to meet the written description requirement; the specification must "described the claimed invention" and not merely state the claimed limitations. *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 968 (Fed. Cir. 2002). But that is not the situation here. The new matter is a long, detailed paragraph describing the ranges in dispute, as well as the rest of the invention of claim 1 and its dependent claims. *See* 334 patent at 5:49-7:24. This is sufficient to satisfy the written description requirement.

As to the second argument, Respondents and the Staff rely on *TurboCare* to argue that "new [matter] introduced during prosecution without a CIP application must find written support in the originally-filed application or else it is invalid." RIB at 65 (citing 264 F.3d at 1119) (emphasis omitted); *see* SIB at 75. In *TurboCare*, the applicant amended his specification during prosecution in response to an indefiniteness rejection, and further added new claim 2. *See* 264 F.3d at 1117. The United States Court of Appeals for the Federal Circuit affirmed a summary judgment of invalidity, holding that one new element of claim 2 was new matter because the "original disclosure was [not] sufficiently detailed" to enable a skilled artisan to recognize that the applicant had invented that claim. *Id.* at 1118-19. But it also noted, citing in part 35 U.S.C. § 120, that "[b]ecause [the applicant] did not file a continuation-in-part application, he cannot rely on any alternative filing date for his newly added claim . . . [so] claim 2 is invalid for an inadequate written description."

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Respondents and the Staff place too much reliance on this statement. The applicant in *TurboCare* filed an application, and then amended it by adding new matter, in contravention of 35 U.S.C. § 120. Had the applicant instead added the new matter by filing a continuation-in-part application, or presumably an entirely new original application, Section 120 would not have been violated, and the filing date of new claim 2 would have been the priority date. In other words, the obverse of the Federal Circuit's dicta in *TurboCare* amounts to "had the applicant added new matter by filing a later application, he would have received a later priority date, and new claim 2 would have satisfied the written description requirement." That is essentially what happened here: the applicants filed a new application containing new matter, and because all the claims in suit possess the gate width and pitch ranges at issue, the priority date for all claims is the filing date of the new application, May 13, 2015. Admittedly, the applicants here filed a continuation application rather than a continuation-in-part, but the consequence of that is simply a later priority date rather than invalidation. *See Reiffin*, 214 F.3d at 1346 ("claims to subject matter in a later-filed application not supported by an ancestor application" receive a later priority date). Inasmuch as the other cases on which Respondents rely interpret *TurboCare* differently, those cases are not binding on me, and their interpretations are not persuasive. *See* RIB at 65 n.8.

Therefore, claims 1, 2, 5, and 15 of the 334 patent satisfy the written description requirement of Section 112.

**2. 35 U.S.C. § 112, ¶ 1 (Enablement)**

As with the written description requirement, Respondents renew the enablement argument that was previously rejected in the context of summary determination. *See* CIB at 68; Order No. 27 at 2. The crux of Respondents' argument is that, "at the effective filing date of the patent, one of ordinary skill in the art could not practice the[] full scope" of the ranges of gate width and pitch recited in claim 1 of the 334 patent "without undue experimentation." RIB at 68 (citing *Wyeth*

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*and Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1384 (Fed. Cir. 2013)). The Staff agrees. SIB at 76.

There is "significant overlap" between the written description and enablement requirements of 35 U.S.C. § 112. *Univ. of Rochester v. G.D. Searle & Co., Inc.*, 358 F.3d 916, (Fed. Cir. 2004). In one respect pertinent here, however, they are significantly different: the written description requirement is satisfied no matter how far the gate width and pitch ranges extend below 45 and 193 nanometers, respectively, but enablement cannot be properly analyzed without ascertaining the "full scope" of the claimed ranges. *AK Steel Corp. v. Sollac and Ugine*, 344 F.3d 1234, 1241 (Fed. Cir. 2003) ("an enablement inquiry typically begins with a construction of the claims"). This is because the written description supports width and pitch ranges with no lower bounds, but the written description may not enable them. *See* RIB at 68 and n.11; *see also* SIB at 82.

So claim 1 must be construed to establish those lower bounds. As noted with respect to infringement, there is no genuine dispute that the two lines of Accused Products possess gate widths and pitches of 28 nanometers and 70 nanometers (for the Intel 14nm Products) and 22 nanometers and 54 nanometers (for the Intel 10nm Products). *See* CX-1144C at Q/A 275-280. Nor is there a genuine dispute that the Samsung Exynos products possess a gate width of no more than about 36 nanometers, and a gate pitch of about 78 nanometers. *See id*. at Q/A 3133-35. The parties' only contentions on constructions of the claimed ranges are therefore in connection with invalidity.

Unfortunately, those contentions are not entirely clear. Respondents state that "there is a (yet unknown) physical limit to how small gate widths and pitches can ultimately be." RRB at 37 n.5. And they appear to contend, in reliance on the testimony of Tela's expert, Dr. Hook, that

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"single-digit nanometer gate widths" and 40 nanometer gate pitches are within the scope of the claims, although they do not explicitly assert that anything smaller qualifies. RRB at 34, 37. The Staff takes a similar position. SIB at 77. Tela, also citing the testimony of Dr. Hook, contends that the lower bound is "the limit of standard CMOS processing," which it further specifies as gate widths of 10 nanometers and gate pitches of 40 nanometers. CRB at 39 (internal quotation omitted).

The parties therefore appear to agree that the lower bound for gate pitch is 40 nanometers; there does not appear to be any relevant intrinsic evidence, and this dimension is supported by the knowledge of a skilled artisan, as established by Dr. Hook. The parties do not agree on the lower bound for gate width, although they are not far apart, and Tela and Respondents seemingly agree that Dr. Hook's testimony is authoritative regarding the knowledge of a POSITA. Dr. Hook testified that a "7 nanometer node" is within the scope of the claimed range of gate width, although he admitted it is "beyond today's manufacturing" abilities. Hr'g Tr. at 1120:20-1122:9. So the claimed ranges are construed as a gate width from about 45 nanometers to 7 nanometers and a gate pitch from about 193 nanometers to 40 nanometers.

Much of the briefing on enablement presupposes a priority date of 2006 rather than 2015. Nonetheless, Respondents argue in the alternative that the full scope of the claims cannot be practiced "even today without undue experimentation." RIB at 68. That argument is meritorious, as consideration of the factors enumerated in *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988), shows:

*The quantity of experimentation necessary and the relative skill of those in the art*. These factors are related. Dr. Hook does not dispute that it takes the full-time effort of at least 1,000 engineers, 95% of whom have doctorates, and "billions" of dollars in research and development

expenses, to reduce the scale of integrated circuit chips by a single process node. Hr'g Tr. at 1105:12-1106:13. This would indeed seem to be "the very definition of 'undue experimentation.'" RRB at 39. Although such labors are "commonplace" and "business as usual" for the semiconductor industry, as Dr. Hook testified, they are surely far from "routine" within the meaning of *Wands*. *See* CIB at 78. And although the level of ordinary skill in the art is neither especially high nor especially low, the level of skill needed to achieve a reduction in scale, as opposed to simply practicing the invention, is clearly well beyond the capabilities of a POSITA.

*The amount of direction or guidance presented*. Even considering the new matter added in 2015, Dr. Hook is correct that the 334 patent is "silent on the process" of resolving the various technical hurdles to scaling down chip size. Hr'g Tr. at 1111:20-25. Tela's position, that the disclosure of a standard CMOS process is adequate, is unpersuasive. CRB at 40-41. Describing CMOS as a "standard" and "well-known" process provides no guidance whatsoever to a skilled artisan about how to shrink chip size. The specification essentially just presupposes that any technical hurdles in reducing gate width and pitch will eventually be overcome; that is, it leaves entirely to someone else the task of solving the problems preventing a skilled artisan from practicing the full scope of the invention.

*The presence or absence of working examples and the state of the prior art*. As noted in analyzing the written description requirement, all the working examples in the specification pertain to sizes larger than or equal to the claimed range. *E.g.*, 334 patent at 9:4-16. Even the new matter added in 2015 provides only a single working example possessing the upper bounds of the claimed ranges. *See id*. at 6:38-46. And the state of the prior art was such that no working examples of the smallest width and pitch would have existed as of 2015; again, Dr. Hook admitted at the hearing that the lower bound of the claimed gate width is "beyond today's manufacturing"

abilities. Hr'g Tr. at 1121:18-1122:9. So Dr. Subramanian's testimony that in 2016, after the priority date, the lowest width and pitch combination commercially available was 22 and 70 nanometers, more than one process node greater than the lower bound of the claimed ranges, stands unrebutted. *See* RX-0007C at Q/A 157.

*The nature of the invention*. As noted, during prosecution the Examiner specifically suggested removing the 45 and 193 nanometer limitations from the claims, but the applicants declined to do so, and instead traversed their own notice of allowability. *See* RX-0019 at *7630-7659. This indicates that the applicants considered the feature ranges to be sufficiently important to the invention that they needed to remain in that application, and in the descendant applications, including the one that issued as the 334 patent. On the other hand, it is not clear why the applicants believed this; Respondents suggest that it was because the applicants wished to avoid prior art, but point to no evidence explicitly supporting such an inference. *See* RIB at 64. Moreover, the "heart of the invention" appears to be the combination of various chip layers possessing rectilinear features, and not the actual sizes of those features. *E.g.*, 334 patent at 4:30-33 ("a solution is needed for managing lithographic gap issues as technology continues to progress toward smaller semiconductor device feature sizes"), 10:6-7 (the problem "stem[s] from variability introduced by design-dependent unconstrained feature topologies"); *Certain Multi-Stage Fuel Vapor Canisters and Activated Carbon Components Thereof*, Inv. No. 337-TA-1140, Final Initial Determination at 168 (Jan. 28, 2020) (not reviewed in relevant part). So on balance, this factor weighs slightly against a finding of undue experimentation.

*The predictability or unpredictability of the art*. This factor also weighs against a finding of undue experimentation. Dr. Hook explained it succinctly: "you can do a pretty good job of predicting that a bunch of engineers will arrive at a solution if you give them enough time and

enough money." Hr'g Tr. at 1125:18-1126:11. In fact, semiconductor design and fabrication is so predictable an art that it has historically followed "Moore's Law"—integrated circuits have halved in area on average once every two years. *See* 334 patent at 3:59-61; CX-1231C at Q/A 1699.

*The breadth of the claims*. As of 2015 integrated circuits with gate widths and pitches well below 45 and 193 nanometers, respectively, had been fabricated. *E.g.*, JX-0302 at *47 (describing a chip made in 2011 with 22 nm gate width and 80-100 nm gate pitch). But the claims are not limited to what could be made and used in 2015; they include ranges with lower bounds beyond what can be made and used even today. Hr'g Tr. at 1121:18-1122:9. Had the claimed ranges been drafted with the knowledge of a skilled artisan in mind, the breadth of the ranges would likely have been uncontroversial. But that is not the situation presented here, and the breadth of the claims weighs against finding enablement.

In sum, the *Wands* factors are mixed. That the relevant art is predictable weighs against a finding of undue experimentation, but, importantly, that predictability is achieved by tremendous research and development efforts. And the nature of the invention also weighs against undue experimentation, albeit only slightly. Otherwise, the *Wands* factors weigh in favor of finding that undue experimentation would be needed to practice the full scope of the claims, down to the lower bounds of the claimed ranges of gate width and pitch. Particularly significant is Dr. Hook's admission at the hearing that the lower bounds are both within the scope of the claims and not manufacturable. *See* Hr'g Tr. at 1121:18-1122:9. So the "breadth of enablement in the patent specification[] is not commensurate in scope with the claims." *Enzo-Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1377 (Fed. Cir. 1999).

Therefore, claims 1, 2, 5, and 15 of the 334 patent are invalid for lack of enablement.

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### 3. Intel 14nm Products

Respondents contend that the asserted claims of the 334 patent are anticipated, but only by the Intel 14nm Products. RIB at 75-76. As a threshold issue and more specifically, Respondents contend that the "Broadwell" 14nm product is prior art to the 334 patent under 35 U.S.C. § 102(a) and (b), assuming that patent's priority date is May 13, 2015. *Id*. Tela presents no argument on this point beyond its assertion that the 334 patent's priority date is instead 2006. CRB at 42.

Intel publicly demonstrated the operation of the Broadwell chip, an Intel 14nm Product, on September 10, 2013, at an Intel Developer Forum. *See* RX-0174 at *5-6. Based on the transcript (RX-0174) and video (RX-0176) of that forum, Dr. Subramanian opines that the Intel 14nm Products were publicly disclosed no later than the date of the forum, in 2013. *See* RX-0007C at Q/A 941. This qualifies as public use more than one year before the application date under the pre-AIA version of 35 U.S.C. § 102(b). *See Honeywell Int'l, Inc. v. Universal Avionics Systems Corp.*, 488 F.3d 982, 998 (Fed. Cir. 2007) ("A barring public use requires a public use more than one year before the patent filing date that employs a completed invention in public, without confidentiality restrictions, and without permitted experimentation.") (citing 35 U.S.C. § 102(b) (2002)); *see also* 35 U.S.C. § 102(a)(1) (2015) (post-AIA version of Section 102: "the claimed invention was . . . in public use" more than one year "before the effective filing date").

Therefore, the Broadwell 14nm Product is prior art to the 334 patent. As determined above, the Broadwell 14nm Product infringes claims 1, 2, and 5, but not claim 15, of the 334 patent. Thus, under the principle that an infringing product, if earlier, anticipates (*see Upsher-Smith Labs.*, 412 , F.3d at 1322), claims 1, 2, and 5 of the 334 patent are invalid as anticipated, and claim 15 is not.

### 4. Kitabayashi in combination with Intel 45nm Products

Respondents contend it would have been obvious to a POSITA to combine the teachings of a U.S. patent prior art reference, Kitabayashi, with certain 45nm processor products from

respondent Intel, in such a way that meets all limitations of the asserted claims. *See* RIB at 77-112.

Kitabayashi, U.S. Patent No. 7,200,831, issued on April 3, 2007, and is unquestionably prior art. *See* 35 U.S.C. § 102(a) (2015) ("the claimed invention was patented" more than one year "before the effective filing date of the claimed invention"). It is also prior art under the pre-AIA version of 35 U.S.C. § 102(e), as Respondents allege; the 334 patent's invention date is the filing date, May 13, 2015, because of the new matter added at that time, and Kitabayashi was therefore "granted on an application for patent by another filed in the United States before the invention by the applicant for patent." 35 U.S.C. § 102(e) (2002). Tela does not dispute that Kitabayashi is prior art. *See* CIB at 80.

Whether the Intel 45nm Products qualify as prior art is disputed, however. Respondents contend, presumably on the assumption that the 334 patent is entitled to a 2006 priority date, only that the Intel 45nm Products are prior art under the pre-AIA version of 35 U.S.C. § 102(g). RIB at 77-78. Under that provision, a patent is invalid if "before [the patentee]'s invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it." 35 U.S.C. § 102(g)(2) (2002). The Intel 45nm Products were on sale in the U.S. no later than November 12, 2007, under the commercial name "Penryn," so Respondents have made out a prima facie case that they were "made" and "not abandoned, suppressed, or concealed" before the 334 patent's 2015 priority date. *See* RX-0007C at Q/A 224-25 (citing JX-0274 and JX-0276). Tela does not dispute that the Penryn chip was on sale in the U.S. by November 2007. CIB at 81.

Tela instead contends—also presumably on the assumption that the 334 patent has a 2006 priority date—that the Penryn chips were based on a "45nm test chip" that was not commercialized

and remains confidential to this day, and which therefore was abandoned, suppressed, or concealed. CIB at 81-82. So most of Tela's Section 102(g) arguments are irrelevant because they are directed exclusively to the test chip rather than to the Penryn chip. *See generally id*. at 81-88.

But Tela does advance three arguments that seemingly apply separately to the Penryn chip: (1) because the technical details of the Penryn chip have never been adequately publicized, that chip was abandoned, suppressed, or concealed (*see* CIB at 82-83); (2) Intel was not diligent in reducing the Penryn chip to practice (*see* CRB at 45-47); and (3) the Penryn chip was not "made in this country by another inventor" (*see* CIB at 86-87). The first two arguments are foreclosed by *Fox Group, Inc. v. Cree, Inc.*, 700 F.3d 1300 (Fed. Cir. 2012). In that case, the United States Court of Appeals for the Federal Circuit held that "commercialization" of a good embodying a product claim is a "way to prove public disclosure," even when that commercialization by itself is non-enabling, thus negating any claim of abandonment, suppression, or concealment. 700 F.3d at 1306-07. That is precisely what Intel did here, and Tela's arguments that *Fox Group* is inapposite, or that its dissenting opinion should be followed, are unpersuasive. *See* CRB at 51-52; CIB at 144 n.12. The Federal Circuit also held that an accused infringer may demonstrate invalidity under Section 102(g) by proving it "reduced its invention to practice first," without regard to diligence. *Id*. at 1304. That, too, is precisely what Intel did here, so proof of diligence is not required. *See id*.; RX-0007C at Q/A 247 (Dr. Subramanian opining that Intel performed a reduction to practice).

The third argument is foreclosed by *Solvay S.A. v. Honeywell Int'l Inc.*, 742 F.3d 998 (Fed. Cir. 2014). In that case, involving method claims, Russian engineers "first conceived the invention and reduced it to practice in Russia." 742 F.3d at 1002. Honeywell, the accused infringer, then "replicated the Russian process by following the information provided by [the

Russian engineers], thereby practicing the invention in the United States." *Id*. at 1007. The Federal Circuit held that such a later reduction to practice in the United States qualifies as "mak[ing]" the invention "in this country by another inventor," even though the Russian engineers were not the ones who performed the domestic reduction to practice. *Id*. And, again, Intel performed a reduction to practice, and did so domestically. *See* JX-0275 at 5 (the 45nm chip "is being developed by [Intel's] Logic Technology Development group located in Hillsboro, Oregon"); JX-0278 at *2; RX-0007C at Q/A 247. That Intel has never identified the Penryn chip's inventors by name is irrelevant, because there is no evidence, or even argument, that the inventors of the 334 patent made the Penryn chip. *See* CRB at 44 (asserting that the persons who conceived of the test chip are unidentified); CIB at 82.

Therefore, the Intel 45nm Products, and more precisely the Penryn chip, are prior art to the 334 patent.

As to the merits of the obviousness theory, Kitabayashi discloses "semiconductor integrated circuit wiring" having a "multilayer structure." JX-0267 at 1:15-16, 2:37. Each successive wiring layer consists of straight-line wiring that is "orthogonal" or "inclined" relative to the previous layer, so that "the wiring traces constitute a grid," and each successive wiring layer is "connected through vias." *Id*. at 5:2, 5:56-58, Figs. 1-9. The lowest wiring layer is "connected to . . . the transistors (circuit elements)." *Id*. at 5:2-3.

The Intel 45nm Products, including the Penryn chip, are described in various documents summarized by Dr. Subramanian. *See generally* RX-0007C at Q/A 213-336. Dr. Subramanian also provides an element-by-element claim comparison. *See generally id*. at Q/A 370-462. The Intel 45nm Products comprise gate structures on a semiconductor chip, positioned relative to

diffusion regions to form transistor gates. *See id*. at Q/A 379; RDX-0009C at *108. Above that are metal layers that do not use a "gridded layout." *Id.* at Q/A 327; *see* RDX-0009C at *96.

Respondents' basic contention is that "it would have been obvious to combine Kitabayashi's gridded metal structure with Intel's unidirectional gate structures . . . [and] to set the lowest-lying metal layer of Kitabayashi to run orthogonal to the gate direction." RRB at 57. But Claim 1 also requires "at least five" substantially rectangular first-metal structures positioned on "at least eight first-metal gridlines," with "adjacent" first-metal structures spaced "less than or equal to 193 nanometers" apart. 334 patent at 30:42-50, 31:3-5. Kitabayashi teaches no particular spacing, and the Intel 45nm Products have neither first-metal gridlines nor consistent spacing, because they are not substantially rectangular. *See* RX-0007C at Q/A 420-23, 433-34. Dr. Subramanian's testimony that the Intel 45nm Products have "metal interconnect layers" with a fixed pitch, that a skilled artisan would know to set at 160 nanometers, makes no sense; the conducting structures in those layers are two-dimensional, and therefore either have no pitch at all or two pitches which appear to be different. *Id*. at Q/A 434; RDX-0009C at *129. And although a 1992 textbook by Maziasz and Hayes, also referenced by Dr. Subramanian, discloses six rectangular first-metal structures, it does not disclose eight gridlines. *See* RX-0028 at 15, Fig. 1.10; RX-0007C at Q/A 324-325. Therefore, even though a combination of the gate arrangement of the Intel 45nm Products and the gridded metal layers of Kitabayashi comes close to an embodiment of claim 1 of the 334 patent, Tela is correct that there is an element missing from that combination, and from the various additional references on which Respondents rely. *See* CRB at 59-60.

Additionally, Tela argues that the combination of seven gate gridlines and eight first-metal gridlines, perpendicular to each other, is not found in the prior art. *See* CIB at 90; CRB at 57.

[redacted]

This requirement is found in the references to "y-direction" and "x-direction" in the claim limitations "each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline" and "each first-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline." 334 patent at cl. 1.

Kitabayashi may provide an express motivation to combine the "semiconductor integrated circuit wiring" structures it discloses with "transistors," *i.e.*, the combination of structures forming the transistors in the Intel 45nm Products. JX-0267 at 5:2-3; CIB at 90 (citing RX-0007C at Q/A 335, 338); RIB at 86-87. But Kitabayashi is silent as to what the transistors look like, how they are oriented, and how many there must be. *See generally* JX-0267. Dr. Subramanian does not persuasively provide these elements, either. He identifies a region in the Intel 45nm Products, not asserted for purposes of invalidity, which happens to have metal structures more closely resembling rectangles and extending perpendicular to the gate structures. RX-0007C at Q/A 322; RDX-0009C at *96. But in the region of the Intel 45nm Products which is asserted for purposes of invalidity, the first-metal structures largely extend perpendicular to the gate structures and do not resemble rectangles at all. *See* RDX-0009C at *125, 129, 131, 132, 135, 139; RX-0007C at Q/A 415-446. This is shown below with gate structures in dark green, running vertically, and first-metal structures in light blue, also running largely vertically:

[redacted]

RDX-0009C at *125;

*id.* at *135.

Dr. Subramanian's testimony that it was known in 2006 that "metal 1" structures "could" run perpendicular to gate structures is not evidence of motivation either. RX-0007C at Q/A 323-

[redacted]

325; *see PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-4 (Fed. Cir. 2017) ("[T]hat reasoning seems to say no more than that a skilled artisan, once presented with the two references, would have understood that they *could be* combined. And that is not enough: it does not imply a motivation to pick out those two references and combine them to arrive at the claimed invention."). Indeed, his critical testimony on this point is mostly legalese: "[i]n my opinion, based on the disclosures in both Intel's 45nm products themselves as well as in well-known textbooks, that running metal 1 perpendicular to the gate direction (or OGD) was a known design choice at the time of the alleged invention, and at a minimum, would have been one of a few known solutions that would yield predictable results and would not require undue experimentation." *Id.* at Q/A 325. This opinion is too conclusory to place much weight on it.

Dr. Auth testified that Intel "considered" linear first-metal structures orthogonal to the gate structures for the Intel 45nm Products because, among other things, "it made sense to route it OGD so that metal 1 structures could make contact with the gates as well as the sources and drains without having to rely on a local interconnect." RX-0001C at Q/A 82. But this testimony is also entitled to little weight, for two reasons. First, it describes what Intel apparently "knew," and not what a person of ordinary skill would have appreciated at the time. Second, it is provided in a somewhat contradictory context. Dr. Auth's immediate next statement is "[f]or these reasons, at the 45nm process node size, we made the decision to require poly to be unidirectional, as I explained previously." *Id.* But both the metal layer and the "poly" gate layer must be unidirectional, as well as orthogonal to each other, and as shown in Dr. Subramanian's evidence (*see, e.g.*, RDX-0009C at *125, 129, 131, 132, 135, 139), unidirectional metal 1 structures were definitely not chosen for the Intel 45nm Products. Thus, whatever would have "made sense" (*i.e.*,

would have been obvious) with unidirectional first-metal structures, Intel went in a different direction.

So Respondents have not clearly and convincingly shown why, even once Kitabayashi and the Intel 45nm Products are combined, a person of ordinary skill would place the lowest, first-metal, layer of Kitabayashi perpendicular or orthogonal to the gate structures in the Intel 45nm Products. In other words, Respondents have not shown "all the elements of [claim 1] are found in a combination of prior art references." *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003). And, necessarily, they also have not shown "an apparent reason to combine" existing elements with a nonexistent element. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). That is, the combination of Kitabayashi and the Intel 45nm Products, in view of "(1) the scope and content of the prior art, (2) the level of ordinary skill in the art, [and] (3) the differences between the claimed invention and the prior art," does not make out a prima facie case of obviousness of claim 1. *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1379 (Fed. Cir. 2008).

**5. Becker, and Becker in combination with Greenway**

Respondents allege that Becker, U.S. Pub. No. US 2007/0210391, which was published on September 13, 2007, renders the claims of the 334 patent obvious under a single-reference theory. *See* RIB at 112-113. Respondents are correct that Becker is prior art under the pre-AIA version of 35 U.S.C. § 102(b), because it is a printed publication predating the 334 patent's priority date of May 13, 2015. *See id*. As with the Intel 14nm Products, Tela advances no argument that Becker is not prior art, beyond its erroneous contention that the 334 patent is entitled to a 2006 priority date. *See* CIB at 92-93; CRB at 62-63.

Respondents also offer an obviousness theory based in a combination of Becker and a printed publication referred to as Greenway, entitled "32nm 1-D Regular Pitch SRAM Bitcell

[redacted]

Design for Interference-Assisted Lithography." RX-0007C at Q/A 94. Greenway predates the 334 patent's priority date of May 13, 2015, and therefore qualifies as prior art under the pre-AIA version of 35 U.S.C. § 102(b). JX-0286. Tela does not expressly dispute this, although Greenway was published after 2006. *See* CIB at 93; CRB at 62-63.

As to the merits of the obviousness theory, Becker contains a disclosure similar to that of the 731 application and the 334 patent, but, notably, without the additional paragraph constituting new matter. *Compare* RX-0027 at *22 *with* 334 patent at 5:49-7:24. Respondents concede that "Becker does not expressly disclose gate widths . . . and gate pitches and other spacing" having the ranges recited in claim 1. RIB at 112-13. Therefore, Becker by itself does not make out a prima facie case of obviousness. Nor does the fact that by 2015 "feature sizes and spacings that fall within" the claimed ranges would have been known to a skilled artisan change this conclusion, because the full extent of the claimed ranges were not known to a skilled artisan at that time, and are still not manufacturable today. *Id*.

As for the combination of Becker and Greenway, Tela's (erroneous) response is that Becker is not prior art. *See* CIB at 93; CRB at 62-63. Greenway does disclose certain elements of claim 1 that are not disclosed in Becker, as Dr. Subramanian explains. *See* RX-0007C at Q/A 939. However, as with the combination of Kitabayashi and the Intel 45nm Products, there is an element missing from the combination of Becker and Greenway.

Claim 1 requires a layer of "at least seven gate gridlines," each containing at least one "substantially rectangular" gate structure, that is, a gate layer of at least seven substantially rectangular structures, each of which "compris[e] a transistor gate." 334 patent 30:5-14; Order No. 34 at 55. This element is not found in either Becker or Greenway; Becker discloses at most six gate structures, and Greenway apparently discloses only four. *See* JX-0267 at 5:2-3; RX-0027

[redacted]

at Fig. 5. By contrast, the new matter added to the 731 Application describes "at least ten conductive structures," where "[s]ome of the at least ten conductive structures form at least one transistor gate electrode." 334 patent at 5:53-56. Dr. Subramanian implicitly concedes that seven gate structures are absent from Becker and Greenway when he opines that "[a]dding more gridlines and gate structures . . . would be mere duplication." RX-0007C at Q/A 845.

Admittedly, this element is found in a prior art reference, namely, one of the designs for the Penryn chip. *See* RX-0007C at Q/A 375 (citing RDX-0009C at *107C (showing at least eleven gridlines on which gate structures are disposed)). But Respondents do not cite this reference in combination with Becker and Greenway, and a skilled artisan's knowledge that "mere duplication" might work is not a substitute for actually identifying a prior art element. So, again, Respondents have not shown "all the elements of [claim 1] are found in a combination of prior art references," and the combination of Becker and Greenway, in view of "(1) the scope and content of the prior art, (2) the level of ordinary skill in the art, [and] (3) the differences between the claimed invention and the prior art," does not make out a prima facie case of obviousness of claim 1. *Velander*, 348 F.3d at 1363; *Scanner Techs.*, 528 F.3d at 1379.

**6. Secondary Considerations**

The secondary considerations of non-obviousness are equivocal at best. Tela offers essentially no evidence of skepticism by others and commercial success. *See* CIB at 95-97. At most it points to joint research and development projects with three entities that did not result in a commercial product. *See id.*; CX-1231C at Q/A 1820-1851. As for failure by others, Tela cites one instance of such failure, in which a company "attempted to make lithographic friendly designs" in a manner different from the 334 patent's claims, but could not reduce the chip area enough. *See* CX-1231C at Q/A 1818-1819. Any long-felt but unmet need seemingly was satisfied by the Intel

[redacted]

45nm Products, which used two-dimensional first metal structures. *See* RX-0007C at Q/A 422-423; RDX-0009C at *125.

There is evidence of copying by Intel, but it is limited to linear first-metal structures oriented perpendicular to the gates. *See* CX-1231C at Q/A 1855-1861. There is also evidence that licensing resulted in substantial revenues for Tela. *See* CX-1231C at Q/A 1852-1854. Nonetheless, it is not clear to what extent the licensing was connected to the claims of the 334 patent, as opposed to other licensed patents, or simply to resolve litigation. *See* RIB at 119-120. So on balance, the secondary considerations of non-obviousness do not change the ultimate conclusion: Respondents have not carried their burden of proving that claim 1 is invalid as obvious, and, by extension, claims 2, 5, and 15, which depend therefrom. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (citing *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992)) ("But if claim 1 is not obvious then claims 6-8 also cannot be obvious because they all depend from a nonobvious claim.").

**7. Covenant Not to Sue**

In addition to theories of invalidity, Respondents contend there can be no infringement of the 334 patent in light of a [redacted] covenant not to sue (hereafter, "CNTS") between Tela and respondent Intel. RIB at 120-121. Respondents argue "Tela agreed [redacted] *Id.* (citing RX-0003C at Q/A 43; RX-0054C at *1-2. Because the 334 patent has a priority date of May 13, 2015, Respondents argue it is covered by the CNTS. *Id.* at 121. Respondents further argue the CNTS does not allow for a patent to simply claim priority on its face to a certain date, "but rather that it [must] 'claim priority' in general" according to the strictures of 35 U.S.C. §§ 112, 120. *See* RRB at 63-64 (citing RX-0054C at *1).

[redacted]

Tela and the Staff correctly point out the fatal flaw in this argument. The CNTS states Tela

[redacted] RX-0054C at *1-2; *see* SIB at 94; CRB at 63. As a matter of contract interpretation, this "claim priority" language is not ambiguous—it refers to claims of priority reflected in an issued patent or application for patent instrument (*see* RX-0054C at *1 (defining "Company Patent Right"), 2 (defining "Patent Rights")), and not any sort of established priority. *See, e.g.*, *Nat. Alts. Int'l, Inc. v. Iancu*, 904 F.3d 1375, 1380 (Fed. Cir. 2018) (citing *In re NTP, Inc.*, 654 F.3d 1268, 1276 (Fed. Cir. 2011)) ("NAI's 'vesting' argument conflates properly claiming priority and demonstrating entitlement to priority. Patent claims 'are not entitled to an earlier priority date merely because the patentee claims priority.'"). To be sure, 35 U.S.C. § 120 "requires that the invention 'be disclosed in the manner provided by the first paragraph of section 112 . . . .'" (RRB at 64), but the CNTS concerns "claim[s]" of priority, not proof of priority (RX-0054C at *1-2). And to merely claim priority, an application need only "contain[] or [be] amended to contain a specific reference to the earlier filed application." 35 U.S.C. § 120. There is no dispute that the 334 Patent contains such a reference.

As Respondents' defense depends on an incorrect interpretation of the CNTS, it is not persuasive and the defense fails.

## V. U.S. PATENT NO. 10,186,523

### A. Level of Ordinary Skill in the Art

As with the 334 patent, a person having ordinary skill in the art of the 523 patent at the time of invention "would have: (1) a bachelor's degree in electrical engineering or computer engineering with at least three years of experience in the field of semiconductor layout technology

and integrated circuit design; (2) a master's degree in electrical engineering or computer engineering with at least two years of experience in the same field; (3) a bachelor's degree in physics or materials science with at least five years of experience in the same field; or (4) a comparable combination of education and experience." Order No. 34 at 8. The parties do not challenge this determination (*see* RIB at 15; SIB at 24; *see generally* CIB; CRB; RRB; SRB), and it is applied throughout this initial determination.

**B. Claims-at-Issue**

Claims 1-11, 14-20, and 25-28 of the 523 patent are at issue in this investigation, either through allegations of infringement or of the domestic industry technical prong. *See* CIB at 102, 135.[8] These claims are reproduced below along with additional claim limitation identifiers:

> 1. [1a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip, the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,
>
> [1b] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein all gate gridlines extend in a y-direction, wherein adjacent gate gridlines are separated from each other by a gate pitch, each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated gate gridline,
>
> [1c] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,
>
> [1d] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one

[8] Again, Tela does not identify claim 25 as infringed, but it is implicated by asserted dependent claim 26.

transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[1e] at least six gate contact structures formed within the region of the semiconductor chip, the at least six gate contact structures formed in part utilizing corresponding at least six gate contact structure layout shapes as an input to a lithography process, wherein at least six gate electrode features within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six gate contact structures,

[1f] each of the at least six gate contact structure layout shapes having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in an x-direction, each of the at least six gate contact structure layout shapes positioned and sized to overlap both edges of the gate electrode feature layout shape corresponding to the gate electrode feature to which it is in physical and electrical contact; and

[1g] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,

[1h] wherein the first-metal layer includes first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process,

[1i] wherein the first-metal structure layout shapes are positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, wherein all first-metal gridlines extend in the x-direction, wherein at least eight of the at least eight first-metal gridlines have at least one first-metal structure layout shape positioned thereon, each first-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner on an associated first-metal gridline,

[1j] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein electrical connections within the logic circuit collectively include at least five first-metal structures corresponding to at least five first-metal structure layout shapes respectively positioned on at least five different first-metal gridlines,

[1k] wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding diffusion region, wherein some diffusion

regions within the region of the semiconductor chip are physically and electrically contacted by at least one diffusion contact structure,

[1l] the at least one diffusion contact structure formed in part utilizing corresponding at least one diffusion contact structure layout shape as an input to a lithography process,

[1m] each diffusion contact structure layout shape within the region positioned in a substantially centered manner along an associated diffusion contact gridline of a diffusion contact grid, the diffusion contact grid having a diffusion contact gridline-to-diffusion contact gridline spacing measured in the x-direction equal to the gate pitch.

2. [2a] The semiconductor chip as recited in claim 1, further comprising: a second-metal layer formed above the first-metal layer within the region of the semiconductor chip, the second-metal layer positioned second in the stack of metal layers counting upward from top surfaces of the gate electrode features, the second-metal layer separated from the first-metal layer by at least one insulator material,

[2b] the second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to a lithography process, the second-metal layer layout shapes positioned in accordance with a second-metal horizontal grid, the second-metal horizontal grid including at least eight second-metal gridlines,

[2c] wherein all second-metal gridlines extend in the y-direction, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, each second-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline,

[2d] wherein some second-metal structures within the region are electrically connected to at least one first-metal structure within the region through at least one first-metal-to-second-metal via structure, each first-metal-to-second-metal via structure within the region formed in part based on corresponding first-metal-to-second-metal via structure layout shape used as an input to a lithography process, each first-metal-to-second-metal via structure layout shape within the region positioned in a substantially centered manner along an associated second-metal gridline.

3. The semiconductor chip as recited in claim 2, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is either a first width or a second width, the second width different than the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the

first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal layout shape that has the second width.

4. The semiconductor chip as recited in claim 3, wherein at least one gate electrode feature within the region that forms at least one gate electrode of at least one transistor of the first transistor type and does not form a gate electrode of a transistor of the second transistor type is electrically connected to at least one gate electrode feature within the region that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type through an electrical connection that includes at least one first-metal structure and at least one second-metal structure.

5. The semiconductor chip as recited in claim 2, wherein the at least six gate contact structure layout shapes are positioned in accordance with a contact vertical grid, the contact vertical grid including contact gridlines extending in the x-direction, each of the at least six gate contact structure layout shapes positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six gate contact structure layout shapes positioned to also extend lengthwise in the x-direction in a substantially centered manner along a corresponding first-metal gridline.

6. [6a] The semiconductor chip as recited in claim 2, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is one of a plurality of widths, the plurality of widths including a first width and a second width, the first width smaller than the second width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the second width,

[6b] wherein each first-metal-to-second-metal via structure that contacts a first-metal structure formed in part by a first-metal structure layout shape having the first width is formed at least in part by a first-metal-to-second-metal via structure layout shape that is intersected by a corresponding first-metal gridline.

7. The semiconductor chip as recited in claim 6, wherein each first-metal-to-second-metal via structure layout shape is intersected by a corresponding first-metal gridline.

8. The semiconductor chip as recited in claim 2, wherein adjacent second-metal gridlines are separated from each other by a second-metal pitch, the second-metal pitch equal to the gate pitch, the second-metal horizontal grid aligned with the diffusion contact grid.

9. The semiconductor chip as recited in claim 8, wherein all second-metal structure layout shapes in the region of the semiconductor chip have a same width as measured in the x-direction.

10. [10a] The semiconductor chip as recited in claim 9, further comprising: a third-metal layer formed above the second-metal layer within the region of the semiconductor chip, the third-metal layer positioned third in the stack of metal layers counting upward from top surfaces of the gate electrode features, the third-metal layer separated from the second-metal layer by at least one insulator material,

[10b] the third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to a lithography process, the third-metal layer layout shapes positioned in accordance with a third-metal vertical grid, the third-metal vertical grid including at least eight third-metal gridlines,

[10c] wherein all third-metal gridlines extend in the x-direction, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, each third-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline,

[10d] wherein some third-metal structures within the region are electrically connected to at least one second-metal structure within the region through at least one second-metal-to-third-metal via structure, each second-metal-to-third-metal via structure within the region formed in part based on corresponding second-metal-to-third-metal via structure layout shape used as an input to a lithography process, wherein at least one second-metal-to-third-metal via structure layout shape within the region is positioned in a substantially centered manner along an associated third-metal gridline.

11. The semiconductor chip as recited in claim 10, wherein each second-metal-to-third-metal via structure layout shape is intersected by a corresponding second-metal gridline.

. . . .

14. The semiconductor chip as recited in claim 1, wherein at least one of the at least six gate contact structures is in physical and electrical contact with, and is substantially centered in the x-direction on, a gate electrode feature within the region that forms at least one gate electrode of at least one transistor of the first transistor type and that does not form a gate electrode of a transistor of the second transistor type.

15. The semiconductor chip as recited in claim 1, wherein each of the at least six gate contact structure layout shapes is intersected by a corresponding gate gridline.

16. The semiconductor chip as recited in claim 1, wherein the first-metal layer includes at least eight first-metal structure layout shapes positioned on four first-metal layer gridlines such that a different two of the at least eight first-metal structure layout shapes is positioned on each of the four first-metal layer gridlines, wherein each of the at least eight first-metal structure layout shapes is positioned next to and spaced apart from at least one other first-metal structure layout shape at a first-metal pitch.

17. The semiconductor chip as recited in claim 1, wherein the at least eight of the at least eight first-metal gridlines that have at least one first-metal structure layout shape positioned thereon are spaced at a first-metal pitch.

18. [18a] The semiconductor chip as recited in claim 1, further comprising: a second-metal layer formed above the first-metal layer within the region of the semiconductor chip, the second-metal layer positioned second in the stack of metal layers counting upward from top surfaces of the gate electrode features, the second-metal layer separated from the first-metal layer by at least one insulator material, the second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to a lithography process, the second-metal structure layout shapes positioned in accordance with a second-metal horizontal grid, the second-metal horizontal grid including at least eight second-metal gridlines, wherein all second-metal gridlines extend in the y-direction, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, each second-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline; and

[18b] a third-metal layer formed above the second-metal layer within the region of the semiconductor chip, the third-metal layer positioned third in the stack of metal layers counting upward from top surfaces of the gate electrode features, the third-metal layer separated from the second-metal layer by at least one insulator material, the third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to a lithography process, the third-metal structure layout shapes positioned in accordance with a third-metal vertical grid, the third-metal vertical grid including at least eight third-metal gridlines, wherein all third-metal gridlines extend in the x-direction, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, each third-metal structure layout shape in the region having a substantially rectangular shape

and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline.

19. [19a] The semiconductor chip as recited in claim 18, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is one of a plurality of widths, the plurality of widths including a first width and a second width, the first width smaller than the second width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the second width,

[19b] wherein each first-metal-to-second-metal via structure that contacts a first-metal structure formed in part by a first-metal structure layout shape having the first width is formed at least in part by a first-metal-to-second-metal via structure layout shape that is intersected by a corresponding first-metal gridline.

20. The semiconductor chip as recited in claim 18, wherein some third-metal structures within the region are electrically connected to at least one second-metal structure within the region through at least one second-metal-to-third-metal via structure, each second-metal-to-third-metal via structure formed at least in part by a second-metal-to-third-metal via structure layout shape that is intersected by a corresponding second-metal gridline.

. . . .

25. The semiconductor chip as recited in claim 1, wherein the at least four transistors of the first transistor type are collectively separated from the at least four transistors of the second transistor type by an inner region that does not include another transistor.

26. The semiconductor chip as recited in claim 25, wherein at least one of the at least six gate contact structure layout shapes is positioned over the inner region and forms a gate contact structure that is in physical and electrical contact with, and is substantially centered in the x-direction on, a gate electrode feature within the region that forms at least one gate electrode of at least one transistor.

27. [27a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip,

[27b] the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,

[27c] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch,

[27d] each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,

[27e] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,

[27f] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type,

[27g] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[27h] a number of gate contact structures formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each gate electrode feature that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape,

[27i] wherein each gate contact structure that contacts a given gate electrode feature that forms any transistor gate electrode does not contact another gate electrode feature, wherein any gate contact structure layout shape that has a corresponding length greater than or equal to a corresponding width is oriented to have its corresponding length extend in an x-direction; and

[27j] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,

[27k] the first-metal layer including first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process,

[27l] wherein each transistor within the region is formed in part by a corresponding diffusion region, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any

transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape,

[27m] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least two first-metal structures form portions of one or more electrical connections within the multiplexer or the latch.

28. [28a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip,

[28b] the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,

[28c] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes a number of gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch,

[28d] each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,

[28e] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,

[28f] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type,

[28g] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[28h] a number of gate contact structures formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each of at least six gate electrode features within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape,

[28i] wherein each gate contact structure is centered in an x-direction on the gate electrode feature with which it physical contacts,

[28j] wherein each gate contact structure layout shape that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in the x-direction, wherein each of the number of gate contact structures is in physical contact with only one of any of the gate electrode features; and

[28k] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,

[28l] the first-metal layer including at least two first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process, the at least two first-metal structures forming portions of one or more electrical connections within the region of the semiconductor chip,

[28m] wherein each transistor within the region is formed in part by a corresponding diffusion region, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape.

*See* 523 patent at cls. 1-11, 14-20, 25-28 (annotated).

### C. Claim Construction

As part of the *Markman* process, the following terms of the 523 patent were construed, either as agreed between the parties or as determined by Order No. 34:

| Claim Term | Construction |
|---|---|
| "a lithography process" | "a process by which a pattern is imprinted on a resist or semiconductor wafer using light as a mask" |
| "gate electrode" | "that portion of a gate electrode feature that forms a transistor gate" |
| "gate electrode feature(s)" / "gate structure(s)" | "a feature comprising a transistor gate" |
| "diffusion region(s)" | "selected portions of the substrate within which impurities have been introduced to form the |

[redacted]

| | |
|---|---|
| | source or drain of a transistor" |
| "[gate horizontal / first-metal vertical grid]; [second-metal horizontal] grid; [contact vertical] grid; [third-metal vertical] grid; [diffusion contact] grid" | "projected gridlines used at least during the layout stage of integrated circuit manufacturing" |
| "[gate / metal / contact] gridline(s)" | "one of the lines making up a grid" |
| "gate pitch" | "center-to-center separation distance between adjacent gate features" |

*See generally* Order No. 34 at 47, 52, 55, 56, 59, 60, 62. As with the 334 patent, "contact structure(s)" and "gate contact structure(s)" were not construed. *Id.* at 61. The parties do not explicitly identify these terms, or any others, as requiring construction. *See* RIB at 15-16; SIB at 23-24; *see generally* CIB; CRB; RRB; SRB. Thus, "contact structure(s)" and "gate contact structure(s)" are addressed below in the infringement and validity determinations to the extent required.

### D. Infringement

According to Tela's post-hearing briefing, the use, manufacture, or sale of the following Accused Products are alleged to infringe the asserted claims of the 523 patent:

| **Claims** | **Accused Products Alleged to Infringe** |
|---|---|
| 1-11, 14-20, 25, 26 | Intel 14nm Products |
| 1-7, 14-20, 25, 26 | Intel 10nm Products |

*See* CIB at 102. For the reasons discussed below, Tela has shown infringement for the Broadwell, Skylake, Kaby Lake, Coffee Lake, and Cascade Lake models of Intel 14nm Products under all of the asserted claims, and the Intel 10nm Products under all of the asserted claims.

[redacted]

### 1. Undisputed Claims

Respondents do not contest Tela's claims of infringement under claims 2-11, 14-20, 25, and 26, apart from their dependency on claim 1, for which infringement is disputed. *See* RIB at 121-44; RRB at 64-79. The Staff similarly has no dispute as to these claims. *See* SIB at 109; SRB at 34-42. In view of the testimony of Dr. Foty that all the relevant Accused Products include the limitations recited in these claims, those identified Accused Products meet the limitations of the dependent claims as alleged. *See* CX-1144C at Q/A 1030-1450, 2135-2385; CIB at 123-135.

### 2. Disputed Claims

Respondents do, however, contest Tela's claims of infringement of independent claim 1. *See* RIB at 121-144. The Staff similarly contests infringement of this claim. *See* SIB at 98-109. For the reasons discussed below, Tela has shown infringement of claim 1 for the Intel 10nm Products and certain of the Intel 14nm Products.

For reference, claim 1 of the 523 patent requires:

> 1. [1a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip, the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,
>
> [1b] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein all gate gridlines extend in a y-direction, wherein adjacent gate gridlines are separated from each other by a gate pitch, each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated gate gridline,
>
> [1c] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,
>
> [1d] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate electrode feature layout shape within the region corresponds to a

gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[1e] at least six gate contact structures formed within the region of the semiconductor chip, the at least six gate contact structures formed in part utilizing corresponding at least six gate contact structure layout shapes as an input to a lithography process, wherein at least six gate electrode features within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six gate contact structures,

[1f] each of the at least six gate contact structure layout shapes having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in an x-direction, each of the at least six gate contact structure layout shapes positioned and sized to overlap both edges of the gate electrode feature layout shape corresponding to the gate electrode feature to which it is in physical and electrical contact; and

[1g] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,

[1h] wherein the first-metal layer includes first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process,

[1i] wherein the first-metal structure layout shapes are positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, wherein all first-metal gridlines extend in the x-direction, wherein at least eight of the at least eight first-metal gridlines have at least one first-metal structure layout shape positioned thereon, each first-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner on an associated first-metal gridline,

[1j] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein electrical connections within the logic circuit collectively include at least five first-metal structures corresponding to at least five first-metal structure layout shapes respectively positioned on at least five different first-metal gridlines,

[redacted]

> [1k] wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding diffusion region, wherein some diffusion regions within the region of the semiconductor chip are physically and electrically contacted by at least one diffusion contact structure,
>
> [1l] the at least one diffusion contact structure formed in part utilizing corresponding at least one diffusion contact structure layout shape as an input to a lithography process,
>
> [1m] each diffusion contact structure layout shape within the region positioned in a substantially centered manner along an associated diffusion contact gridline of a diffusion contact grid, the diffusion contact grid having a diffusion contact gridline-to-diffusion contact gridline spacing measured in the x-direction equal to the gate pitch.

523 patent at cl. 1 (annotated). Several disputes exist between the parties concerning whether Tela has sufficiently shown the Accused Products meet various limitations of the claim. These are addressed below. In view of the testimony of Dr. Foty that the Accused Products meet those remaining limitations of claim 1 which are not in dispute, the Accused Products have been shown to meet them as alleged. *See* CX-1144C at Q/A 596-1028, 1876-2133; CIB at 102-123.

**a. Gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process**

First, Respondents and Staff dispute that "the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process" is met in the Intel 14nm Products and the Intel 10nm Products. RIB at 121-132, 143; SIB at 98-105.

For this limitation, Tela, through its expert, identifies certain Intel layout shapes as meeting the "gate electrode feature layout shapes" element. *See* CIB at 102-10 (citing, *inter alia*, CX-1144C at Q/A 683-745), 104 (citing, *inter alia*, CX-1144C at Q/A 1909-1941). One example of these gate electrode layout shapes, for the [redacted] cell of certain Intel 14nm Products, is shown below:

[redacted]

CDX-0008C at *2; *see* CX-1144C at Q/A 616. Tela argues "[these] gate electrode feature layout shapes are an input to a lithography process because they are used to generate the set of masks used to pattern the gate electrode features onto the semiconductor chip." CIB at 103 (citing CX-1144C at Q/A 377-378, 391, 454-456, 675-682). It is these, Tela contends, which are "then used to lithographically pattern features onto a photoresist that is used to define the particular patterns specified by the layout onto the chip through additional processing steps." *Id.* (citing CX-1144C at Q/A 377-378, 391, 454-456, 675-682); *see* CRB at 67. Tela disputes that the shapes contained on the mask need to correlate or be "essentially identical" to the gate structure layout shapes, as this would be an attempt to limit the claims of the 523 patent to just one of its disclosed embodiments. CIB at 107 (citing *Liebel-Flarsheim*, 358 F.3d 898; 523 patent at Fig. 13A; CX-1144C at Q/A 130; Hr'g Tr. at 853:24-855:8); *see id.* at 108 ("The language 'formed *in part based on* corresponding gate electrode feature layout shapes,' merely requires the layout shape to be one part of forming the gate electrode features."). Lastly, Tela claims "[t]here is no dispute that the gate electrode features in the Intel 14nm and 10nm Products correspond to the gate electrode

[redacted]

feature layout shapes specified by the layout" (CIB at 110 (citing CX-1144C at Q/A 391, 427; Hr'g Tr. at 751:19-753:13, 754:4; RX-0007C at Q/A 46)), and notes there is "no dispute that Intel's M0 layout shapes are an input to a lithography process, despite the fact that [redacted] (CRB at 68 (citing CX-1144C at Q/A 330-348)).

In opposition, Respondents argue Tela's identification of layout shapes must fail because "it is undisputed that in the accused process nodes Intel [redacted] RIB at 121-122 (citing Hr'g Tr. at 720:7-11; 980:18-22). Rather, Respondents urge "the dimensions of Intel's gates are defined using [redacted] *Id.* at 122 (citing Hr'g Tr. at 719:15-720:11). Respondents reason:

> [redacted] the identified gate layout shapes are not "used as an input" to a lithography process as claimed, and the Accused Products do not practice this limitation. RX-0014C (Subramanian) at Q/A 295, 325.

*Id.* Respondents emphasize non-infringement based on the idea that the Asserted Patents, including the 523 patent, are intended to solve problems with a process (lithography) that Intel simply no longer uses because of the small size of its process nodes [redacted] *See generally id.* at 122-128 (citations omitted), 130; RRB at 64-65.

More specifically, Respondents argue Tela's identified layout shapes are not those that Intel actually inputs into lithography—those would be the [redacted] shown in the below demonstrative:

[redacted]

RIB at 128 (citing RDX-0016C at *149). Respondents contend the only "input[s]" to lithography are the shapes on the masks used: "the shapes 'used as an input to a lithography process' are those shapes that are actually input into a lithography process, *i.e.*, the shapes on the lithography mask." *See* RIB at 130-131 (citing, *inter alia*, RX-1662C at 55:8-18; RX-0014C at Q/A 343-345; RX-1660C at 40:12-15). Yet, Respondents caution, these patterns cannot meet the claims "because they are not the recited *gate* layout shapes," among other reasons. *See* RIB at 129 (citing RX-0014C at Q/A 314-316, 320-324); RRB at 69.

Importantly, Respondents claim "[t]he [redacted] CIB at 129 (citing Hr'g Tr. at 720:12-20); RRB at 66 (citing Hr'g Tr. at 716:19-718:4). In their reply brief, they similarly claim "Intel's gate layout shapes [redacted] RRB at 65. Respondents argue Intel's

[redacted] *Id.* (citing RX-0008C at Q/A 6, 100-102, 122; Hr'g Tr. at 716:19-718:4).

The Staff agrees with each of Respondents' non-infringement positions. *See generally* SIB at 98-105. The Staff views Tela's theory as "rel[ying] on drawn poly layouts shapes from the *design* phase to meet this limitation. But it is undisputed that Intel's drawn poly layout shapes are not used during lithography in the *fabrication* phase." SIB at 98 (citing Hr'g Tr. at 720:7-11, 980:18-22; RX-0008C at Q/A 110-117) (emphasis in original).

The limitation is met. There is no dispute that the [redacted] *See* RX-0008C at Q/A 6; CIB at 103 (citing CX-1144C at Q/A 377-378, 391, 454-456, 675-682); RRB at 65-66. In describing the three mask shapes reproduced above in RDX-0016C at *149, Dr. Subramanian correctly states that [redacted] (RX-0014C at Q/A 310), but he does not state they [redacted] Intel witness [redacted] Hr'g Tr. at 1014:2-20. Further, Dr. Subramanian himself effectively admitted [redacted] according to where gate structures are positioned in the design layout. *Compare* Hr'g Tr. at 913:2-917:11 *with id.* at 918:20-23. Dr. Auth testified similarly. *See id.* at 751:19-756:6 (discussing RDX-0010C at *22). Thus, there is no real merit to

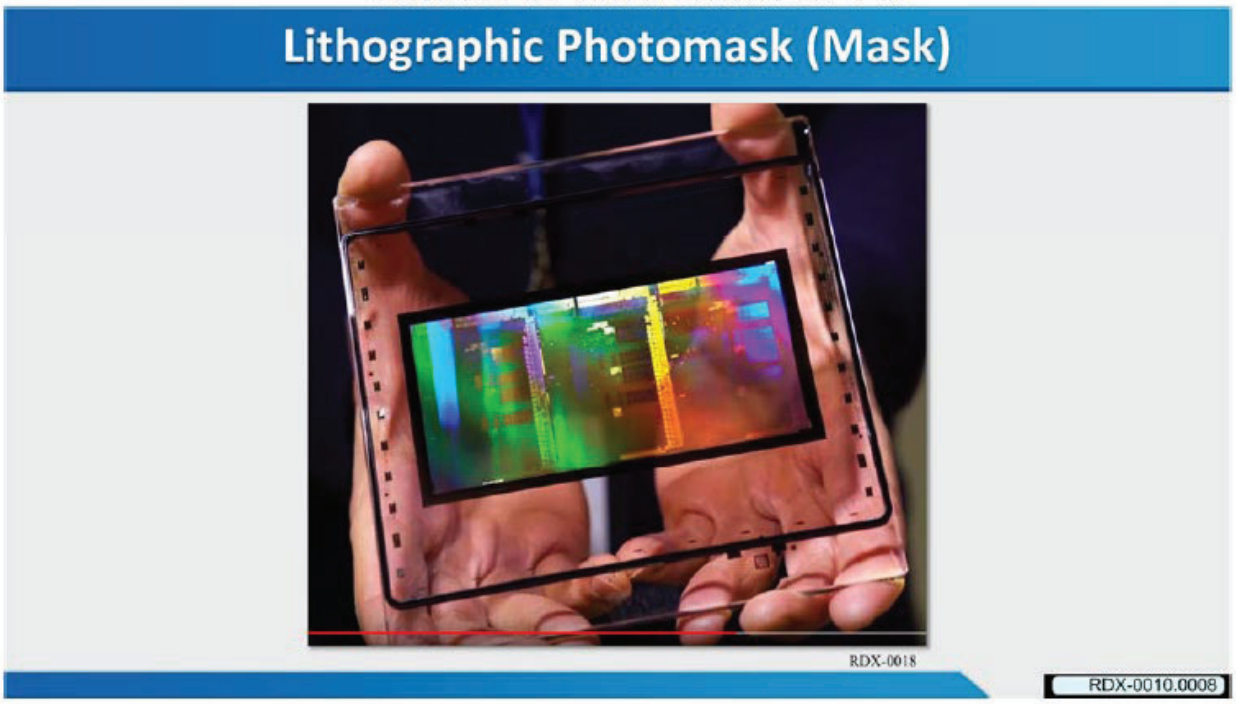
[redacted]

Respondents' characterization that the layout designs are "not *an* input to the mask creation process." RRB at 66 (emphasis added).

To the extent resolution of this dispute requires further construction of the claim language, persons of ordinary skill in the art would surely consider the layout designs as "an input to a lithography process," even though there are other, more direct inputs. More precisely, a plain reading of the claim is that "layout shapes" are "input[s] to a lithography process," even if those shapes are used to configure other mask shapes more directly linked to fabrication—a process Respondents call an "indirect chain of software algorithms." RRB at 66. Moreover, the term "layout shape" explicitly appears in the claim as that which is "used as an input," the claim language expressly recites that the features are "based in part" on those layout shapes, and Tela's identified images have consistently been referred to by all parties as layout shapes. Respondents have cited no intrinsic evidence to show that "an input" should be construed more narrowly, or that the images Tela identifies are not "layout shapes."

As to the Staff's argument that the shapes "from the design phase" cannot meet the limitation because they are not used "in the fabrication phase," those shapes are still inputs to a lithography process. In fact, the Staff's argument could also be applied to the actual mask shapes (*i.e.*, that which are contained in [redacted] files (*see* RX-0008C at Q/A6))—which are indisputably inputs to a lithography process—because they are not themselves used for fabrication, but are instead used to create physical masks which are put into the lithography machine, as explained by Intel witness Dr. Auth and shown below:

> Q. Turning to RDX-0010.0008, what exactly is a mask?
>
> A. A lithographic photomask (or just "mask") is a quartz plate partially covered with a pattern defined by a chrome film. In each lithography module during fabrication, a different mask will be fed into the lithography machine to create the desired pattern for that stage of fabrication. This image is from the video RDX-0018.




Q. How are Intel's masks manufactured?

A. [redacted]

Q. You mentioned these masks are fed into a lithography machine. Turning to RDX-0010.0009, what does a lithography machine look like?

A. This is an image captured from a video RDX-0019. It shows the insides of a lithography machine [redacted] The purple color indicates where light is being shone through a sequence of mirrors, through a mask, and onto a wafer below.

[redacted]

RX-0008C at Q/A 24-26; RDX-0010 at *8, 9. Other witnesses testified that there are other inputs to the lithography process, including Tela witnesses John Malecki (RX-1660C at 40:12-15 ("Q. From Tela's point of view, the input to the lithography process would be the GDS2 files that specify the mask shapes? A. Yes. Yes.")) and Dhrumil Gandhi (*see* RIB at 131 (citing RX-0014C at Q/A 344; RX-1662C at 55:8-12) (GDSII file shapes are OPC-modified before mask creation)), and Dr. Subramanian (RX-0014C at Q/A 611 ("if OPC is applied, the input to the lithography process would be the OPC shapes to meet the claims")).

With this understanding, Respondents' and the Staff's additional arguments regarding [redacted] are irrelevant. The limitation only requires the "gate electrode features" to be "formed in part" by a lithography process which takes into account or "use[s]" gate feature layout shapes (523 patent at cl. 1)—an act which Respondents acknowledge is the first step in the process (*see, e.g.*, RX-0008C at Q/A 103; RX-0014C at Q/A 295; RRB at 65). Thus, the limitation is met in the Accused Products.

[redacted]

**b. Gate electrode feature layout shapes positioned in accordance with a gate horizontal grid**

Second, the Staff, but not Respondents, disputes whether "gate electrode feature layout shapes positioned in accordance with a gate horizontal grid" is met in the Intel 14nm Products and Intel 10nm Products. SIB at 105. Order No. 34 construed "grid" as "projected gridlines used at least during the layout stage of integrated circuit manufacturing." Order No. 34 at 59.

For this limitation, Tela again refers to Intel's alleged "1-D gridded approach" and explains that [redacted] for the Intel 14nm Products "defines the 'gate horizontal grid,' and the gate electrode feature layout shapes are positioned and centered along gate gridlines in the y-direction" (CIB at 102 (citing, inter alia, CX-1144C at Q/A 683-745; CPX-0497C at -762; RX-0008C at Q/A 138; Hr'g Tr. at 801:1-802:7); CRB at 69), and a [redacted] similarly defines the grid in the Intel 10nm Products (CIB at 104-105 (citations omitted); CRB at 69). Tela provides the following two examples from 14nm and 10nm layout files:

[redacted]

CIB at 103 (citing CDX-0008C at *12), 105 (citing CDX-0010C at *6).

[redacted]

The Staff contends that "[b]ecause Intel designers use a [redacted] to place the gate and metal features in accordance with the pitch and spacing requirements as set forth by the design rules, Intel's 14nm and 10nm Accused Products do not practice this limitation, as Dr. Foty admits." SIB at 105 (citing CX-1144C at Q/A 552; Hr'g Tr. at 399:4-400:19).

As determined above with respect to the similar limitation in the 334 patent, this limitation is met in the Accused Products. The layout files cited by Tela and Dr. Foty show [redacted] between the gate electrode feature layout shapes—*i.e.*, their positioning is in a grid. And Intel documentation shows this arrangement, or positioning, was "in accordance" with a planned layout (*i.e.*, not happenstance). That Intel also uses a different, 1nm drawing grid for designers, as the Staff argues, is beside the point. *See* Hr'g Tr. at 399:15-400:9.

**c. First-metal structure layout shapes are positioned in accordance with a first-metal vertical grid**

Third, Respondents and Staff dispute whether "first-metal structure layout shapes are positioned in accordance with a first-metal vertical grid" is met in the Intel 14nm Products and Intel 10nm Products. RIB at 132-141, 143; SIB at 105-106.

For this limitation, Tela again refers to a "1-D gridded approach" within the Accused products and explains, per design rules, that the first-metal structures are [redacted] CIB at 115 (citing, *inter alia*, CX-1144C at Q/A 330-331, 887-916; CPX-0497C at -780), 117 (citing CX-1144C at Q/A 358-362, 2032-2051; CPX-0341C at -5851; CPX-0097C at -151). Additionally, Tela argues the design rules, as discussed above, specify [redacted] *See id.* at 116, 117 (citations omitted).

[redacted]

Respondents argue, as they did with the corresponding limitation of the 334 patent, that the [redacted] *See* RIB at 133-136, 143. Again, Respondents emphasize [redacted] (*id*. at 136 (citing Hr'g Tr. at 728:2-16)) as resulting in [redacted] (*id*. (citing Hr'g Tr. at 726:9-727:12; RX-0008C at Q/A 136-144); RRB at 72-73). According to Respondents, "it is undisputed that Intel's *actual* Metal-0 features [redacted] . . . . Accordingly, based on Dr. Foty's own definition of the function of a 'grid,' Intel does not practice the first metal 'grid' limitation." RIB at 137 (citing Hr'g Tr. at 200:1-6) (emphasis in original). Respondents also argue that Dr. Foty and Tela cannot show the presence of a "grid" on layout file images unless the gridlines are a part of those files. *See id*. at 138 ("Given that unavoidable fact, in order to conjure up an alleged grid, Dr. Foty is forced to draw *his own* dotted lines over the shapes . . . ."), 141 ("Dr. Foty's ex-post drawing of dotted lines along shapes that have already been positioned cannot meet a construction that requires Intel to have projected those gridlines during layout."); RRB at 72 [redacted] . . . . Tela has no answer for this fundamental flaw . . . ."), 76 ("[T]he point remains the same—[redacted]"), 77-79. The Staff agrees with Respondents' positions on the issue. *See* SIB at 105-106 ("[T]here is no defined 'grid' that shapes must be positioned in accordance with—whether by uniform pitch or otherwise."); SRB at 40-41 ("In the Staff's view, because Intel does not define any 'grid' for the Metal-0 shapes to be positioned along, the Accused Products also do not satisfy the claimed requirement that the 'first-metal structure layout shapes are positioned in accordance with a first-metal vertical grid.'").

[redacted]

As with the '334 patent, the limitation is met in the Accused Products. The layout files cited by Tela and Dr. Foty show [redacted] *See* CX-1144C at Q/A 887-900, 2033-2043; CDX-0008C at *62-67; CDX-0010C at *37-39. As to Respondents' argument that "[u]ltimately, Tela effectively interprets the claims to require nothing more than rectangular, parallel shapes—while improperly ignoring the additional grid limitations, which are indisputably not met" (RRB at 73), there is nothing more to a "grid" than an arrangement of rectangular, parallel shapes. Inasmuch as the term "grid" requires construction, that is its plain and ordinary meaning.

Also as with the 334 patent, requiring a uniform pitch between these layout shapes per a construction of "grid" (*see, e.g.*, RIB at 137 ("it is undisputed that Intel's actual Metal-0 layer does not meet the requirement of having uniformly spaced feature locations (*i.e.*, gridlines)"); RRB at 74 ("Intel does not practice the Metal-0 limitation because it is undisputed that the Metal-0 layer's layout shapes are not restricted to regularly spaced gridlines.")) is inappropriate. The first-metal "grid" of claim 1 is not bound by any such restriction as opposed to, for example, claim 8, which requires a second-metal layer grid defined by "*a* second-metal pitch, the second-metal pitch equal to the gate pitch," and claim 17, which requires eight first-metal gridlines "spaced at *a* first-metal pitch." *Id.* at cls. 8, 17 (emphases added). Under principles of claim differentiation, it would thus be improper to read in *a* pitch (*i.e.*, the same pitch), or any defined amount of pitch, into the basic claim term of "grid." *Curtiss-Wright*, 438 F.3d at 1380; *see Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72 (Fed. Cir. 1999) ("different words or phrases used in separate claims" are presumed to indicate "the claims have different meanings and scope"). Accordingly, the limitation is met.

[redacted]

**d. Each gate gridline has at least one gate electrode feature layout shape positioned thereon**

Fourth, Respondents dispute whether "each gate gridline has at least one gate electrode feature layout shape positioned thereon" is met in the Intel 14nm Products and Intel 10nm Products, whereas the Staff only disputes the limitation for the Intel 10nm Products. RIB at 141-144; SIB at 107. For this limitation, Tela incorporates its discussion of the same limitation for the 334 patent. *See* CIB at 110; CRB at 69.

In opposition, Respondents note "gate electrode feature" is construed the same as "gate structure" in the 334 patent—a "feature comprising a transistor gate"—and Tela relies on the same gridlines for the 523 patent as it did for the 334 patent. *See* RIB at 141-142. Respondents thus incorporate their argument as to non-infringement of the 334 patent. *See id.* at 141-144; RRB at 79. The Staff similarly adopts its positions as in the 334 patent—the limitation is met for the Intel 14nm Products but not for the Intel 10nm Products. *See* SIB at 107; SRB at 41. For the Intel 10nm Products, the Staff notes Tela fails to acknowledge that Dr. Foty identified more gridlines than the seven the claim requires, the result of which is a gridline clearly not including a gate electrode feature. *See* SRB at 41 (citing CDX-0010C at *12).

Tela has identified and relies on the same gridlines for each cell as it did under the 334 patent. *See* CX-1144C at Q/A 725-733, 1932-1937; CDX-0008C at *9-21; CDX-0010C at *6-13. Under the same reasoning, given above, the following cells from the Intel l4nm Products have not been shown to meet this limitation: [redacted] Dr. Foty's demonstratives indicate the latter three cells comprise the entirety of cells for the Goldmont, Goldmont Plus, Ice Lake Chipset, and Cannon Lake Chipset products. CDX-0012C at *25-26. Thus, the Accused Products including these models do not infringe. The

[redacted]

remaining Intel 14nm Products use one or both of [redacted] so they meet the limitation. And all of the Intel 10nm Products meet the limitation.

**e. At least six gate contact structures formed within the region of the semiconductor chip . . . wherein at least six gate electrode features within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six gate contact structures**

Fifth, the Staff, but not Respondents, disputes whether "at least six gate contact structures formed within the region of the semiconductor chip . . . wherein at least six gate electrode features within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six gate contact structures" is met in the Intel 10nm Products. SIB at 107. No party disputes the limitation is met in the Intel 14nm Products.

For this limitation, and the Intel 10nm Products in particular, Tela argues the [redacted] gate contact layout shapes are sized and positioned to overlap both edges of the surface of the gate structure to which it is in physical and electrical contact. CIB at 113-114 (citing, *inter alia*, CX-1144C at Q/A 315-319, 1964, 1980-1995; CPX-0341C at -5827-5828; CPX-0030C at -1493; CX-0662 at *7, 9). Tela does not address the limitation in its reply brief. *See generally* CRB at 65-71.

In opposition, the Staff argues that Intel's [redacted]

in the Intel 10nm Products. SIB at 107 (citing RX-0014C at Q/A 160-161, 166); SRB at 41.

Given this argument, it is unclear to me on what grounds the Staff is challenging the limitation. The Staff incorporates its argument from the 334 patent (*see* SIB at 107; SRB at 41), but in that discussion acknowledges direct physical contact between gate features and other M0 contact structures in the Intel 10nm Products, stating "[t]he evidence clearly shows that in TEM images of Intel's 10nm Accused Product, the gate-contacting portion of M0 is the same width as

[redacted]

the gate, and thus not 'sized to overlap both edges of the top surface of the gate structure.'" SIB at 41. To the extent Staff's concern is that Tela attempts to show this limitation with layout files and other illustrations (*see, e.g.*, SIB at 41) which is insufficient for a limitation concerning actual structures rather than imagery of actual structures (*see, e.g.*, SIB at 41), layout files are circumstantial evidence of actual structure, and the Staff does not dispute that there is physical and electrical contact in the actual structures. In any event, direct teardown evidence confirms the required contact. *See* RDX-0010 at *34; RX-0008C at Q/A 162. Thus, the limitation is met.

**f. Diffusion region**

Sixth, Respondents and Staff dispute whether "diffusion region" is met in the Intel 14nm Products and Intel 10nm Products. RIB at 142, 144; SIB at 108.

Tela argues that "[t]he diffusion regions are defined by the portions of the diffusion region layout shape to the sides of the gate (poly) layout shape" and "[t]he source and drain regions of the transistors in the Intel 14nm and 10nm Products are formed within the diffusion region specified in the layout." CIB at 120 (citing CX-1144C at Q/A 127, 267-269, 953, 2081). To be clear, as with the 334 patent, Tela identifies "source and drain regions" in the Accused Products as the claimed "diffusion region[s]":

> Indeed, the Intel documentation describes that [redacted] (Tr. (Auth) at 652:6-12; RPX-1997 at 90237DOC0000307 [redacted] 90237DOC0000319 [redacted] RPX-2021 at 90237DOC0001048, 90237DOC0001060 (same).) As such, *these regions are "diffusion regions" under the ALJ's construction* because they are "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor."

*Id.* at 120-121 (emphasis added).

[redacted]

In opposition, Respondents incorporate their discussion of the same limitation in claim 15 of the 334 patent. RIB at 142, 144; RRB at 79. The Staff incorporates similarly. SIB at 108; SRB at 42.

As determined above in connection with the same limitation in claim 15 of the 334 patent, the Accused Products' [redacted] and therefore not literally "substrate" as required by the construction for "diffusion region." While not explicit on this point, however, Tela's reply brief contends the [redacted] structures qualify as "diffusion region[s]" under the doctrine of equivalents, as in the 334 patent. *See* CRB at 69 (citing CRB at 19-28). As determined above, the evidence supports this assertion. Accordingly, the Accused Products meet this limitation.

**g. Diffusion contact structure**

Seventh, Respondents and Staff dispute whether "diffusion contact structure" is met in the Intel 14nm Products and Intel 10nm Products. RIB at 142, 144; SIB at 108-109. "Contact structure" was not previously construed, nor was "diffusion contact structure." *See* Order No. 34 at 61.

For this limitation, Tela argues "[i]n the Intel 14nm and 10nm Products, the diffusion regions are physically and electrically contacted by a diffusion contact structure [redacted] which "physically contacts the [redacted] source and drain regions to form an electrical connection to other features." CIB at 121 (citing, *inter alia*, CX-1144C at Q/A 267, 297-300, 311-314, 317, 320, 953, 2081; CPX-0097C at -146; CPX-0341C at -5815-5824; CPX-0497C at -771). Tela also points to Intel documentation on the 10nm process which describes [redacted] *Id.* (citing JX-0239 at *3; Hr'g Tr. at 669:2-670:22); CRB at 70. Tela rejects a requirement that this contact structure must be separate from any other, such as gate contacts, citing Order No. 34. *See* CRB at 70 n.16 (citing Order No. 34 at

[redacted]

60-61). Even then, Tela argues, there is at least one diffusion contact structure which is clearly separate from the gate contacts. *See id.* (citing CX-1144C at Q/A 989-1000, 2100-2108).

In opposition, Respondents argue that the Accused Products lack these structures and that those identified by Tela "'do not physically and electrically contact the substrate or any diffusion region therein, nor do they otherwise involve 'diffusion' of any kind.'" RIB at 142 (citing RX-0014C at Q/A 130-133; RX-0008C at Q/A 84-98), 144 (citing RX-0014C at Q/A 130-133; RX-0008C at Q/A 84-98). Respondents allege Tela and Dr. Foty fail to address the requirement "that these be 'diffusion contact' structures (as opposed to other types of contact structures) . . . ." *Id.* at 142; *see id.* at 144. The Staff agrees and adds, specifically, "Intel's gate contacts and diffusion contact functionalities are [redacted] *See* SIB at 108 (citing RX-0014C at Q/A 139-144; *HTC Corp. v. Cellular Commc'ns Equip. LLC*, 701 F. App'x 978, 982 (Fed. Cir. 2017)). This, the Staff argues, is in addition to the fact that these structures do not contact substrate or any diffusion region in the substrate. *See id.* at 108-109 (citing CX-1144C at Q/A 131; RX-0008C at Q/A 84-98).

Respondents' argument depends on the absence of a "diffusion region" already discussed above, as opposed to actually identifying and discussing what structures the accused [redacted] do physically and electrically contact. *See* RX-0014C at Q/A 130-133. And in fact, Respondents' witness, Dr. Auth, testified that the [redacted] sources and drains discussed above. RX-0008C at Q/A 95. This meets the plain and ordinary meaning of "diffusion contact structure" as a structure which contacts what has been alleged as the "diffusion region" under the claim. Inasmuch as construction of this limitation is required, that plain and ordinary meaning is adopted.

[redacted]

As to the Staff's contention that the limitation cannot be met because "Intel's gate contact and diffusion contact functionalities are [redacted] (SIB at 108), Tela correctly points out that the claim requires only "at least one diffusion contact structure" (523 patent at cl. 1) and, assuming a need for separateness, the Staff's cited evidence does not show all accused diffusion contacts also serve as gate contacts (SIB at 108 (citing RX-0014C at Q/A 139-144; RDX-0016C at *64)). The fact that they may otherwise be in the same "layer" is immaterial and does not conflict with the language of the claims.

Accordingly, the limitation is met in the Accused Products.

### E. Domestic Industry – Technical Prong

According to Tela's post-hearing briefing, the construction or use of the DI Products practice claims 27 and 28 of the 523 patent. *See* CIB at 135. For the reasons discussed below, Tela has not shown by a preponderance of the evidence that the DI Products practice the claims.

#### 1. Product Representativeness

As determined above, Tela has not shown the Exynos 7420 is representative of the other DI Products (S5E7570, S5E7870, S5E7880, S5E7883, and S5E8890) such that practice of the claims of the Asserted Patents by the Exynos 7420 suffices for the other products as well. Nevertheless, the following discussion of particular claim limitations assumes all products are represented by the Exynos 7420.

#### 2. Disputed Claims

Respondents contest Tela's alleged practice of claim 27 but do not address claim 28. *See* RIB at 145-148; RRB at 79-81. The Staff takes the same position on claim 27, but contends claim 28 is also not practiced on identical grounds. SIB at 110-112. The evidence shows Tela has not shown direct practice of either claim.

### a. Claim 27

For reference, claim 27 of the 523 patent requires:

27. [27a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip,

[27b] the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,

[27c] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes at least seven gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch,

[27d] each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,

[27e] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,

[27f] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type,

[27g] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[27h] a number of gate contact structures formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each gate electrode feature that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape,

[27i] wherein each gate contact structure that contacts a given gate electrode feature that forms any transistor gate electrode does not contact another gate electrode feature, wherein any gate contact structure layout shape that has a corresponding length greater than or equal to a corresponding width is oriented to have its corresponding length extend in an x-direction; and

[redacted]

> [27j] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,
>
> [27k] the first-metal layer including first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process,
>
> [27l] wherein each transistor within the region is formed in part by a corresponding diffusion region, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape,
>
> [27m] wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least two first-metal structures form portions of one or more electrical connections within the multiplexer or the latch.

523 patent at cl. 27 (annotated). Several disputes exist between the parties concerning whether Tela has shown the DI Products meet the limitations of the claim. These are addressed below. In view of the testimony of Dr. Foty that the DI Products practice those remaining limitations which are not in dispute, the DI Products have been shown to practice them as alleged. *See* CX-1144C at Q/A 2709-2967; CIB at 135-140.

#### i. Gate electrode feature layout shapes positioned in accordance with a gate horizontal grid

First, as with the 334 patent, Respondents and Staff dispute whether "gate electrode feature layout shapes positioned in accordance with a gate horizontal grid" is met in the DI Products. RIB at 148; SIB at 111.

For this limitation, Tela contends "Samsung's 14LPP and 14LPC design manuals specify the [redacted] which are used as an input to a lithography process to form gate electrode features." CIB at 135-136 (citing CX-1144C at Q/A

[redacted]

2766-2770; CX-0727C at *38, 133; CX-0726C at *46, 162). Tela claims a teardown analysis also shows practice of the limitation (*see id.* at 136; CRB at 71 ("[M]asks are not necessary to show infringement.")) and Respondents' expert, Dr. Subramanian, "had no doubt that the Exynos 7420 chip would be manufactured from a layout designed in accordance with Samsung design rules" (CIB at 136 (citing Hr'g Tr. at 937:20-939:5)).

In opposition, Respondents emphasize Tela's failure to offer any "documents, testimony, or any other evidence describing Samsung's layout stage at all, let alone establish that any such gridlines were used during layout." RIB at 148 (citing RX-0014C at Q/A 437, 559-666). "Accordingly," Respondents argue, "Tela has not met its burden of proving that the alleged DI products practice this limitation." *Id.*; *see* RRB at 81 ("[N]o evidence of record . . . that the claimed 'grid' and 'gridlines' are used in the manner claimed."). The Staff, on the other hand, argues "[t]he DI products do not satisfy this limitation for the same reasons described above for non-infringement by the Intel Accused Products." SIB at 111; SRB at 43.

As determined above in the context of the 334 patent, the evidence shows the DI Products contain actual gate electrode features positioned in accordance with a gate horizontal grid, based in no small part on actual teardown imagery of the Exynos 7420 showing linear, parallel arrangement to these structures. *See, e.g.*, JX-0215 at *9. This limitation, however, requires not actual structures, but layout shapes, positioned in accordance with a gate horizontal grid. The record supports finding that such layout shapes exist and are so positioned. Dr. Subramanian conceded that the DI Products would be manufactured in accordance with the design rules concerning layout of gate structures. Hr'g Tr. at 937:20-939:5. Those rules are contained in CX-0727C and CX-0726C, and Dr. Foty testified as to how these documents refer to [redacted]

[redacted]. CX-1144C at Q/A 107, 2657, 2769-2778; *see* CX-0727C at -38, -133. Thus, it is more likely than not the limitation is met, despite the absence of actual layout files in the record. To the extent the Staff argues the limitation is not met because no further specificity on the "grid" is provided in the design rules, or for the lack of an actual, observable projection of a "grid," those reasons are not persuasive, as discussed in the context of infringement under the 334 patent.

**ii. Gate electrode feature layout shapes used as an input to a lithography process**

Second, the Staff, but not Respondents, disputes whether "gate electrode feature layout shapes used as an input to a lithography process" is met by the DI Products. SIB at 110-111.

Tela contends "Samsung's 14LPP and 14LPC design manuals specify the [redacted] which are used as an input to a lithography process to form gate electrode features." CIB at 135-136 (citing CX-1144C at Q/A 2766-2770; CX-0727C at *38, 133; CX-0726C at *46, 162). Tela claims a teardown analysis also shows practice of the limitation (*see id.* at 136; CRB at 71 ("[M]asks are not necessary to show infringement.")), and Respondents' expert, Dr. Subramanian, "had no doubt that the Exynos 7420 chip would be manufactured from a layout designed in accordance with Samsung design rules" (CIB at 136 (citing Hr'g Tr. at 937:20-939:5)).

The Staff criticizes Tela for "offer[ing] no direct evidence regarding Samsung's design layout or SAS's mask shapes that are used during Samsung's lithography process versus the structures in the final product." SIB at 110. Thus, according to Staff, there is insufficient evidence to show practice of the claim. *See id.* at 110-111 (citing RX-0014C at Q/A 606-612); SRB at 42-43.

The limitation is more likely than not practiced by the DI Products, albeit through circumstantial evidence. As determined above, the evidence supports finding that "gate electrode

[redacted]

feature layout shapes" are used by Samsung in the creation of the DI Products, and are positioned in accordance with a grid. Thus, the issue becomes whether these "gate electrode layout shapes" are also used as an input to a lithography process.

As explained in the infringement discussion above, "used as an input" encompasses Intel's use of design layout shapes as a starting point to create backbone and cut mask shapes for lithography, where that lithography is just the first step in a process called spacer-defined double (or quad) patterning. *See, e.g.*, RX-0008C at Q/A 31-32, 99-115. Dr. Subramanian considered teardown analyses and Samsung's design rules to conclude that Samsung utilizes the same process. *See* RX-0014C at Q/A 598-606 ("It is my opinion that Samsung likely uses SADP to form its metal gates. In any event, Dr. Foty has not provided evidence to refute that it does."). Dr. Foty, also considering Samsung's design rules, points to [redacted] as evidence that gate electrode feature layout shapes are created and then used in a lithography process. CX-1144C at Q/A 2769-2770. Thus, on balance, a preponderance of the evidence supports finding the DI Products meet this limitation, essentially in the same way as the Accused Products.

**iii. Diffusion Regions**

Third, as with the 334 patent, Respondents and Staff dispute that the DI Products have any "diffusion region[s]." RIB at 145; SIB at 111-112. Tela again points to the [redacted] in Samsung's LPP and LPC design manuals, as evidence of this claim element. CIB at 139-140; CRB at 71-72. As determined above, the DI Products' epitaxially grown sources and drains are new material and therefore not literally "substrate" as required by the construction for "diffusion region." Again, though, Tela alleges the limitation is practiced under the doctrine of equivalents, which, again, the record supports. CRB at 71-72 (citing CRB at 19-28). Thus, the limitation is practiced.

[redacted]

### iv. Formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process

Fourth, Respondents and Staff contend that, should the DI Products be found to contain "diffusion region[s]," they are not "formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process." RIB at 145-148; SIB at 111-112.

For this limitation, Tela contends the [redacted] in the DI Products, is "formed in part based on corresponding diffusion layout shapes in, at least, a GDSII file that is used as an input to a lithography process." CIB at 140 (citing CX-1144C at Q/A 2931-2936; CX-0727C at *37, 138, 141; CX-0726C at *46, 168, 171); *see* CRB at 72.

In opposition, Respondents again note the lack of discovery from non-party Samsung and state "the record does not contain any layout files for Samsung chips." RIB at 145 (citing RX-0014C at Q/A 616); RRB at 80 ("the 'GDSII file' Tela references is purely hypothetical; there is no Samsung GDSII file in the record."). Thus, according to Respondents, "[t]here is no evidence of which layout shapes, if any, are utilized as an input to lithography," and Tela cannot meet its burden. RIB at 146; *see* RRB at 80-81. Respondents also note that the acknowledged epitaxially grown source and drain regions are "fundamentally non-lithographic.' RIB at 146 (citing RX-0014C at Q/A 619); *see generally* RIB at 146-148. The Staff agrees with this position. SIB at 111-112; SRB at 43-44.

The limitation is not practiced given the fact, which Respondents allege and Tela does not dispute, that [redacted] sources and drains are fundamentally non-lithographic. Indeed, Tela has offered no explanation of how lithography plays a role, even "in part," in source and drain creation. Thus, in contrast with gate electrode features, which do involve lithography, there can be no diffusion regions "formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process."

[redacted]

**v. Substantially rectangular shape**

Fifth, Respondents and Staff dispute that the DI Products contain "diffusion region layout shapes" that are "substantially rectangular." RIB at 145; SIB at 111-112.

Tela contends the [redacted] of the DI Products have corresponding diffusion layout shapes within, "at least, a [redacted]" CIB at 140. Tela further contends these [redacted] are rectangular, [redacted] *Id.* (citing CX-1144C at Q/A 2931-2946; CX-0727C at *37, 138, 141; CX-0726C at *46, 168, 171); CRB at 72.

Tela has not sufficiently shown a rectangular shape for these layout shapes. Given the absence of actual layout files, the shape of "*each* diffusion region" for "*each* transistor" within the overall "region of the semiconductor chip" in satisfaction of the claim (*see* 523 patent at cl. 27) cannot be drawn from brief imagery on the cited pages of Samsung's LPP and LPC design rules (CX-0727C at *37, 138, 141; CX-0726C at *46, 168, 171; *see* RIB at 146, 147 (citing RX-0014C at Q/A 618; CX-1144C at Q/A 2934)). Therefore, this limitation is not met by the DI Products.

**b. Claim 28**

For reference, claim 28 of the 523 patent requires:

> 28. [28a] A semiconductor chip, comprising: gate electrode features formed within a region of the semiconductor chip,
>
> [28b] the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to a lithography process,
>
> [28c] the gate electrode feature layout shapes positioned in accordance with a gate horizontal grid that includes a number of gate gridlines, wherein adjacent gate gridlines are separated from each other by a gate pitch,
>
> [28d] each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline,
>
> [28e] wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon,

[28f] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type,

[28g] wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

[28h] a number of gate contact structures formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each of at least six gate electrode features within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape,

[28i] wherein each gate contact structure is centered in an x-direction on the gate electrode feature with which it physical contacts,

[28j] wherein each gate contact structure layout shape that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in the x-direction, wherein each of the number of gate contact structures is in physical contact with only one of any of the gate electrode features; and

[28k] a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material,

[28l] the first-metal layer including at least two first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process, the at least two first-metal structures forming portions of one or more electrical connections within the region of the semiconductor chip,

[28m] wherein each transistor within the region is formed in part by a corresponding diffusion region, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape.

[redacted]

523 patent at cl. 28 (annotated). As noted above, Respondents do not explicitly challenge practice of claim 28, but the Staff does, for all of the same reasons discussed with respect to claim 27: both claims require "diffusion region," "diffusion region layout shape . . . formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process," "a substantially rectangular shape," and "gate electrode feature layout shapes used as an input to a lithography process." *See* SIB at 110-112. As determined above, the DI Products do not practice claim 27. Accordingly, the DI Products also have not been shown to practice claim 28.

**F. Validity**

Respondents and the Staff identify and discuss the following invalidity theories for the 523 patent:

| **Claims** | **Theory** |
|---|---|
| 1- 11, 14-20, 25, 26, 27, 28 | Rendered obvious under 35 U.S.C. § 103 by Kitabayashi (JX-0267) and Intel 45nm Products and/or Maziasz and Hayes (RX-0028) |
| 27 | Lack of written description 35 U.S.C. § 112, ¶ 1 |

*See generally* RIB at 148-171. The Staff agrees that claim 27 fails the written description requirement, but does not assert obviousness as to any claim. *See* SIB at 112-114. Claim 27 is pertinent only to the technical prong of domestic industry. *See* RIB at 148; SIB at 83-84. Thus, because indefiniteness is not an asserted ground of invalidity of claim 27, the parties' dispute over that claim need not be resolved or otherwise addressed. *Silicon Microphone Packages*, Inv. No. 337-TA-695, Notice at 3. Thus, only the obviousness theory remains.

Before turning to the merits of that theory, the priority date of the 523 patent must be established. The 523 patent claims priority to the 2006 Provisional Application and lacks the new

[redacted]

matter added to the 731 Application in 2015. *See* 523 patent at 1:13-28. And Respondents do not allege that its asserted priority date is erroneous. *See* RIB at 149. Therefore, the 523 patent's presumptive priority date is March 9, 2006.

With this date in mind, Respondents assert three prior art references in an obviousness combination: (1) Kitabayashi; (2) the Intel 45nm Products; and (3) the textbook entitled "Layout Minimization of CMOS Cells" by Maziasz and Hayes. RX-0007C at Q/A 91. Tela does not expressly dispute that Kitabayashi and Maziasz and Hayes are prior art. *See* CIB at 144. Kitabayashi was filed as a U.S. Patent Application in 2004 and issued in 2007, and the earliest date Tela asserts as the 523 patent's conception date is October 22, 2005, so Kitabayashi is prior art because it is a patent "granted on an application for patent by another filed in the United States before the invention by the applicant for patent." 35 U.S.C. § 102(e) (2002); RX-0267; *see* CIB at 152. And Maziasz and Hayes was published in 1992, well before the 523 patent's priority date. *See* RX-0028.

Whether the Intel 45nm Products are prior art under the pre-AIA version of Section 102(g) is a closer question, however, requiring more scrutiny than with the 334 patent. Tela contends that the inventions claimed in the 523 patent were conceived no earlier than October 22, 2005, and constructively reduced to practice by the filing of the 2006 Provisional Application on March 9, 2006. *See* CIB at 152-153. Respondents point to corroborated evidence that the Intel 45nm Products were conceived no later than June 27, 2005, and contend they were actually reduced to practice no later than January 25, 2006. *See* RIB at 78, 80; RX-0007C at Q/A 234. Therefore, the question presented is whether the Intel 45nm Products were actually reduced to practice before March 9, 2006, and not abandoned, suppressed, or concealed; if so, diligence is immaterial. *See Fox Group*, 700 F.3d at 1304.

[redacted]

As noted, the Intel 45nm Products consist of the test chip and the Penryn chip. *See* RIB at 77. A press release and a Powerpoint presentation state that Intel successfully demonstrated its test chip no later than June 27, 2005, and that it was "on track to manufacture chips with this technology in 2007." JX-0278; *see* JX-0275. Tela criticizes this evidence as uncorroborated. *See* CIB at 83 (citing *In re Garner*, 508 F.3d 1376, 1381 (Fed. Cir. 2007)). *Garner*, however, applies a "rule of reason" analysis, where "evidence of surrounding facts and circumstances independent of information received from the inventor" may be sufficient to corroborate reduction to practice. 508 F.3d at 1380 (quoting *Price v. Symsek*, 988 F.3d 1187, 1195 (Fed. Cir. 1993)). Dr. Subramanian itemizes the pertinent design documents, which were written between May 2004 and October 2005. *See* RX-0007C at Q/A 242-253. The timeline of these documents is consistent with what would be expected in the leadup to Intel's public announcement of a "[f]ully functional" test chip in January 2006, and the announcement itself was supported by photographs of a chip and images of what even Tela describes as a portion of its gate layer. JX-0275 at 3; *see* JX-0278; CIB at 83. To be sure, Respondents offer no test results to explicitly demonstrate that the test chip "would work for its intended purpose," but the Penryn chip's commercial release in 2007 (as predicted by Intel in its 2006 press release), combined with the other evidence offered, is adequate to satisfy that standard under a "rule of reason." *Garner*, 508 F.3d at 1380; *see* RX-0001C at Q/A 34 ("Intel completed testing" by January 2006 "to ensure that it worked for its intended purpose"), 58. And as with the 334 patent, the test chip was not conceived, reduced to practice, or otherwise developed by the 523 patent's inventors, so necessarily it was reduced to practice "by another." *See* CIB at 83 (citing *Fox Group*, 700 F.3d at 1304).

So the test chip was reduced to practice prior to March 9, 2006. Tela advances two arguments as to why this does not establish the Intel 45nm Products as prior art. First, Tela argues

[redacted]

that the test chip was intentionally abandoned, suppressed, or concealed. *See* CIB at 85; CRB at 52. Inasmuch as the test chip materially differs from the Penryn chip, the evidence supports this argument, because, among other factors, the test chip itself was never commercialized and only some of its "hundreds of [design] rules" have been publicly disclosed. *See* CX-1219C at 261-263. But Respondents contend that the test chip and the Penryn chip, which was commercialized, were part of the same research and development program—the test chip was, in essence, a "prototype" that was "refined, perfected, and improved . . . for commercial release" as the Penryn chip. RIB at 84; *see* RX-0007C at Q/A 220.

Other than a conclusory, nonspecific comment by Dr. Hook, Tela points to no evidence to counter this contention. *See* CX-1231C at Q/A 1481 ("the M1 structures differ between the 45nm SRAM test chip and the Penryn"). Respondents' evidence supports it, however. *See* RX-0001C at Q/A 37 ("The test chip was designed using the same design rules that we developed for the commercial products."); RX-0007C at Q/A 288 (Dr. Subramanian explains that his claim-by-claim analysis relies on layout files from both the test chip and the Penryn chip). Dr. Auth testified that it took approximately 1,000 Intel engineers about two years of full-time work "for the main part of the project" of developing the Intel 45nm Products, so the delay here between actual reduction to practice and commercialization would be expected. RX-0001C at Q/A 30; *see id*. at Q/A 40 ("Penryn processors . . . are manufactured on Intel's 45nm process technology"). Even Dr. Hook, who opined that the Intel 45nm Products had not been adequately publicly disclosed, generally treated the test chip and the Penryn chip as one product for purposes of his opinion. *Compare* CX-1231C at Q/A 1217 ("there a lot of design rules" that were not discussed in a 2007 publication by an Intel engineer) *with* Q/A 1204 (Respondents "rel[y] on certain 45nm products using Intel's Penryn architecture," and Dr. Hook "refer[s] to these as 'Intel 45nm products'").

[redacted]

Therefore, the evidence shows that the Penryn chip was the commercial embodiment of the test chip, rather than an entirely different invention, and that the 21-month period between actual reduction to practice and public disclosure through commercialization resulted from continuing research and development efforts, rather than intentional suppression and concealment. In response, Tela presents its second argument for abandonment, suppression, or concealment: that there was no enabling public disclosure. *See* CIB at 83-88. This argument differs from the one advanced regarding the 334 patent, because the 334 patent covers product claims and the 523 patent allegedly covers product-by-process claims. *See* CIB at 144 n.12. And because prior art status for product-by-process claims requires an enabling public disclosure, the argument goes, mere commercialization, without an otherwise enabling disclosure, is insufficient to establish prior art status. *See id*. at 144-45.

As a threshold matter of claim construction, all asserted claims depend from claim 1, which claims a "semiconductor chip" comprising various structures "formed" under certain conditions. *E.g.*, 523 patent at 24:51 ("gate electrode features formed within a region"). Respondents and the Staff seemingly agree that such language articulates a product-by-process claim, and so do I. *See* RIB at 85; SIB at 104. In view of this construction, Tela asserts that "Federal Circuit case law holds that the public disclosure necessary for prior art status to product-by-process claims under § 102(g) must be enabling." CIB at 144. Tela candidly admits, however, that the "case law" to which it refers is a dissenting opinion in *Fox Group*. *See id*. at 144 n.12. In fact, actual Federal Circuit case law supports Respondents' position: "a product-by-process claim can be anticipated by a prior art product that does not adhere to the claim's process limitation," because "an old product is not patentable even if it is made by a new process." *Amgen Inc. v. F. Hoffman-La Roche Ltd*, 580 F.3d 1340, 1370 (Fed. Cir. 2009). And as noted above with respect to the product

claims of the 334 patent, commercialization of an allegedly prior art product is a "way to prove public disclosure" under Section 102(g), even when that commercialization by itself is non-enabling. *Fox Group*, 700 F.3d at 1306-07.

Therefore, the Intel 45nm Products, and the Penryn chip in particular, are prior art to the 523 patent.

As to the specifics of Respondents' obviousness theory, Respondents argue the obviousness of the 523 patent in view of two combinations of prior art: Kitabayashi/Intel 45 nm Products and Kitabayashi/Intel 45 nm Products/Maziasz and Hayes. *See* RIB at 149. As with the 334 patent, the combination of Kitabayashi and the Intel 45 nm Products comes close to an embodiment of claim 1 of the 523 patent. Claim 1 covers a semiconductor chip possessing, among other elements, rectangular "gate electrode features" oriented in the y-direction and having a particular pitch, rectangular "gate contact structures" oriented in the x-direction, "at least one diffusion contact structure" positioned on a diffusion contact grid having a spacing equal to the gate pitch, and rectangular "first-metal structures" oriented in the x-direction, all forming multiple transistors. *See generally* 523 patent at 24:50-26:4. Most of these elements and the other elements of claim 1 are found in the Intel 45 nm Products, as Dr. Subramanian opines. *E.g.*, RX-0007C at Q/A 612-13. One of his demonstrative exhibits, for instance, identifies gate electrode features (green), gate contact structures (dark blue), and diffusion contact structures (pink) in the test chip. *See* RDX-0009C at *169. In particular, and contrary to Tela's contention, Dr. Subramanian identifies multiple regions, generally by reference to cells shown in Intel 45 nm Product layout files, that contain structures that form various logic circuits, including a multiplexer, an inverting multiplexer, and a latch. *See* RX-0007C at Q/A 629-632; RIB at 149 n.42 ("the 'region' is the entire cell"); *cf.* CIB at 147 (arguing that Respondents "present[] no evidence" of a region of the

[redacted]

semiconductor chip containing features that form a logic circuit). And Kitabayashi discloses rectangular first-metal structures all oriented in the same direction, with "grids" of multiple metal layers, each oriented orthogonally to its vertical neighbors. *See* JX-0267 at 5:46-58, Fig. 9.

Thus, all the elements of claim 1 are seemingly disclosed in the prior art, with two exceptions. The first is, as Tela notes, orienting the gate electrode features and first-metal structures perpendicularly as in the 334 patent.[9] *See* CIB at 146. Respondents allege that this element would be obvious to a skilled artisan on the same grounds presented before. *See* RIB at 149 (citing RX-0007C at Q/A 537-552 (discussing Intel 45nm Products), 152-153 (citing RX-0007C at Q/A 606-610 (discussing Kitabayashi)). Dr. Subramanian similarly does not expand on the purported motivation to include this arrangement in the prior art combination. RX-0007C at Q/A 610 ("As I discussed earlier, in the combination of Kitabayashi and Intel's 45nm Products, it would have been obvious to run the wires in M1 to be perpendicular to the direction that poly runs."). Accordingly, for the same substantive reasons discussed above, Respondents have not clearly and convincingly shown this limitation would be present in the Kitabayashi and Intel 45nm Product combination.

The second exception is the "diffusion region." Respondents contend that this element is found in the Intel 45nm Products, to the extent "any source or drain is a 'diffusion region'" under Tela's infringement theory. RIB at 154 (citing RX-0007C at Q/A 639-642)). But the sources and drains in the Intel 45nm Products are [redacted] and do not literally satisfy the "diffusion

[9] Not all relevant claim terms were construed during the *Markman* proceeding, including, as one example, "grid," to the extent it means something beyond "projected gridlines" used during a stage of chip manufacturing, and "diffusion contact structure." Order No. 34 at 59. But Tela does not separately dispute that the various components in the prior art fall within the scope of the unconstrued claim terms, so there is no need to separately construe them. *See Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1323 (Fed. Cir. 2004).

[redacted]

region" limitation, as explained above. *See* RX-0007C at Q/A 641. This is the only argument Respondents present regarding this limitation. *See* RIB at 154; RRB at 83-85. Although diffusion regions like those disclosed in the 523 patent are likely readily found in the prior art, Respondents make no effort to demonstrate that it would have been obvious to a skilled artisan to, say, substitute such diffusion regions for the [redacted] sources and drains found in the Intel 45 nm Products, or otherwise demonstrate obviousness beyond generally alluding to "Tela's infringement theory." RIB at 154. Respondents' evidence regarding this limitation is not clear and convincing, and accordingly, this limitation is also missing from the prior art relied upon.

Beyond these missing claim elements, Respondents have not presented a clear and convincing case of obviousness in a procedural sense, either. Tela is correct that much of Respondents' detailed discussion for this patent appears in footnotes. *See* CRB at 73 n.17. Indeed, some of Respondents' most significant points appear in footnotes. *E.g.*, RIB at 152 n.44 (disputing Dr. Hook's opinion regarding motivation to combine); RIB at 153 n.48 (arguing that a skilled artisan would have known that "metal 1 can be run orthogonal to poly"). Although Ground Rule 13.1 contemplates the use of footnotes (because it holds that footnotes need not be double spaced), it also states that a "reasonable page limit will be imposed," with that limit determined on a "case-by-case basis." Order No. 2, Attachment A. The limit here was 200 pages for the opening brief, as announced in open court at the end of the evidentiary hearing. *See* Hr'g Tr. at 1286:18-19. The large amount of text, the pointedness of the arguments, and the volume of the evidence cited in the relevant footnotes of Respondents' opening brief may not violate the letter of Ground 13.1, but they plainly violate the spirit, to Tela's prejudice. *See id*. at 1288:12-18 ("I urge both sides, be judicious about what you put in your post-hearing briefs"). So although the pertinent footnotes

[redacted]

have not been "disregarded," as Tela requests, they have generally been accorded less weight than the main text. CRB at 73 n.17.

Accordingly, Respondents have not carried their burden of proving that claim 1 is invalid as obvious, nor have they proven that the claims depending from it are invalid as obvious. *Ortho-McNeil*, 520 F.3d at 1365.

## VI. DOMESTIC INDUSTRY - ECONOMIC PRONG

In a patent-based complaint, a violation of Section 337 can be found "only if an industry in the United States, relating to the articles protected by the patent ... concerned, exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). Under Commission precedent, this "domestic industry requirement" of Section 337 consists of an economic prong and a technical prong. *Stringed Instruments*, Inv. No. 337-TA-586, Comm'n Op. at 12-14. The complainant bears the burden of establishing that the domestic industry requirement is satisfied. *See Certain Set-Top Boxes and Components Thereof*, Inv. No. 337-TA-454, Initial Determination at 294 (June 21, 2002) (not reviewed in relevant part).

The economic prong of the domestic industry requirement is defined in subsection (a)(3) of Section 337 as follows:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark or mask work concerned --
>
> (A) Significant investment in plant and equipment;
>
> (B) Significant employment of labor or capital; or
>
> (C) Substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). The economic prong of the domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above. Importantly, the Commission has

clarified that investments in plant and equipment, labor, and capital that may fairly be considered investments in research and development are eligible for consideration under subsections (A) and (B), in addition to subsection (C). *See Solid State Storage Drives,* Comm'n Op. at 14.

Tela contends the economic prong is met under subsections (A) and (B) through the domestic activities of its licensee SAS. In its opening brief, Tela explains it owns the Asserted Patents and entered into a license with Samsung Electronics Co., Ltd. ("Samsung") in 2016 which permitted Samsung and its affiliates, such as SAS, to practice the Asserted Patents. CIB at 155-156 (citing JX-0008; JX-0010; CX-1148C at Q/A 6-21; JX-0170C). No party disputes this ownership or the status of SAS as a licensee. *See generally* RIB; RRB; SIB; SRB.

As determined above, Tela has not shown the technical prong of domestic industry is met. Nevertheless, to aid the Commission's analysis, Tela's claims of economic prong domestic industry are evaluated below; and for the reasons provided, Tela has not shown "significant" investment in satisfaction of the statute under either subsection (A) or (B). 19 U.S.C. § 1337 (a)(3)(A), (B).

**A. Qualifying Expenditures**

As noted above in the discussion of procedural history, and prior to the evidentiary hearing, Tela filed a motion for summary determination that it satisfied the economic prong of domestic industry. That motion was granted-in-part with Order No. 38, which, while not finding the matter conclusively established, did establish the qualifying expenditures from Tela's licensee, SAS, which manufactures the DI Products within the United States. Those expenditures, repeated in Tela's post-hearing briefing with small changes to Group 3 amounts (*see* CIB at 161 n.17), are as follows:

[redacted]

| Subsection (A), "Plant and Equipment" | | |
|---|---|---|
| | Allocated Depreciation | Allocated Square Footage |
| Group 1 | [redacted] | |
| Group 2 | | |
| Group 3 | | |
| **Subsection (B), "Labor and Capital"** | | |
| | Allocated Salary[16] + Production Expenses | |
| Group 1 | [redacted] | |
| Group 2 | | |
| Group 3 | | |

(*id.* at 160-161; *see* Order No. 38 at 13). For ease of reference, and as mentioned above, the groups 1-3 refer to the following overlapping sets of products:

| Tela's Economic Prong Groups | |
|---|---|
| Group 1 | [redacted] (7420) |
| Group 2 | Group 1 + [redacted] |
| Group 3 | Group 1 + Group 2 + [redacted] |

CIB at 160; *see* RIB at 172-173. Accordingly, Tela contends "[i]n light of these findings, the only remaining issue for the ALJ to decide is whether these allocated investments are significant." *Id.* at 154. The Staff's discussion of economic prong reflects the same position. *See* SIB at 116-122.

Respondents and the Staff, on the other hand, do not immediately abandon a contest over Tela's claimed investment amounts. Rather they argue that SAS effectively last produced Group 1 wafers in July 2018 (*see* RIB at 173-174; SIB at 117) and Group 2 wafers in December 2018

[redacted]

(*see* RIB at 174; SIB at 118), meaning that there was no investment in those products at the time of Tela's original complaint (December 2018) or amended complaint (February 2019) (*see* RIB at 174-175; SIB at 118).

Respondents reason that if this initial determination finds that Group 2 or Group 3 have not been shown to practice the Asserted Patents (as the contrary had been assumed in Order No. 38), that must mean there are no current "qualifying activities" to enable consideration of any "past" Group 1 investment, regardless of whether Group 1 satisfies the technical prong:

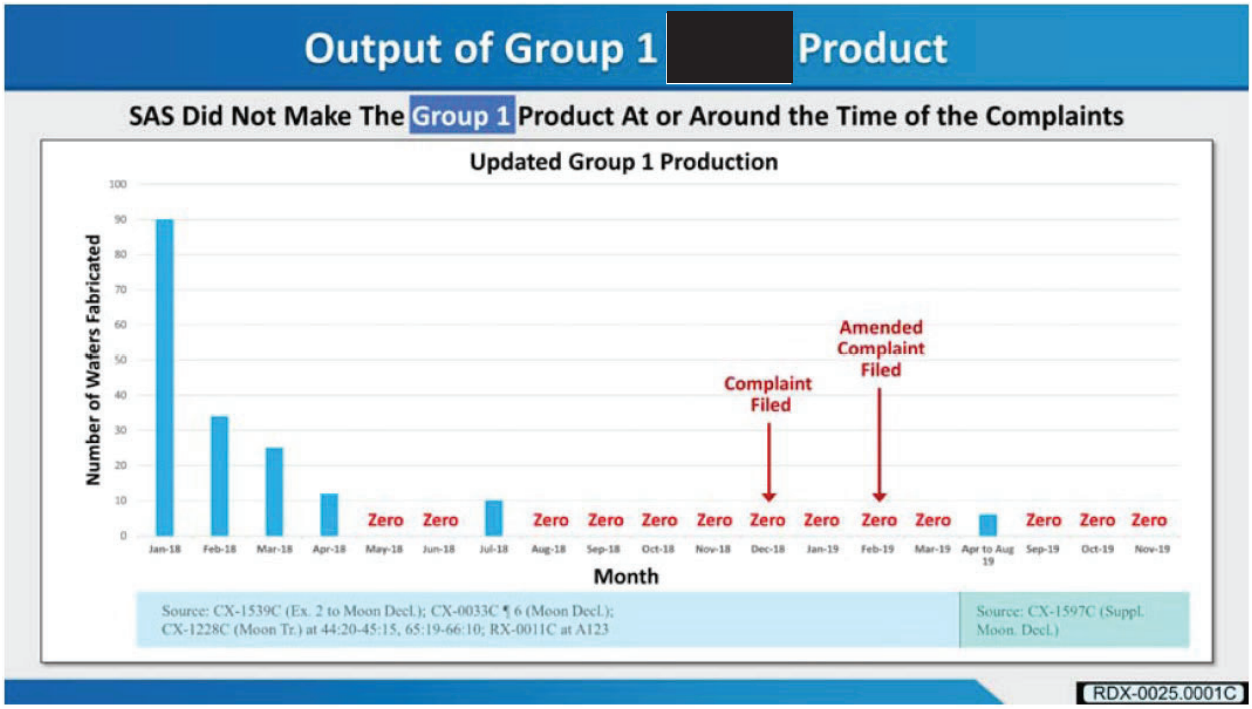
> As Order No. 38 recognized, past expenditures could be considered, "so long as those investments pertain to the complainant's industry with respect to articles protected by the asserted IP rights *and the complainant is continuing to make qualifying investments at the time the complaint is filed*." Order No. 38 at 6-7 (quotes and citation omitted) (emphasis added). While the ALJ noted that "qualifying investments continue to be made for the Group 3 products" (*id.* at 7), products can form the basis of a "qualifying" activity only if they practice the asserted patents. *See Certain Television Sets, Television Receivers, Television Tuners, and Components Thereof*, Inv. No. 337-TA-910, 2015 WL 6755093, Comm'n Op., at *39; *Certain Subsea Telecommunications Sys. and Components Thereof*, Inv. No. 337-TA-1098, Initial Determination at 70 (U.S.I.T.C. Apr. 26, 2019) (qualifying activity must be tied to patent-practicing article). With respect to Group 3, because Tela has not provided any evidence that the unique (non-Exynos 7420) products in Group 3 practice the Asserted Patents, any continuing activities for those products are irrelevant, and SAS's cessation of activities for the Group 1 and 2 products should end the domestic industry inquiry.

*Id.* at 175; *see* RRB at 89.

As determined above, Tela has indeed failed to show practice of the Asserted Patents by the Exynos 7420 on the merits, and by the other DI Products through assertions of representativeness. In this way, domestic industry cannot be found. Assuming nonetheless that the Exynos 7420 does practice a claim of an Asserted Patent, Respondents' argument regarding continuing qualifying activities should be addressed.

[redacted]

Respondents' argument is not persuasive. As shown in their demonstrative below, the Group 1 products had been produced within one year of either Tela's original or amended complaints:




RIB at 174; RDX-0025C at *1; *see* CIB at 164 (noting "171[redacted] wafers represent thousands of Exynos 7420 processors"). Also as shown, an amount of Exynos 7420 products were produced after the filing of the complaint, between April and August 2019. *See* CRB at 81 (citing CX-1597C). Considering the technology involved and required preparation for manufacture, the Exynos 7420 cannot be deemed a "discontinued" product. Respondents would have me ignore this 2019 production entirely and reach the opposite conclusion under *Certain Thermoplastic-Encapsulated Electric Motors, Components Thereof, and Products and Vehicles Containing Same II*, Inv. No. 337-TA-1073 (*see* RIB at 176), but that investigation concerned whether post-complaint expenditures could be considered in assessing "significant" investment. Comm'n Op. at 6-8 (Aug. 12, 2019). Here, the post-complaint activity is only considered to show the product

[redacted]

is not discontinued, and it is not incorporated into the investment amounts determined in Order No. 38 and evaluated below. *See, e.g.*, *Certain Magnetic Data Storage Tapes and Cartridges Containing the Same*, Inv. No. 337-TA-1012, Comm'n Op. at 112-113 (Apr. 2, 2018) ("*Magnetic Data Storage*").

Moreover, because the Exynos 7420 was not discontinued at the time of Tela's complaint, it is not reasonable to compare SAS to the complainant in *Certain Television Sets*, that had shifted its business model and ceased all of its qualifying domestic activity six months before filing its complaint. Inv. No. 337-TA-910, Comm'n Op. at 59 (Oct. 30, 2015). As the Commission in that investigation explained, "[w]hat is at issue in this investigation is not merely a decline in an ailing business or discontinued products, but the lack of evidence that a cognizable domestic industry exists at the time the complaint was filed. . . . Its U.S. business shifted toward patent monetization and away from any research and development, or engineering related to its tuner products." *Id.* at 74. By contrast, the record here shows that SAS's plant, equipment, labor and capital which created the Exynos 7420 products continued to function through the date of the complaint. To the extent Respondents and Staff argue for a rule that eliminates consideration of any investment older than six months when there is no investment during the same month, week, or day as the filing of the complaint (*see* RRB at 89 ("Because SAS did not produce any Group 1 wafers at the time of Tela's complaint, no domestic industry in those products existed, and the inquiry should end there. *See* [*Certain Television Sets*]."); SIB at 118), such a rule is not supported by the cited precedent (*see* RIB at 175; RRB at 89; SIB at 118).

Accordingly, the investment amounts listed for the Group 1 products in Order No. 38, and fairly adjusted by Tela without meaningful dispute (*see* RRB at 88; SRB at 46), are analyzed for significance.

[redacted]

**B. "Significant" or "Substantial"**

The next step in the evaluation of domestic industry is to determine if the investment amounts identified above are "significant," as in subsections (A) and (B). The most recent precedential decision by the Court of Appeals for the Federal Circuit addressing this determination is *Lelo*, which restated law applicable to a number of issues surrounding the economic prong of domestic industry. *See* 786 F.3d at 883-85. In particular, the Federal Circuit held that the statutory terms "'significant' and 'substantial' refer to an increase in quantity, or to a benchmark in numbers" and "[a]n 'investment in plant and equipment' therefore is characterized quantitatively, *i.e.*, by the amount of money invested in the plant and equipment." *Id.* at 883. Continuing, the Federal Circuit held "[a]ll of the foregoing requires a quantitative analysis in order to determine whether there is a 'significant' increase or attribution by virtue of the claimant's asserted commercial activity in the United States." *Id.* In short, "[q]ualitative factors cannot compensate for quantitative data that indicate insignificant investment and employment." *Id.* at 885. The Commission has since made clear that some sort of comparative analysis must be made before significant or substantial can be found. *See, e.g.*, *Certain Gas Spring Nailer Products and Components Thereof*, Inv. No. 337-TA-1082, Notice of Comm'n Determination at 3 (Dec. 12, 2019) ("*Gas Spring Nailers*"); *Certain Carburetors and Products Containing Such Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 17-19 (Oct. 28, 2019) ("*Carburetors*").

As to the Group 1, [redacted] (Exynos 7420) product, Tela points to a number of considerations: the asserted domestic activity is the actual manufacture of the "billions of transistors and other components that enable the logic functions," which is qualitatively significant (*see* CIB at 166); that manufacture, regardless of the number of wafers made, requires enormous up-front investment in space and equipment (*see id.* at 167; *id.* at 167 n.20 (citing *Magnetic Data*

[redacted]

*Storage*, Inv. No. 337-TA-1012, Comm'n Op. at 115)); that manufacture, considered "front-end" processing, is generally quantitatively significant compared to the overseas, "back-end" processing (*see id.* at 167-170); the claimed labor and depreciation investment is quantitatively significant compared to the cost of the raw materials used by SAS in manufacturing, in a value-added context (*see id.* at 170-171); the value of the sold wafer as compared to raw material cost is quantitatively significant (*see id.* at 171-172); the scope of the Asserted Patents' claims—that is, the physical implementation of integrated circuit designs—is commensurate with the scope of the work performed by SAS (*see id.* at 172-173); SAS is a quantitatively significant investor in U.S. semiconductor fabrication as compared to the rest of the industry (*see id.* at 173-174); and the claimed investment is quantitatively significant as compared to SAS's revenue per sold wafer (*see id.* at 175-176).

In its reply brief, Tela contends "[a]t base, Respondents and Staff's only argument is that SAS's allocated investments in Groups 1 and 2 are too small." CRB at 82. This is in error, Tela argues, because the Commission has made clear there is no minimum monetary expenditure to satisfy the domestic industry requirement. *See id.* at 82-83 (citing *Stringed Instruments*, Inv. No. 337-TA-586, Comm'n Op. at 25-26; *Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 27). Tela further observes that the parties' positions on the Group 3 products reveals their application of a minimum investment:

> That Respondents and Staff contest the significance of the investments in Groups 1 and 2 – but not Group 3 – demonstrates that they are applying a minimum threshold. The fabrication activities and related expenses are relatively the same for all of the Exynos Products, as indicated by the fact that SAS tracks its costs per wafer at the node level (*e.g.*, 14nm) and not by individual products. (CX-1145C (Greene) at Q/A 171-175 (showing that on average it costs SAS [redacted] to fabricate any 14nm wafer).) Thus, the fabrication activities and the per-wafer costs between the three groups, all of which are 14nm Exynos mobile processors, are relatively the same. Group 3, however, contains more models and therefore the absolute value

[redacted]

> of the allocated Group 3 investments is larger than those of Groups 1 and 2 because the same activities are applied across a greater volume of wafers. A finding that only Group 3 is significant necessarily means that a minimum threshold was applied, because significance only existed once the same activities and costs were multiplied by a sufficient volume of wafers for the aggregate allocated amount to cross some unspecified – and improper – significance threshold.

*Id.* at 83-84. Tela reemphasizes its views that "domestic industry analysis is not whether the investments are large or small in the absolute sense, but whether they are important to the articles, which is the analysis Mr. Greene performed and Respondents and Staff ignore" (*id.* at 84 (citing Hr'g Tr. at 537:11-16, 543:11-16)), and the massive production of products by SAS other than the Exynos 7420 in 2018 is simply "not pertinent to the analysis" (*id.* at 85). Tela explains:

> More importantly, the production volume percentages were just used to quantitatively allocate SAS's investments. (Tr. (Greene) at 511:24-512:4; 536:21-537:6.) Whether those investments are significant is a separate, multi-faceted inquiry. If an allocation percentage was the measure of significance, there would be no need perform any of the additional evaluations the Commission regularly employs to put the relative value of investments in context. *See Certain Collapsible Sockets for Mobile Electronic Devices and Components Thereof*, Inv. No. 337-TA-1056, Comm'n Op. at 20 n.13 (July 9, 2018) (significance cannot be determined on the sales-based allocation percentage itself); Carburetors, Comm'n Op. at 17-18; (Tr. (Greene) at 537:7-10). Respondents argue that Mr. Greene's statement that production of a single wafer could be significant is absurd. (RIB at 173, 179.) Respondents cite no authority. Considering the Commission evaluates significance of the investment and activities to the articles, placed in the proper context – for example, that production of even a single wafer requires millions of dollars of equipment and facility space, and requires skilled technicians, and results in hundreds of valuable processors – production of a single wafer very well could be significant. (Tr. (Greene) at 543:24-545:8.) Regardless, Tela is not relying on a single wafer so the testimony is irrelevant.

*Id.*

Respondents oppose a finding of significance. Respondents highlight that the Group 1 product, the Exynos 7420, indisputably made up just 0.02% of all wafers fabricated by SAS in 2018 and argue this cannot be "significant." RIB at 176 (citing CDX-0014C at *18). Respondents

[redacted]

criticize Tela for failing to take into account this minimal volume of wafers produced, and characterize the claim of Tela's expert, Mr. Greene, that "production of just *one* wafer would qualify as 'significant,'" as "self-evidently absurd." *See id.* at 179 (citing Hr'g Tr. at 511:7-12, 535:8-16, 536:10-14). Respondents take the position that it is improper to ignore SAS's production of other, non-DI Products, because "a domestic industry must be 'made in the context of the complainant's size.'" *Id.* at 181 (citing *Certain Kinesiotherapy Devices and Components Thereof*, Inv. No. 337-TA-823, Comm'n Op. at 33 (July 12, 2013), *rev'd on other grounds*, *Lelo*, 786 F.3d 879); RRB at 89-92 (citing, *inter alia*, *Carburetors*, Inv. No. 337-TA-1123, Comm'n Op at 17). As to Tela's quantitative analysis, Respondents argue there is no evidence on "the processors' R&D, design, assembly, testing, and packaging—none of which is carried out domestically by SAS, yet all of which contributes to the total cost of producing the processors (with the relevant data presumably being available to Tela from its licensee)" (RRB at 92 (citing Hr'g Tr. at 509:11-510:2, 522:16-525:25)), Tela's use of Intel data as a proxy suffers from the same problem, and there is no evidence to believe the analogy to Intel is appropriate (*see id.* at 92-93 (citing Hr'g Tr. at 533:9-534:24)).

The Staff agrees with each of Respondents' points for the Group 1 product. *See* SIB at 117-120. In particular, the Staff notes the labor associated with Group 1 is one half of one employee (*see* SIB at 119 (citing RX-0011C at Q/A 140; Order No. 38 at 8)) and actual profits to SAS from the sale of wafers to Samsung are only [redacted] (SRB at 47 (citing CPB at 170-173)). The Staff summarizes: "[a]ll of these numbers are quantitatively small, particularly for large companies like SAS and Samsung . . . ." SRB at 47.

The domestic industry investments are not significant. Even accepting Tela's principal quantitative metric (*i.e.*, SAS's investments add 100% of the value to the product), [redacted]

[redacted] amounts are not significant. *See* CRB at 82-84. While it is true the Commission made clear in *Stringed Instruments* that "there is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry" (Inv. No. 337-TA-586, Comm'n Op. at 25), it also explained "[w]e agree with the parties that the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant's relative size" (*id.* at 25-26). In that investigation, for example, a "substantial" or "significant" investment did not exist with investment of $8500 representing, impliedly, a 100% domestic value-add. *See id.* at 26-27.

Tela does little to explain why [redacted] invested in plant and equipment and [redacted] in labor is not too small. Indeed, in a section entitled "The Semiconductor Fabrication Industry and Marketplace," Tela touts the domestic presence and spending of SAS as a whole, and not the [redacted] figures at issue. *See* CIB at 173-174; *see also* CRB at 88-89. Tela also emphasizes the limited number of industry actors (CIB at 173 ("[O]nly a handful of companies are able to operate 300mm wafer fabrication facilities in the U.S.")), the millions of dollars required in equipment and facilities required to start up semiconductor process fabrication (*id.* at 167 "These machines can cost up to $100 million apiece."), and SAS's relative size (*id.* at 173 ("After Intel, SAS is the largest major 14nm supplier in the U.S."); *id.* at 174 ("[W]hile SAS is comparable to GlobalFoundries in terms of facility size and employee headcount, SAS invested [redacted] in U.S. salaries and produced [redacted] 14nm wafers in 2018.").

This approach avoids the crucial question, which is whether [redacted] in plant and equipment and [redacted] in labor can be considered "significant" in the contexts of the marketplace and SAS itself. In fact, Tela's approach only serves to emphasize the modesty of these amounts. And that modesty is consistent with the fact that the Exynos 7420 is the processor for the Galaxy

[redacted]

S6, Samsung's flagship smartphone back in 2015—a phone which has since been replaced by newer generations both in the marketplace and in SAS's production facilities—so domestic industry investment can be expected to be even more modest in the future. *See* CIB at 159-160 (showing investment levels across LPE, LPP, and LPC), 164 (describing Galaxy S6); CX-0629; CX-1230; CX-0632; CX-0631; CX-0630; CX-0633. The Federal Circuit and the Commission have associated modesty with insignificancy, an appropriate association here as well. *Lelo*, 786 F.3d at 885 ("The Commission determined that Standard Innovation's investment and employment under prongs (A) and (B) were quantitatively 'modest,' Comm'n Op. at 34, which we take to mean 'insignificant.' . . . We agree with the Commission's finding that investment and employment under prongs (A) and (B) were modest and insignificant."); *Certain Thermoplastic-Encapsulated Electric Motors, Components Thereof, and Products and Vehicles Containing Same II*, Inv. No. 337-TA-1073, Comm'n Op. at 14 (Aug. 12, 2019) ("IV's investments are too modest to meet the domestic industry requirement of section 337(a)(3)") ("*Electric Motors*"); *Electric Motors*, Inv. No. 337-TA-1073, Comm'n Op. at 17 ("IV has failed to show how these expenditures are significant in any appropriate context, particularly in light of the alleged difficulty of making these pumps."). That there was a large up-front investment years ago changes nothing, because the domestic industry presently devoted to the Exynos 7420 is virtually defunct, and even massive investments cannot be allocated to domestic industry if they possess no nexus to a domestic industry product. *See, e.g. Certain Subsea Telecommunication Systems and Components Thereof*, Inv. No. 337-TA-1098, Comm'n Op. at 41 (Oct. 21, 2019) ("The Commission has found that complainants have not satisfied the domestic industry requirement where the complainant failed to allocate expenses to account for non-domestic industry products that do not practice the patent.").

[redacted]

In sum, SAS's commitment to producing semiconductors in the United States even though "global capacity for fabrication has generally shifted to Asia" (CIB at 174) is commendable. The record does not show, however, that the Exynos 7420 is a significant part of SAS's plan; nor does it show SAS's investment of [redacted] in plant and equipment and [redacted] in labor can be considered "significant" under the statute. Accordingly, Tela has not met the economic prong of the domestic industry requirement even assuming the Exynos 7420 is found to practice a claim of the Asserted Patents.

## VII. CONCLUSIONS OF LAW

1. The Commission has *in rem* jurisdiction over the accused products, integrated circuits and products containing same.

2. The importation or sale requirement of Section 337 is satisfied for all respondents.

3. Tela, through its licensee, has not been shown to practice any claims of U.S. Patent No. 10,141,334.

4. The domestic industry requirement is not satisfied with respect to the 334 patent.

5. Tela, through its licensee, has not been shown to practice any claims of U.S. Patent No. 10,186,523.

6. The domestic industry requirement is not satisfied with respect to the 523 patent.

7. Respondents directly infringe claims 1, 2, and 5 of the 334 patent.

8. Respondents directly infringe claims 1-11, 14-20, 25, and 26 of the 523 patent.

9. Claims 1, 2, and 5 of the 334 patent have been shown to be invalid under 35 U.S.C. § 102. No claims of the 334 patent have been shown to be invalid under 35 U.S.C. § 103.

10. Claims 1, 2, 5, and 15 of the 334 patent have been shown to be invalid under 35 U.S.C. § 112.

11. No claims of the 523 patent have been shown to be invalid under 35 U.S.C. § 103.

12. No claims of the 523 patent have been shown to be invalid under 35 U.S.C. § 112.

13. Tela is not contractually barred from enforcing the 334 patent against respondent Intel or its customers.

[redacted]

14. There is no violation of Section 337 with respect to the 334 patent.

15. There is no violation of Section 337 with respect to the 523 patent.

## VIII. RECOMMENDED DETERMINATION ON REMEDY AND BOND

The Commission's Rules provide that subsequent to an initial determination on the question of violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, the administrative law judge shall issue a recommended determination concerning the appropriate remedy in the event that the Commission finds a violation of section 337, and the amount of bond to be posted by respondent during Presidential review of the Commission action under section 337(j). *See* 19 C.F.R. § 210.42(a)(1)(ii).

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986). Under Section 337(d)(1), if the Commission determines as a result of an investigation that there is a violation of section 337, the Commission is authorized to enter either a limited or a general exclusion order. 19 U.S.C. § 1337(d)(1). A limited exclusion order instructs the U.S. Customs and Border Protection ("CBP") to exclude from entry all articles that are covered by the patent at issue and that originate from a named respondent in the investigation. A general exclusion order instructs the CBP to exclude from entry all articles that are covered by the patent at issue, without regard to source. *Certain Purple Protective Gloves*, Inv. No. 337-TA-500, Comm'n Op. at 5 (Dec. 22, 2004). Under section 337(f)(1), the Commission may issue a cease and desist order in addition to, or instead of, an exclusion order. 19 U.S.C. § 1337(f)(1). The Commission generally issues a cease and desist order directed to a domestic respondent when there is a "commercially significant" amount of infringing, imported product in the United States that could be sold, thereby undercutting the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC Pub. 2391, Comm'n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof*

[redacted]

*and Prods. Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334 (Remand), Comm'n Op. at 26-28 (Sept. 10, 1997).

Additionally, during the 60-day period of Presidential review under 19 U.S.C. § 1337(j), "articles directed to be excluded from entry under subsection (d) . . . shall . . . be entitled to entry under bond prescribed by the Secretary in an amount determined by the Commission to be sufficient to protect the complainant from any injury." *See* 19 U.S.C. § 1337(j)(3). "The Commission typically sets the bond based on the price differential between the imported infringing product and the domestic industry article or based on a reasonable royalty. However, where the available pricing or royalty information is inadequate, the bond may be set at one hundred (100) percent of the entered value of the infringing product." *Certain Industrial Automation Systems and Components Thereof Including Control Systems, Controllers, Visualization Hardware, Motion and Motor Control Systems, Networking Equipment, Safety Devices, and Power Supplies*, Inv. No. 337-TA-1074, Comm'n Op. at 13 (Apr. 23, 2019) ("*Automation Systems*") (public version) (citation omitted).

**A. Limited Exclusion Order**

Should a violation be found, Tela argues "the Commission's usual practice is to issue relief extending to the boundaries of the Notice of Investigation to exclude any infringing products." CIB at 190 (citing *Certain Erasable Programmable Read Only Memories, Components Thereof, Prods. Containing Such Memories, and Processes for Making Such Memories*, Inv. No. 337-TA-276, Comm'n Op. at 9-11 (Aug. 1, 1991)). Thus, Tela contends a limited exclusion order should issue against all of Respondents' infringing products. *Id.* In relevant part, Tela opposes any certification provisions because Respondents' mentions of new processor products "are Intel 14nm or smaller Tri-Gate integrated circuits . . . within the scope of the NOI and subject to exclusion."

[redacted]

CRB at 100. Tela suggests that Respondents should leverage the advisory opinion process for any future products, and that they have not shown the need for warranty or repair exemptions. *See id.* In its public interest discussion, Tela argues any delay on a remedy is not warranted, but if implemented should be limited to six months—the same time Intel claimed in interrogatory responses that it could design around the Asserted Patents. CRB at 95-96 (citing CX-0007C at *1150; CX-1235C at Q/A 216-218, 221).

Respondents do not challenge that a limited exclusion should issue, but argue public interest considerations warrant several adjustments, including: a delay of at least twelve months, the order should not extend to Respondents' downstream products, and applicability only to products for which respondent Intel is the importer of record. RIB at 196-197; *see* RRB at 100. As to the delay, Respondents claim it would take [redacted] RIB at 196-197 (citing CX-1220C at 253:12-19; CX-1223C at 137:17-138:6; RX-0002C at Q/A 165-169). Respondents also contend it serves "to allow Respondents and other impacted companies time to begin implementing substitute processors and/or moving manufacturing overseas." RIB at 196; RRB at 100. Additionally, Respondents argue the remedy should allow for: certification provisions, Government exemptions under 19 U.S.C. § 1337(l), and service and repair exemptions. *See* RIB at 197.

The Staff emphasizes that "[t]he Commission has 'broad discretion in selecting the form, scope and extent of the remedy.'" SIB at 123 (citing *Viscofan, S.A. v. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986); *Fuji Photo Film v. Int'l Trade Comm'n*, 386 F.3d 1095, 1106-1107 (Fed. Cir. 2004)). The Staff does not support downstream product exemptions as described by Respondents (*id.* at 124), or service, repair, and replacement exceptions (*id.* at 124-125

[redacted]

("Respondents also ask for a repair exemption, although they cite only scant evidence of repair and maintenance activities.")). The Staff does support including the Commission's standard certification provision (*id.* at 125) and a delay to the effective date by several months to alleviate the impact on third parties (*id.* at 132). On this latter point, the Staff notes, as Tela did, that "Respondents admit that a design-around could be completed in as little as six months." *Id.* (citing CX-0007C at *1150).

The record supports imposition of a limited exclusion order with a delay of 12 months and a standard certification provision. Respondents' consideration of EPROMs factors and their requests for certification provisions and service and repair modifications are explained only through an incorporation by reference of their pre-hearing brief, which violates Ground Rule 13.5. *See* RIB at 197 (citing RPB at 393-396); Order No. 2; *see generally* RRB at 93-100. As such, these arguments are not considered. The government exemption under 19 U.S.C. § 1337(l) is included in exclusion orders as a matter of course and need not be discussed. As to service and repair exceptions, no other party supports them, and I do not recommend they be included in any exclusion orders.

As to a delay, should an exclusion order issue, Tela and the Staff largely draw upon Respondents' contentions in this investigation for their six-month figure, but the contentions state a redesign would take *at least* 6 months. CX-0007C at *1150 ("Intel would likely need to change the early stages or lower level of the wafer fabrication process to avoid the adjudicated scope of Tela's asserted patent claims. The lower level the modification, the longer the redesign will take, because a low level modification has ripple effects for all subsequent levels of the fabrication process. Thus, a redesign of Intel Accused Products would likely take at least 6 months to complete.")). It seems unlikely that designs could change, in ways acceptable to fabrication and

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performance needs, in that timeframe. That six-month figure also does not appear to take into account the changes non-party customers would need to implement subsequent to the redesign, or the time needed to switch processor suppliers. Credible testimony on this point supports accommodating at least an additional six months. *See* CX-1220C at 253:12-257:7; CX-1223C at 137:14-139:9.

Finally, as to certification provisions, the Commission has instructed that "[c]ertification provisions aid U.S. Customs and Border Protection ('CBP') in enforcing Commission orders but 'do not mandate that CBP accept certification as proof that the articles in question are not covered' by the limited exclusion order." *Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Comm'n Op. at 55 (Feb. 1, 2019). Additionally, "[t]he standard provision does not allow an importer to simply certify that it is not violating the exclusion order. Rather, CBP only accepts a certification that the goods have been previously determined by CBP or the Commission not to violate the exclusion order" and "it has been Commission practice for the past several years to include certification provisions in its exclusion orders to aid CBP." *See Road Milling Machines*, Inv. No. 337-TA-1067, Comm'n Op. at 15, 15 n. 5 (citations omitted). Respondents do not appear to argue for any non-standard certification provision, so it is my recommendation that any limited exclusion order include the Commission's standard certification provision.

**B. Cease and Desist Order**

Should a violation be found, Tela argues cease and desist orders should issue because "[e]ach Respondent stipulated that it maintains a commercially significant inventory of Accused Products in the U.S." CIB at 191 (citing JX-0017C; JX-0018C; JX-0019C; JX-0020C; JX-0021C; CX-1145C at Q/A 233-278). Tela specifies that the orders should preclude activities including

[redacted]

"(1) maintenance, warranty, and repair, (2) sale, including of any inventory, (3) sales and/or marketing, and (4) importation." *Id.*

Respondents generally apply their argument on exemptions and limitations to an exclusion order to any issuing cease and desist orders. *See* RIB at 196-197; RRB at 100. The Staff supports cease and desist orders should a violation be found, again noting the stipulations entered into by each respondent. SIB at 126-127; SRB at 50. The Staff does, however, question how certain of Tela's public interest propositions comport with a cease and desist order that prevents Intel from selling to third-parties for later importation. *See* SIB at 127; SRB art 49.

Complainants bear the burden on the issue of cease and desist orders. *Certain Microfluidic Devices*, Inv. No. 337-TA-1068, Comm'n Op. at 23 (Jan. 10, 2020). Such orders "are generally issued when, with respect to the imported infringing products, respondents maintain commercially significant inventories in the United States or have significant domestic operations that could undercut the remedy provided by an exclusion order." *Id.* at 22-23 (citations omitted). Given the stipulations referenced above, this inventory requirement is met and it is my recommendation that cease and desist orders should issue against each respondent. It is also my recommendation that the cease and desist orders be delayed for twelve months in parallel with the exclusion orders.

**C. Bond**

The Commission has held that "[t]he complainant bears the burden of establishing the need for a bond" during the Presidential Review period. *See Robotic Vacuums*, Inv. No. 337-TA-1057, Comm'n Op. at 68. Tela does not seek a bond. *See* CIB at 190-191; RIB at 196 (citing CPB at 386); SIB at 128. Therefore, it is my recommendation that, in the event of a violation, no bond requirement should issue.

[redacted]

### D. Public Interest

As determined above, there has been no violation of section 337. Assuming a violation is found, however, it is recommended that the remedial orders include: limited exclusion orders directed to each respondent, including certification provisions and a twelve-month enforcement delay; and cease-and-desist orders, also directed to each respondent and including twelve-month enforcement delays. The remaining issue for this recommended determination is to identify the effects which these orders would have upon the public interest and consider whether those effects are so prejudicial as to justify the denial of any remedy. The Commission has explained:

> Section 337 requires the Commission, upon finding a violation of section 337, to issue an LEO "unless, after considering the effect of such exclusion upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers, it finds that such articles should not be excluded from entry." 19 U.S.C. § 1337(d)(l). Similarly, the Commission must consider these public interest factors before issuing a CDO. 19 U.S.C. § 1337(f)(1).

*Certain Electronic Nicotine Delivery Systems and Components Thereof*, Inv. No. 337-TA-1139, Comm'n Op. at 16 (May 5, 2020). The Respondents contend public interest factors should preclude a remedy; the Staff does not. RIB at 183; *see* SIB at 132; CIB at 177-178. For the reasons discussed below, it is not my recommendation that public interest considerations should preclude the issuance of the recommended remedy.

#### 1. Public Health and Welfare

As to public health and welfare, the record does not weigh one way or the other. Respondents argue the orders would "exclude Intel microprocessors that supply over 95% of the U.S. server market segment and large percentages of the U.S. workstation, supercomputer, and personal computer market segments" leading to reduced output and employment in the U.S., slow the pace of innovation, and disrupt other interests and industries. RIB at 191 (citing RX-0004C at

[redacted]

Q/A 94-97, 104-110). Specifically, Respondents predict a massive shortfall of x86 processors in the U.S., with the domestic computer manufacturing industry reducing output by 82% and losing 200,000 jobs (*id.* at 191-192 (citing RX-0004C at Q/A 157-161)), with a loss of sales that would cause Intel to cut its research budget (*id.* at 192 (citing RX-0004C at Q/A 44-48, 139; RX-0006C at Q/A 128-130)). As to other interests, Respondents explain "[t]he Proposed Orders would immediately deprive a broad number of U.S. industries, including healthcare, cloud computing, advanced research, and education, of the cutting-edge technology they require." RIB at 192 (citing RX-0004C at Q/A 133-172; RX-0011C at Q/A 87-91; RX-0006C at Q/A 54-131)); *see* RIB at 192-193.

On this topic, only Respondents' discussions of the healthcare, research, and education are material, and Respondents have not explained with particularity why these sectors would be harmed by the exclusion orders as opposed to generally observing that they use Accused Products in support of their missions. *See, e.g.*, RIB at 192-193 (citing Hr'g Tr. at 1040:3-6); Hr'g Tr. at 1039:20-1040:22 ("If those hospitals or those companies weren't – didn't have access to the latest advances in technology, we wouldn't be able to get down to the specific genome in a DNA strand that allows you to target precision medicine for cancer. They wouldn't be able to do some of the research that they have been able to do around Alzheimer's. They wouldn't be able to do early spinal cancer detection."). The Commission has explained "[t]he relevant issue is not whether there is a public health and welfare benefit provided by blood cholesterol testing generally, but rather whether the exclusion of the Accused Products will negatively impact the public health and welfare." *Certain Blood Cholesterol Testing Strips and Associated Systems Containing the Same*, Inv. No. 337-TA-1116, Comm'n Op. at 34 (May 1, 2020).

This is a critical omission, because Tela's expert, Dr. Akemann, persuasively testified that there are acceptable substitute x86 processors from AMD in the same sectors discussed by

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Respondents. *See* RIB at 182-183 (citations omitted); CX-1146C at Q/A 267-302, 616-620; RRB at 95 ("The accused Intel processors are x86 processors."). Respondents' response to substitution by AMD is mainly that they are not drop-in replacements, that AMD is not compatible with some of Intel's unique features such as Optane memory, and that AMD chips generally "do not support the ecosystem of Intel performance, power, and security features described above." *See* RIB at 188. These incompatibilities, however, are neither unexpected nor insurmountable and otherwise do not take away from the evidence showing AMD x86 processors could substitute even if they have historically had low market share. *See, e.g.*, CRB at 92-93, RX-0004C at Q/A 104-112. Indeed, many of the non-Intel respondents sell computer products including or intended for AMD processors, and which are comparable to their respective Accused Products (*see, e.g.*, CIB at 181 (citing CX-0426; CX-0427), 182 (citing CX-0451; CX-0905; CX-0115; CX-0116; CX-1473; CX-0969; CX-0215; CX-0585; CX-0214; CX-0353C; CX-0584; CX-0897; JX-0227; CX-0142; RX-0966; RX-0967; RX-0968; RX-0969; RX-0976)), and given the prospective nature of the relief, AMD's rise in desktop, mobile, and server market share and technological competitiveness is particularly relevant (*see* CIB at 179-180 (citing, *inter alia*, CX-1599 at *2-4; CX-1002; CX-0986; CX-1600; RX-0966; CX-1011; RX-0987; JX-0316; JX-0323C; CX-1407; JX-0186C at *3; RX-0805C at *2)).

As to slowed innovation (RIB at 192), this is limited to Intel and its own financial constraints, and the national security complications Respondents warn of (*id.*) are greatly ameliorated by 19 U.S.C. § 1337(l). Further, it is reasonable to assume at this stage that the impact on public health and welfare from computer manufacturers, software designers, and end users switching to AMD-based products (if even necessary given Respondents' claims of redesign), and

[redacted]

difficulties for AMD itself to ramp up production, would be lessened by a delay in enforcement of the exclusion orders. *See* SIB at 131.

**2. Competitive Conditions in the United States Economy**

As to competitive conditions, this factor partially weighs in favor of precluding a remedy. Respondents state "[t]he accused Intel processors are x86 processors" (RRB at 95) and Tela's expert, Dr. Akemann, acknowledges that only two companies have an x86 license—AMD and Intel (CX-1146C at Q/A 292 (citing CX-0548C at -7978)). Dr. Akemann does not discuss the possibility of new entrants to the x86 field (CX-1146C at Q/A 226, 267, 268, 275; *see generally* CX-1146C at Q/A 303-602 (discussing non-AMD entities and no mention of x86)), which logically results in a one-supplier market and weaker competition in the United States economy for all x86 applications (*see* RIB at 194). Tela's arguments regarding importers of record (CRB at 89) and non-respondent, non-licensed, companies' continuing ability to import substantial quantities of Accused Products (CIB at 187) are not persuasive. A limited exclusion order would prevent respondent Intel from importing but also selling for importation its Accused Products into the United States. As the Intel Accused Products are essentially all packaged, or finished, overseas (RIB at 189-190 (citing, *inter alia*, RX-0005C at Q/A 22-36, 58-73)), their entrance into the United States would somehow require Intel to sell them on terms that prohibit this act, with the customer then doing so anyway. This is an unrealistic scenario.

The record does show, however, that there are additional vendors and solutions for the server, cloud, and supercomputing environments where x86 is not required, even if not preferred at present. CIB at 183-186 (describing ARM-based processors, IBM processors, and Nvidia GPUs); RRB at 96 ("[T]he examples Tela cites in its brief are examples where non-x86 processor suppliers compete on the margins for business from consumers who are willing to buy non-x86-

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based products for a minority of applications."). So competitive conditions in these sectors may be less affected by the remedial orders.

### 3. Production of Like or Directly Competitive Articles in the United States

The product of like or directly competitive articles in the United States does not weigh in favor of precluding a remedy. As noted above, the reason the Commission has jurisdiction over the Intel Accused Products is because they are fabricated in wafer form in the United States but packaged, or finished, overseas (known as assembly, test, and packaging (ATM)) before importation. RIB at 189-190. The record shows Intel has, at present, limited ATM operations inside the United States, which process about [redacted] units per year. RIB at 190 (citing CX-1146C at Q/A 250; RX-0005C at Q/A 59, 61). Increasing these domestic operations, by any amount, would avoid the remedial orders presently considered and increase the production of articles in the United States. Further, and with respect to Respondents' predicted loss of computer manufacturing jobs (*e.g.*, building/assembling computers with Intel processors) (*see* RIB at 184-185), some portion of these can be expected to remain and shift to non-Intel products (such as AMD) in the timeframe allowed by delayed enforcement of the exclusion orders. This has in fact recently occurred due to market-based supply shortages. *See* CX-1600 ("In a bid to lower the impact of Intel CPU shortages, ASUS and other makers of PCs and components have developed more AMD-based products."). Overall, it is likely there would be an increase in domestic production of Intel-like articles.

### 4. Effect upon United States Consumers

The effect upon United States consumers slightly favors precluding a remedy. As explained above, the competition for products in the x86 architecture space will be cut in half and it is safe to assume prices for end users (*i.e.*, consumers) will increase as a result. With the loss of

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Intel products, the non-x86 spaces will also likely see price increases. The evidence is limited as to the extent of those increases, however. RIB at 196 (citing RX-0004C at Q/A 187-193; RX-0011C at Q/A 115). Respondents' arguments regarding OEMs and ODMs (*see id.*) as actors in the supply chain of downstream devices are not relevant here, because they are not end users.

**5. Conclusion**

In conclusion, a weighing of the factors above does not support outright preclusion of any remedy should a violation be found. The economic impact upon entities who incorporate the Intel Accused Products into their own computer products, and are not named respondents to this investigation, will have the benefit of a delayed enforcement to prepare their operations. Further, it has not been shown that industries with ties to public health and welfare are particularly dependent on the Accused Products, or that the Accused Products are uniquely suited for their computing needs, other than the fact that Intel currently enjoys dominant market share. Additionally, while there will undoubtedly be significantly decreased competition for x86 processor products, and lesser competition in others, this is a natural consequence of the right to exclude under a patent—even in industries as critical as information technology. *See Certain Personal Data and Mobile Communications Devices and Related Software*, Inv. No. 337-TA-710, Comm'n Op. at 69, 83-84 (Dec. 29, 2011). Further, Tela claims, and Respondents do not dispute, that Intel could theoretically employ the services of licensed semiconductor manufacturers TSMC and Samsung to make Intel-designed products—thereby alleviating much of the supply disruption which is the basis of Respondents' public interest concerns. CIB at 187. Further still, to the extent these remedial orders manage to devastate the public interest in the ways alleged by Respondents, the Commission provides modification proceedings for this exact event, which will undoubtedly be acted upon swiftly. 19 C.F.R. § 210.76 ("Whenever any person believes that changed conditions of fact or law, or the public interest, require that an exclusion order, cease and desist

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order, or consent order be modified or set aside . . . the Commission make a determination that the conditions which led to the issuance of an exclusion order, cease and desist order, or consent order no longer exist").

## IX. INITIAL DETERMINATION AND ORDER

Based on the foregoing,[10] it is my Initial Determination that there is no violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain integrated circuits and products containing the same, in connection with the asserted claims of U.S. Patent Nos. 10,141,334 and 10,186,523.

Furthermore, it is my determination that a domestic industry in the United States that practices or exploits the asserted patents does not exist.

This Initial Determination, together with the record of the hearing in this investigation consisting of the transcript of the evidentiary hearing, with appropriate corrections as may hereafter be ordered, and the exhibits accepted into evidence in this investigation, is hereby certified to the Commission.[11]

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission sixty (60) days after the date of service of the Initial Determination, unless a party files a petition for review of the Initial Determination within twelve (12) business days after service of the Initial Determination pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion, a review of the Initial Determination or certain issues therein. Any issue or argument not raised in a petition for review,

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[10] The failure to discuss any matter raised by the parties or any portion of the Record herein does not indicate that said matter was not considered. Rather, any such matter(s) or portion(s) of the Record has/have been determined to be irrelevant, immaterial or meritless. Arguments made on brief which were otherwise unsupported by Record evidence or legal precedent have been accorded no weight.

[11] The pleadings of the parties filed with the Secretary need not be certified as they are already in the Commission's possession in accordance with Commission rules.

[redacted]

or response thereto, will be deemed to have been abandoned and may be disregarded by the Commission in reviewing the Initial Determination pursuant to 19 C.F.R. § 210.43(b) and (c).

[redacted]

**Confidentiality Notice:**

This Initial Determination is being issued as confidential, and a public version will be issued pursuant to Commission Rule 210.5(f). Within seven (7) days of the date of this Initial Determination, the parties shall jointly submit: (1) a proposed public version of this opinion with any proposed redactions bracketed in red; and (2) a written justification for any proposed redactions specifically explaining why the piece of information sought to be redacted is confidential and why disclosure of the information would be likely to cause substantial harm or likely to have the effect of impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions.[12]

**SO ORDERED.**

Cameron Elliot
Administrative Law Judge

[12] Under Commission Rules 210.5 and 201.6(a), confidential business information includes: information which concerns or relates to the trade secrets, processes, operations, style of works, or apparatus, or to the production, sales, shipments, purchases, transfers, identification of customers, inventories, or amount or source of any income, profits, losses, or expenditures of any person, firm, partnership, corporation, or other organization, or other information of commercial value, the disclosure of which is likely to have the effect of either impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions, or causing substantial harm to the competitive position of the person, firm, partnership, corporation, or other organization from which the information was obtained, unless the Commission is required by law to disclose such information. *See* 19 C.F.R. § 201.6(a). Thus, to constitute confidential business information the disclosure of the information sought to be designated confidential must likely have the effect of either: (1) impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions; or (2) causing substantial harm to the competitive position of the person, firm, partnership, corporation, or other organization from which the information was obtained.

# APPENDIX A

| INTEL | | | | | | |
|---|---|---|---|---|---|---|
| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | BROADWELL | N/A | 5Y10 | 935385 | Intel® Core™ M-5Y10 Processor (4M Cache, up to 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3755U | 936718 | Intel® Celeron® Processor 3755U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y70 | 937141 | Intel® Core™ M-5Y70 Processor (4M Cache, up to 2.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | N/A | 937248 | MBL [BROADWELL] Processor ULV 2.00 GHz, 3M Cache, FC-BGA14F, Tray, 15W, FH8065801620203 |
| 1272 | 14nm | BROADWELL | N/A | N/A | 937249 | MBL [BROADWELL] Processor ULV 2.00 GHz, 3M Cache, FC-BGA14F, Tray, 15W, FH8065801620403 |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | 3805U | 937255 | Intel® Pentium® Processor 3805U (2M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3755U | 937258 | Intel® Celeron® Processor 3755U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3205U | 937260 | Intel® Celeron® Processor 3205U (2M Cache, 1.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y70 | 937262 | Intel® Core™ M-5Y70 Processor (4M Cache, up to 2.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y10 | 937263 | Intel® Core™ M-5Y10 Processor (4M Cache, up to 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y10A | 937264 | Intel® Core™ M-5Y10a Processor (4M Cache, up to 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y10 | 937418 | Intel® Core™ M-5Y10 Processor (4M Cache, up to 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5600U | 937723 | Intel® Core™ i7-5600U Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5200U | 937726 | Intel® Core™ i5-5200U Processor (3M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3215U | 937732 | Intel® Celeron® Processor 3215U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5015U | 937735 | Intel® Core™ i3-5015U Processor (3M Cache, 2.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5257U | 937776 | Intel® Core™ i5-5257U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | N/A | 938695 | MBL [SKYLAKE] Processor ULV 1.00 GHz, 4M Cache, FC-BGA14C, Tray, 20W, HE8066201922822 |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | N/A | 938728 | DT [SKYLAKE] Processor 2.20 GHz, 8M Cache, FC-LGA14C, Tray, 80W, CM8066202070833 |
| 1272 | 14nm | BROADWELL | N/A | 5Y10C | 939310 | Intel® Core™ M-5Y10c Processor (4M Cache, up to 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y31 | 939314 | Intel® Core™ M-5Y31 Processor (4M Cache, up to 2.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y51 | 939327 | Intel® Core™ M-5Y51 Processor (4M Cache, up to 2.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 5Y71 | 939331 | Intel® Core™ M-5Y71 Processor (4M Cache, up to 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5600U | 939359 | Intel® Core™ i7-5600U Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5500U | 939360 | Intel® Core™ i7-5500U Processor (4M Cache, up to 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5300U | 939361 | Intel® Core™ i5-5300U Processor (3M Cache, up to 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5200U | 939362 | Intel® Core™ i5-5200U Processor (3M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5010U | 939363 | Intel® Core™ i3-5010U Processor (3M Cache, 2.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5020U | 939364 | Intel® Core™ i3-5020U Processor (3M Cache, 2.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3765U | 939366 | Intel® Celeron® Processor 3765U (2M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3215U | 939367 | Intel® Celeron® Processor 3215U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5005U | 939368 | Intel® Core™ i3-5005U Processor (3M Cache, 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5015U | 939369 | Intel® Core™ i3-5015U Processor (3M Cache, 2.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 3825U | 939519 | Intel® Pentium® Processor 3825U (2M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | 3825U | 939531 | Intel® Pentium® Processor 3825U (2M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5650U | 939655 | Intel® Core™ i7-5650U Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5350U | 939656 | Intel® Core™ i5-5350U Processor (3M Cache, up to 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5550U | 939658 | Intel® Core™ i7-5550U Processor (4M Cache, up to 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5250U | 939660 | Intel® Core™ i5-5250U Processor (3M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I7-5557U | 939662 | Intel® Core™ i7-5557U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5287U | 939670 | Intel® Core™ i5-5287U Processor (3M Cache, up to 3.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5257U | 939672 | Intel® Core™ i5-5257U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5157U | 939674 | Intel® Core™ i3-5157U Processor (3M Cache, 2.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | N/A | I3-5005U | 940707 | Intel® Core™ i3-5005U Processor (3M Cache, 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | N/A | 942317 | MBL [SKYLAKE] Processor ULV 1.60 GHz, 4M Cache, FC-BGA14C, Tray, 15W, FJ8066201930823 |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1540 | 942392 | Intel® Xeon® Processor D-1540 (12M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1520 | 942393 | Intel® Xeon® Processor D-1520 (6M Cache, 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | I7-6500U | 942759 | Intel® Core™ i7-6500U Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | I5-6300U | 942760 | Intel® Core™ i5-6300U Processor (3M Cache, up to 3.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | I5-6200U | 942761 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | M3-6Y30 | 942802 | Intel® Core™ m3-6Y30 Processor (4M Cache, up to 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | M7-6Y75 | 942808 | Intel® Core™ m7-6Y75 Processor (4M Cache, up to 3.00 GHz) FC-BGA14C, Tray |

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| INTEL | | | | | | |
|---|---|---|---|---|---|---|
| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | M5-6Y57 | 942810 | Intel® Core™ m5-6Y57 Processor (4M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 | I5-5675C | 942888 | Intel® Core™ i5-5675C Processor (4M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400T | 943084 | Intel® Core™ i5-6400T Processor (6M Cache, up to 2.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 943086 | Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 943093 | Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 943095 | Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500T | 943096 | Intel® Core™ i5-6500T Processor (6M Cache, up to 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) PROCESSOR | I3-6100U | 943140 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | N/A | 943307 | SRV [KNIGHTS LANDING] Processor 1.20 GHz, 30M Cache, FC-LGA14B, Tray, 215W, HJ8066702268801 |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5775C | 943363 | Intel® Core™ i7-5775C Processor (6M Cache, up to 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 | I5-5675R | 943366 | Intel® Core™ i5-5675R Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 | I5-5575R | 943367 | Intel® Core™ i5-5575R Processor (4M Cache, up to 3.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5775R | 943368 | Intel® Core™ i7-5775R Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1270LV4 | 943401 | Intel® Xeon® Processor E3-1270L v4 (6M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1285LV4 | 943403 | Intel® Xeon® Processor E3-1285L v4 (6M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1265LV4 | 943404 | Intel® Xeon® Processor E3-1265L v4 (6M Cache, 2.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1284LV4 | 943407 | Intel® Xeon® Processor E3-1284L v4 (6M Cache, 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5850HQ | 943430 | Intel® Core™ i7-5850HQ Processor (6M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5950HQ | 943431 | Intel® Core™ i7-5950HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5700HQ | 943450 | Intel® Core™ i7-5700HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 943463 | Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400T | 943464 | Intel® Core™ i5-6400T Processor (6M Cache, up to 2.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 943465 | Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700T | 943466 | Intel® Core™ i7-6700T Processor (8M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 943467 | Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 943468 | Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 943469 | Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 943470 | Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500T | 943471 | Intel® Core™ i5-6500T Processor (6M Cache, up to 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600T | 943472 | Intel® Core™ i5-6600T Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 943473 | Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1280V5 | 943544 | Intel® Xeon® Processor E3-1280 v5 (8M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240V5 | 943545 | Intel® Xeon® Processor E3-1240 v5 (8M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1230V5 | 943546 | Intel® Xeon® Processor E3-1230 v5 (8M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1270V5 | 943547 | Intel® Xeon® Processor E3-1270 v5 (8M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1220V5 | 943548 | Intel® Xeon® Processor E3-1220 v5 (8M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1260LV5 | 943549 | Intel® Xeon® Processor E3-1260L v5 (8M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1225V5 | 943550 | Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1275V5 | 943551 | Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1245V5 | 943552 | Intel® Xeon® Processor E3-1245 v5 (8M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1235LV5 | 943553 | Intel® Xeon® Processor E3-1235L v5 (8M Cache, 2.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240LV5 | 943554 | Intel® Xeon® Processor E3-1240L v5 (8M Cache, 2.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6440HQ | 943599 | Intel® Core™ i5-6440HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1285V4 | 943660 | Intel® Xeon® Processor E3-1285 v4 (6M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1270LV4 | 943661 | Intel® Xeon® Processor E3-1270L v4 (6M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5775C | 943887 | Boxed Intel® Core™ i7-5775C Processor (6M Cache, up to 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 943907 | Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 943908 | Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1541 | 943943 | Intel® Xeon® Processor D-1541 (12M Cache, 2.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1548 | 943950 | Intel® Xeon® Processor D-1548 (12M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1528 | 943953 | Intel® Xeon® Processor D-1528 (9M Cache, 1.90 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1541 | 944000 | Intel® Xeon® Processor D-1541 (12M Cache, 2.10 GHz) FC-BGA14C, Tray |

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|---|---|---|---|---|---|---|
| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1521 | 944001 | Intel® Xeon® Processor D-1521 (6M Cache, 2.40 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1531 | 944002 | Intel® Xeon® Processor D-1531 (9M Cache, 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1539 | 944005 | Intel® Xeon® Processor D-1539 (12M Cache, 1.60 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1548 | 944006 | Intel® Xeon® Processor D-1548 (12M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1527 | 944007 | Intel® Xeon® Processor D-1527 (6M Cache, 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1528 | 944008 | Intel® Xeon® Processor D-1528 (9M Cache, 1.90 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | D1519 | 944009 | Intel® Pentium® Processor D1519 (6M Cache, 1.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1518 | 944010 | Intel® Xeon® Processor D-1518 (6M Cache, 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | D1507 | 944011 | Intel® Pentium® Processor D1507 (3M Cache, 1.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | D1508 | 944012 | Intel® Pentium® Processor D1508 (3M Cache, 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1529 | 944013 | Intel® Xeon® Processor D-1529 (6M Cache, 1.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6820EQ | 944028 | Intel® Core™ i7-6820EQ Processor (8M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 944035 | Boxed Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6440EQ | 944037 | Intel® Core™ i5-6440EQ Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100E | 944045 | Intel® Core™ i3-6100E Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6822EQ | 944047 | Intel® Core™ i7-6822EQ Processor (8M Cache, up to 2.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6102E | 944050 | Intel® Core™ i3-6102E Processor (3M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6442EQ | 944051 | Intel® Core™ i5-6442EQ Processor (6M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1505LV5 | 944067 | Intel® Xeon® Processor E3-1505L v5 (8M Cache, 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5700EQ | 944074 | Intel® Core™ i7-5700EQ Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1278LV4 | 944075 | Intel® Xeon® Processor E3-1278L v4 (6M Cache, 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-5850EQ | 944076 | Intel® Core™ i7-5850EQ Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1258LV4 | 944077 | Intel® Xeon® Processor E3-1258L v4 (6M Cache, 1.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E3-1283LV4 | 944090 | Intel® Xeon® Processor E3-1283L v4 (6M Cache, 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) M | M5-6Y57 | 944320 | Intel® Core™ m5-6Y57 Processor (4M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) M | M7-6Y75 | 944321 | Intel® Core™ m7-6Y75 Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) M | M5-6Y54 | 944325 | Intel® Core™ m5-6Y54 Processor (4M Cache, up to 2.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) M | M3-6Y30 | 944326 | Intel® Core™ m3-6Y30 Processor (4M Cache, up to 2.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | 4405Y | 944330 | Intel® Pentium® Processor 4405Y (2M Cache, 1.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | 3855U | 944335 | Intel® Celeron® Processor 3855U (2M Cache, 1.60 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | 3955U | 944336 | Intel® Celeron® Processor 3955U (2M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | 4405U | 944337 | Intel® Pentium® Processor 4405U (2M Cache, 2.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6500U | 944339 | Intel® Core™ i7-6500U Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6300U | 944340 | Intel® Core™ i5-6300U Processor (3M Cache, up to 3.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6600U | 944341 | Intel® Core™ i7-6600U Processor (4M Cache, up to 3.40 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6820HK | 944356 | Intel® Core™ i7-6820HK Processor (8M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1535MV5 | 944365 | Intel® Xeon® Processor E3-1535M v5 (8M Cache, 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1505MV5 | 944366 | Intel® Xeon® Processor E3-1505M v5 (8M Cache, 2.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6300HQ | 944367 | Intel® Core™ i5-6300HQ Processor (6M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700HQ | 944368 | Intel® Core™ i7-6700HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100H | 944369 | Intel® Core™ i3-6100H Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6440HQ | 944370 | Intel® Core™ i5-6440HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6920HQ | 944371 | Intel® Core™ i7-6920HQ Processor (8M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6820HQ | 944372 | Intel® Core™ i7-6820HQ Processor (8M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1537 | 944377 | Intel® Xeon® Processor D-1537 (12M Cache, 1.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 | I5-5675C | 944383 | Intel® Core™ i5-5675C Processor (4M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 944458 | Boxed Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 944459 | Boxed Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 944460 | Boxed Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 944461 | Boxed Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 944462 | Boxed Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 944464 | Boxed Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 944469 | Boxed Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 944470 | Boxed Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 944472 | Boxed Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 944473 | Boxed Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 944474 | Boxed Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 944475 | Boxed Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1537 | 944484 | Intel® Xeon® Processor D-1537 (12M Cache, 1.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | D1517 | 944485 | Intel® Pentium® Processor D1517 (6M Cache, 1.60 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240V5 | 944496 | Boxed Intel® Xeon® Processor E3-1240 v5 (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1230V5 | 944497 | Boxed Intel® Xeon® Processor E3-1230 v5 (8M Cache, 3.40 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1270V5 | 944498 | Boxed Intel® Xeon® Processor E3-1270 v5 (8M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1275V5 | 944499 | Boxed Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1245V5 | 944500 | Boxed Intel® Xeon® Processor E3-1245 v5 (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1220V5 | 944506 | Boxed Intel® Xeon® Processor E3-1220 v5 (8M Cache, 3.00 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1225V5 | 944507 | Boxed Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900E | 944534 | Intel® Celeron® Processor G3900E (2M Cache, 2.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3902E | 944537 | Intel® Celeron® Processor G3902E (2M Cache, 1.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 | I5-5675C | 944548 | Boxed Intel® Core™ i5-5675C Processor (4M Cache, up to 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2695V4 | 944676 | Intel® Xeon® Processor E5-2695 v4 (45M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2696V4 | 944679 | Intel® Xeon® Processor E5-2696 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300 | 944894 | Intel® Core™ i3-6300 Processor (4M Cache, 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300T | 944897 | Intel® Core™ i3-6300T Processor (4M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100T | 944899 | Intel® Core™ i3-6100T Processor (3M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100 | 944901 | Intel® Core™ i3-6100 Processor (3M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 944906 | Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400T | 944925 | Intel® Pentium® Processor G4400T (3M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900T | 944927 | Intel® Celeron® Processor G3900T (2M Cache, 2.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6260U | 945073 | Intel® Core™ i5-6260U Processor (4M Cache, up to 2.90 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6320 | 945192 | Intel® Core™ i3-6320 Processor (4M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300 | 945193 | Intel® Core™ i3-6300 Processor (4M Cache, 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300T | 945205 | Intel® Core™ i3-6300T Processor (4M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100T | 945206 | Intel® Core™ i3-6100T Processor (3M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100 | 945208 | Intel® Core™ i3-6100 Processor (3M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4500 | 945269 | Intel® Pentium® Processor G4500 (3M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4520 | 945298 | Intel® Pentium® Processor G4520 (3M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400T | 945362 | Intel® Pentium® Processor G4400T (3M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4500T | 945382 | Intel® Pentium® Processor G4500T (3M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900T | 945383 | Intel® Celeron® Processor G3900T (2M Cache, 2.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900 | 945385 | Intel® Celeron® Processor G3900 (2M Cache, 2.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3920 | 945387 | Intel® Celeron® Processor G3920 (2M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | N/A | I5-5200U | 945390 | Intel® Core™ i5-5200U Processor (3M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2695V4 | 945399 | Intel® Xeon® Processor E5-2695 v4 (45M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2696V4 | 945449 | Intel® Xeon® Processor E5-2696 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2695V4 | 945450 | Intel® Xeon® Processor E5-2695 v4 (45M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | N/A | 945460 | SRV [BROADWELL] Processor 2.10 GHz, 20M Cache, 8.000 GT/s Intel® QPI, FC-LGA14A, Tray, 85W, CM8066002032201 |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300 | 945908 | Boxed Intel® Core™ i3-6300 Processor (4M Cache, 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300T | 945909 | Boxed Intel® Core™ i3-6300T Processor (4M Cache, 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100T | 945910 | Boxed Intel® Core™ i3-6100T Processor (3M Cache, 3.20 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100 | 945911 | Boxed Intel® Core™ i3-6100 Processor (3M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900 | 945912 | Boxed Intel® Celeron® Processor G3900 (2M Cache, 2.80 GHz) FC-LGA14C |

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| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3920 | 945913 | Boxed Intel® Celeron® Processor G3920 (2M Cache, 2.90 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6300 | 945914 | Boxed Intel® Core™ i3-6300 Processor (4M Cache, 3.80 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100T | 945917 | Boxed Intel® Core™ i3-6100T Processor (3M Cache, 3.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100 | 945918 | Boxed Intel® Core™ i3-6100 Processor (3M Cache, 3.70 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900 | 945919 | Boxed Intel® Celeron® Processor G3900 (2M Cache, 2.80 GHz) FC-LGA14C, for China |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2683V4 | 945949 | Intel® Xeon® Processor E5-2683 v4 (40M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2698V4 | 945951 | Intel® Xeon® Processor E5-2698 v4 (50M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 946002 | Boxed Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4500 | 946003 | Boxed Intel® Pentium® Processor G4500 (3M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 946004 | Boxed Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4520 | 946006 | Boxed Intel® Pentium® Processor G4520 (3M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 946007 | Boxed Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4500 | 946008 | Boxed Intel® Pentium® Processor G4500 (3M Cache, 3.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400 | 946009 | Boxed Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | BROADWELL | INTEL(R) PENTIUM(R) | D1509 | 946072 | Intel® Pentium® Processor D1509 (3M Cache, 1.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6320 | 946089 | Boxed Intel® Core™ i3-6320 Processor (4M Cache, 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2690V4 | 946091 | Intel® Xeon® Processor E5-2690 v4 (35M Cache, 2.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2660V4 | 946093 | Intel® Xeon® Processor E5-2660 v4 (35M Cache, 2.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2680V4 | 946098 | Intel® Xeon® Processor E5-2680 v4 (35M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2650LV4 | 946099 | Intel® Xeon® Processor E5-2650L v4 (35M Cache, 1.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2658V4 | 946107 | Intel® Xeon® Processor E5-2658 v4 (35M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6560U | 946138 | Intel® Core™ i7-6560U Processor (4M Cache, up to 3.20 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6260U | 946143 | Intel® Core™ i5-6260U Processor (4M Cache, up to 2.90 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6167U | 946152 | Intel® Core™ i3-6167U Processor (3M Cache, 2.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 946153 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6567U | 946157 | Intel® Core™ i7-6567U Processor (4M Cache, up to 3.60 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6287U | 946159 | Intel® Core™ i5-6287U Processor (4M Cache, up to 3.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6267U | 946160 | Intel® Core™ i5-6267U Processor (4M Cache, up to 3.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6660U | 946161 | Intel® Core™ i7-6660U Processor (4M Cache, up to 3.40 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6360U | 946162 | Intel® Core™ i5-6360U Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6785R | 946208 | Intel® Core™ i7-6785R Processor (8M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2699V4 | 946675 | Intel® Xeon® Processor E5-2699 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2683V4 | 946676 | Intel® Xeon® Processor E5-2683 v4 (40M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2697V4 | 946678 | Intel® Xeon® Processor E5-2697 v4 (45M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2698V4 | 946679 | Intel® Xeon® Processor E5-2698 v4 (50M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2676V4 | 946681 | Intel® Xeon® Processor E5-2676 v4 (40M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2697AV4 | 946684 | Intel® Xeon® Processor E5-2697A v4 (40M Cache, 2.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2682V4 | 946687 | Intel® Xeon® Processor E5-2682 v4 (40M Cache, 2.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2679V4 | 946688 | Intel® Xeon® Processor E5-2679 v4 (50M Cache, 2.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2689V4 | 946690 | Intel® Xeon® Processor E5-2689 v4 (25M Cache, 3.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2686V4 | 946691 | Intel® Xeon® Processor E5-2686 v4 (45M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6650U | 946722 | Intel® Core™ i7-6650U Processor (4M Cache, up to 3.40 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2673V4 | 946773 | Intel® Xeon® Processor E5-2673 v4 (50M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8330 | 947028 | Intel Atom® x5-Z8330 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2609V4 | 947112 | Intel® Xeon® Processor E5-2609 v4 (20M Cache, 1.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2637V4 | 947115 | Intel® Xeon® Processor E5-2637 v4 (15M Cache, 3.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2667V4 | 947117 | Intel® Xeon® Processor E5-2667 v4 (25M Cache, 3.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1603V4 | 947135 | Intel® Xeon® Processor E5-1603 v4 (10M Cache, 2.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 947200 | Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400T | 947201 | Intel® Core™ i5-6400T Processor (6M Cache, up to 2.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 947202 | Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700T | 947203 | Intel® Core™ i7-6700T Processor (8M Cache, up to 3.60 GHz) FC-LGA14C, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 947204 | Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 947205 | Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 947206 | Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 947207 | Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500T | 947208 | Intel® Core™ i5-6500T Processor (6M Cache, up to 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600T | 947209 | Intel® Core™ i5-6600T Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1280V5 | 947224 | Intel® Xeon® Processor E3-1280 v5 (8M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240V5 | 947225 | Intel® Xeon® Processor E3-1240 v5 (8M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1230V5 | 947228 | Intel® Xeon® Processor E3-1230 v5 (8M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1270V5 | 947229 | Intel® Xeon® Processor E3-1270 v5 (8M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1220V5 | 947230 | Intel® Xeon® Processor E3-1220 v5 (8M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1260LV5 | 947234 | Intel® Xeon® Processor E3-1260L v5 (8M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1225V5 | 947247 | Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1275V5 | 947248 | Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1245V5 | 947249 | Intel® Xeon® Processor E3-1245 v5 (8M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1235LV5 | 947250 | Intel® Xeon® Processor E3-1235L v5 (8M Cache, 2.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240LV5 | 947252 | Intel® Xeon® Processor E3-1240L v5 (8M Cache, 2.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700TE | 947253 | Intel® Core™ i7-6700TE Processor (8M Cache, up to 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1268LV5 | 947254 | Intel® Xeon® Processor E3-1268L v5 (8M Cache, 2.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500TE | 947257 | Intel® Core™ i5-6500TE Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100TE | 947268 | Intel® Core™ i3-6100TE Processor (4M Cache, 2.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) | G4400TE | 947270 | Intel® Pentium® Processor G4400TE (3M Cache, 2.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900TE | 947271 | Intel® Celeron® Processor G3900TE (2M Cache, 2.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1581 | 947370 | Intel® Xeon® Processor D-1581 (24M Cache, 1.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1571 | 947371 | Intel® Xeon® Processor D-1571 (24M Cache, 1.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1587 | 947372 | Intel® Xeon® Processor D-1587 (24M Cache, 1.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1577 | 947373 | Intel® Xeon® Processor D-1577 (24M Cache, 1.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1567 | 947374 | Intel® Xeon® Processor D-1567 (18M Cache, 2.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1557 | 947375 | Intel® Xeon® Processor D-1557 (18M Cache, 1.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1559 | 947376 | Intel® Xeon® Processor D-1559 (18M Cache, 1.50 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1240V5 | 947516 | Boxed Intel® Xeon® Processor E3-1240 v5 (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1230V5 | 947517 | Boxed Intel® Xeon® Processor E3-1230 v5 (8M Cache, 3.40 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1270V5 | 947518 | Boxed Intel® Xeon® Processor E3-1270 v5 (8M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1220V5 | 947519 | Boxed Intel® Xeon® Processor E3-1220 v5 (8M Cache, 3.00 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1225V5 | 947521 | Boxed Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1275V5 | 947522 | Boxed Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1245V5 | 947523 | Boxed Intel® Xeon® Processor E3-1245 v5 (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400T | 947546 | Boxed Intel® Core™ i5-6400T Processor (6M Cache, up to 2.80 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700T | 947547 | Boxed Intel® Core™ i7-6700T Processor (8M Cache, up to 3.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500T | 947548 | Boxed Intel® Core™ i5-6500T Processor (6M Cache, up to 3.10 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600T | 947549 | Boxed Intel® Core™ i5-6600T Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 947558 | Boxed Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 947559 | Boxed Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 947560 | Boxed Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 947561 | Boxed Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 947562 | Boxed Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 947563 | Boxed Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700K | 947565 | Boxed Intel® Core™ i7-6700K Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700 | 947566 | Boxed Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600K | 947567 | Boxed Intel® Core™ i5-6600K Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6600 | 947568 | Boxed Intel® Core™ i5-6600 Processor (6M Cache, up to 3.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6500 | 947569 | Boxed Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz) FC-LGA14C, for China |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6400 | 947570 | Boxed Intel® Core™ i5-6400 Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7250 | 947605 | Intel® Xeon Phi™ Processor 7250 (16GB, 1.40 GHz, 68 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | N/A | 947606 | Intel® Xeon Phi™ Processor 7210 (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7210 | 947607 | Intel® Xeon Phi™ Processor 7210 (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7230 | 947609 | Intel® Xeon Phi™ Processor 7230 (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2690V4 | 947614 | Intel® Xeon® Processor E5-2690 v4 (35M Cache, 2.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2650V4 | 947616 | Intel® Xeon® Processor E5-2650 v4 (30M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2660V4 | 947617 | Intel® Xeon® Processor E5-2660 v4 (35M Cache, 2.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2680V4 | 947620 | Intel® Xeon® Processor E5-2680 v4 (35M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2650LV4 | 947622 | Intel® Xeon® Processor E5-2650L v4 (35M Cache, 1.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2666V4 | 947623 | Intel® Xeon® Processor E5-2666 v4 (30M Cache, 2.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2687WV4 | 947624 | Intel® Xeon® Processor E5-2687W v4 (30M Cache, 3.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2658V4 | 947636 | Intel® Xeon® Processor E5-2658 v4 (35M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2628LV4 | 947637 | Intel® Xeon® Processor E5-2628L v4 (30M Cache, 1.90 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2648LV4 | 947638 | Intel® Xeon® Processor E5-2648L v4 (35M Cache, 1.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2671V4 | 947639 | Intel® Xeon® Processor E5-2671 v4 (35M Cache, 2.30 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 947686 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500 | 947688 | Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700T | 947690 | Intel® Core™ i7-7700T Processor (8M Cache, up to 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600T | 947691 | Intel® Core™ i5-7600T Processor (6M Cache, up to 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500T | 947692 | Intel® Core™ i5-7500T Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 947693 | Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2695V4 | 947739 | Boxed Intel® Xeon® Processor E5-2695 v4 (45M Cache, 2.10 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2660V4 | 947744 | Boxed Intel® Xeon® Processor E5-2660 v4 (35M Cache, 2.00 GHz) FC-LGA14A |
| 1273 | 14nm | APOLLO LAKE | GENUINE INTEL (R) CPU | N/A | 947983 | DT [APOLLO LAKE] Processor ULV , 2M Cache, FC-BGA15F, Tray, 10W, FH8066802588601 |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6402P | 947992 | Intel® Core™ i5-6402P Processor (6M Cache, up to 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2683V4 | 948034 | Boxed Intel® Xeon® Processor E5-2683 v4 (40M Cache, 2.10 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2697V4 | 948035 | Boxed Intel® Xeon® Processor E5-2697 v4 (45M Cache, 2.30 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2695V4 | 948059 | Boxed Intel® Xeon® Processor E5-2695 v4 (45M Cache, 2.10 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6098P | 948062 | Intel® Core™ i3-6098P Processor (3M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6198DU | 948065 | Intel® Core™ i5-6198DU Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6498DU | 948066 | Intel® Core™ i7-6498DU Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6402P | 948102 | Intel® Core™ i5-6402P Processor (6M Cache, up to 3.40 GHz) FC-LGA14C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | N/A | 948107 | EMB [APOLLO LAKE] Processor ULV , 2M Cache, FC-BGA15C, Tray, 13W, LH8066802599101 |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | N/A | 948116 | EMB [APOLLO LAKE] Processor ULV , 2M Cache, FC-BGA15C, Tray, 13W, LH8066802599203 |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | N/A | 948117 | EMB [APOLLO LAKE] Processor ULV , 2M Cache, FC-BGA15C, Tray, 9W, LH8066802599304 |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2640V4 | 948123 | Intel® Xeon® Processor E5-2640 v4 (25M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2603V4 | 948124 | Intel® Xeon® Processor E5-2603 v4 (15M Cache, 1.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2609V4 | 948125 | Intel® Xeon® Processor E5-2609 v4 (20M Cache, 1.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2630LV4 | 948126 | Intel® Xeon® Processor E5-2630L v4 (25M Cache, 1.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2637V4 | 948127 | Intel® Xeon® Processor E5-2637 v4 (15M Cache, 3.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2643V4 | 948128 | Intel® Xeon® Processor E5-2643 v4 (20M Cache, 3.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2667V4 | 948129 | Intel® Xeon® Processor E5-2667 v4 (25M Cache, 3.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1620V4 | 948130 | Intel® Xeon® Processor E5-1620 v4 (10M Cache, 3.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1650V4 | 948131 | Intel® Xeon® Processor E5-1650 v4 (15M Cache, 3.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1680V4 | 948132 | Intel® Xeon® Processor E5-1680 v4 (20M Cache, 3.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2608LV4 | 948136 | Intel® Xeon® Processor E5-2608L v4 (20M Cache, 1.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6950X | 948137 | Intel® Core™ i7-6950X Processor Extreme Edition (25M Cache, up to 3.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6900K | 948138 | Intel® Core™ i7-6900K Processor (20M Cache, up to 3.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6850K | 948139 | Intel® Core™ i7-6850K Processor (15M Cache, up to 3.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6800K | 948140 | Intel® Core™ i7-6800K Processor (15M Cache, up to 3.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2618LV4 | 948141 | Intel® Xeon® Processor E5-2618L v4 (25M Cache, 2.20 GHz) FC-LGA14A, Tray |

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|---|---|---|---|---|---|---|
| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1630V4 | 948142 | Intel® Xeon® Processor E5-1630 v4 (10M Cache, 3.70 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1603V4 | 948143 | Intel® Xeon® Processor E5-1603 v4 (10M Cache, 2.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1607V4 | 948144 | Intel® Xeon® Processor E5-1607 v4 (10M Cache, 3.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2623V4 | 948145 | Intel® Xeon® Processor E5-2623 v4 (10M Cache, 2.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1660V4 | 948146 | Intel® Xeon® Processor E5-1660 v4 (20M Cache, 3.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2690V4 | 948197 | Boxed Intel® Xeon® Processor E5-2690 v4 (35M Cache, 2.60 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2650V4 | 948198 | Boxed Intel® Xeon® Processor E5-2650 v4 (30M Cache, 2.20 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2660V4 | 948199 | Boxed Intel® Xeon® Processor E5-2660 v4 (35M Cache, 2.00 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2680V4 | 948200 | Boxed Intel® Xeon® Processor E5-2680 v4 (35M Cache, 2.40 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2687WV4 | 948206 | Boxed Intel® Xeon® Processor E5-2687W v4 (30M Cache, 3.00 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6700HQ | 948244 | Intel® Core™ i7-6700HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6402P | 948516 | Boxed Intel® Core™ i5-6402P Processor (6M Cache, up to 3.40 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6098P | 948517 | Boxed Intel® Core™ i3-6098P Processor (3M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6402P | 948518 | Boxed Intel® Core™ i5-6402P Processor (6M Cache, up to 3.40 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6098P | 948520 | Boxed Intel® Core™ i3-6098P Processor (3M Cache, 3.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2609V4 | 948609 | Boxed Intel® Xeon® Processor E5-2609 v4 (20M Cache, 1.70 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1515MV5 | 948619 | Intel® Xeon® Processor E3-1515M v5 (8M Cache, 2.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1545MV5 | 948620 | Intel® Xeon® Processor E3-1545M v5 (8M Cache, 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1575MV5 | 948621 | Intel® Xeon® Processor E3-1575M v5 (8M Cache, 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6970HQ | 948622 | Intel® Core™ i7-6970HQ Processor (8M Cache, up to 3.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6870HQ | 948623 | Intel® Core™ i7-6870HQ Processor (8M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6770HQ | 948624 | Intel® Core™ i7-6770HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6350HQ | 948625 | Intel® Core™ i5-6350HQ Processor (6M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2630V4 | 948649 | Intel® Xeon® Processor E5-2630 v4 (25M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2620V4 | 948659 | Intel® Xeon® Processor E5-2620 v4 (20M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2630V4 | 948660 | Intel® Xeon® Processor E5-2630 v4 (25M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1565LV5 | 948665 | Intel® Xeon® Processor E3-1565L v5 (8M Cache, 2.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1585LV5 | 948666 | Intel® Xeon® Processor E3-1585L v5 (8M Cache, 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1585V5 | 948668 | Intel® Xeon® Processor E3-1585 v5 (8M Cache, 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8870V4 | 948733 | Intel® Xeon® Processor E7-8870 v4 (50M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-4850V4 | 948735 | Intel® Xeon® Processor E7-4850 v4 (40M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-4830V4 | 948737 | Intel® Xeon® Processor E7-4830 v4 (35M Cache, 2.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-4820V4 | 948738 | Intel® Xeon® Processor E7-4820 v4 (25M Cache, 2.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-4820V4 | 948739 | Intel® Xeon® Processor E7-4820 v4 (25M Cache, 2.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-4809V4 | 948741 | Intel® Xeon® Processor E7-4809 v4 (20M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8867V4 | 948742 | Intel® Xeon® Processor E7-8867 v4 (45M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8867V4 | 948743 | Intel® Xeon® Processor E7-8867 v4 (45M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8880V4 | 948744 | Intel® Xeon® Processor E7-8880 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8880V4 | 948745 | Intel® Xeon® Processor E7-8880 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8860V4 | 948747 | Intel® Xeon® Processor E7-8860 v4 (45M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8855V4 | 948749 | Intel® Xeon® Processor E7-8855 v4 (35M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4650V4 | 948752 | Intel® Xeon® Processor E5-4650 v4 (35M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4628LV4 | 948754 | Intel® Xeon® Processor E5-4628L v4 (35M Cache, 1.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4640V4 | 948756 | Intel® Xeon® Processor E5-4640 v4 (30M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4660V4 | 948758 | Intel® Xeon® Processor E5-4660 v4 (40M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4610V4 | 948762 | Intel® Xeon® Processor E5-4610 v4 (25M Cache, 1.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4667V4 | 948764 | Intel® Xeon® Processor E5-4667 v4 (45M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4669V4 | 948767 | Intel® Xeon® Processor E5-4669 v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4655V4 | 948768 | Intel® Xeon® Processor E5-4655 v4 (30M Cache, 2.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4655V4 | 948769 | Intel® Xeon® Processor E5-4655 v4 (30M Cache, 2.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4620V4 | 948771 | Intel® Xeon® Processor E5-4620 v4 (25M Cache, 2.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-4627V4 | 948865 | Intel® Xeon® Processor E5-4627 v4 (25M Cache, 2.60 GHz) FC-LGA14A, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8891V4 | 948869 | Intel® Xeon® Processor E7-8891 v4 (60M Cache, 2.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8893V4 | 948871 | Intel® Xeon® Processor E7-8893 v4 (60M Cache, 3.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8890V4 | 948872 | Intel® Xeon® Processor E7-8890 v4 (60M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8890V4 | 948873 | Intel® Xeon® Processor E7-8890 v4 (60M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM® | N4200 | 948985 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2630V4 | 949003 | Boxed Intel® Xeon® Processor E5-2630 v4 (25M Cache, 2.20 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2640V4 | 949004 | Boxed Intel® Xeon® Processor E5-2640 v4 (25M Cache, 2.40 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON® | E5-2603V4 | 949005 | Boxed Intel® Xeon® Processor E5-2603 v4 (15M Cache, 1.70 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2609V4 | 949006 | Boxed Intel® Xeon® Processor E5-2609 v4 (20M Cache, 1.70 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1620V4 | 949007 | Boxed Intel® Xeon® Processor E5-1620 v4 (10M Cache, 3.50 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6850K | 949174 | Intel® Core™ i7-6850K Processor (15M Cache, up to 3.80 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6800K | 949175 | Intel® Core™ i7-6800K Processor (15M Cache, up to 3.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2689V4 | 949319 | Intel® Xeon® Processor E5-2689 v4 (25M Cache, 3.10 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | N/A | 949356 | SRV [KNIGHTS LANDING] Processor 1.50 GHz, 36M Cache, FC-LGA14B, Tray, 245W, HJ8066702974700 |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | N/A | 949367 | SRV [KNIGHTS LANDING] Processor 1.30 GHz, 32M Cache, FC-LGA14B, Tray, 230W, HJ8066702975000 |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 949415 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2620V4 | 949499 | Boxed Intel® Xeon® Processor E5-2620 v4 (20M Cache, 2.10 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2630V4 | 949500 | Boxed Intel® Xeon® Processor E5-2630 v4 (25M Cache, 2.20 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2699CV4 | 949756 | Intel® Xeon® Processor E5-2699C v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 949784 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600 | 949788 | Intel® Pentium® Processor G4600 (3M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930 | 949799 | Intel® Celeron® Processor G3930 (2M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 949805 | Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600T | 949807 | Intel® Pentium® Processor G4600T (3M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930T | 949811 | Intel® Celeron® Processor G3930T (2M Cache, 2.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1578LV5 | 949901 | Intel® Xeon® Processor E3-1578L v5 (8M Cache, 2.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | E3-1558LV5 | 949904 | Intel® Xeon® Processor E3-1558L v5 (8M Cache, 1.90 GHz) FC-BGA14F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3900 | 950313 | Intel Atom® Processor E3900 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3900 | 950318 | Intel Atom® Processor E3900 (2M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3900 | 950321 | Intel Atom® Processor E3900 (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3900 | 950325 | Intel Atom® Processor E3900 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1526 | 950400 | Intel® Xeon® Processor D-1526 (6M Cache, 1.80 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6950X | 950624 | Boxed Intel® Core™ i7-6950X Processor Extreme Edition (25M Cache, up to 3.50 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6900K | 950625 | Boxed Intel® Core™ i7-6900K Processor (20M Cache, up to 3.70 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6850K | 950626 | Boxed Intel® Core™ i7-6850K Processor (15M Cache, up to 3.80 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6800K | 950627 | Boxed Intel® Core™ i7-6800K Processor (15M Cache, up to 3.60 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6950X | 950628 | Boxed Intel® Core™ i7-6950X Processor Extreme Edition (25M Cache, up to 3.50 GHz) FC-LGA14A, for China |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6900K | 950629 | Boxed Intel® Core™ i7-6900K Processor (20M Cache, up to 3.70 GHz) FC-LGA14A, for China |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6850K | 950630 | Boxed Intel® Core™ i7-6850K Processor (15M Cache, up to 3.80 GHz) FC-LGA14A, for China |
| 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 | I7-6800K | 950631 | Boxed Intel® Core™ i7-6800K Processor (15M Cache, up to 3.60 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-1650V4 | 950795 | Boxed Intel® Xeon® Processor E5-1650 v4 (15M Cache, 3.60 GHz) FC-LGA14A |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 950936 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 950937 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 950938 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7290 | 951260 | Intel® Xeon Phi™ Processor 7290 (16GB, 1.50 GHz, 72 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7290F | 951262 | Intel® Xeon Phi™ Processor 7290F (16GB, 1.50 GHz, 72 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7250F | 951264 | Intel® Xeon Phi™ Processor 7250F (16GB, 1.40 GHz, 68 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7250 | 951266 | Intel® Xeon Phi™ Processor 7250 (16GB, 1.40 GHz, 68 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7230F | 951268 | Intel® Xeon Phi™ Processor 7230F (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7230 | 951270 | Intel® Xeon Phi™ Processor 7230 (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7210 | 951272 | Intel® Xeon Phi™ Processor 7210 (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | KNIGHTS LANDING | INTEL(R) XEON PHI(TM) | 7210F | 951274 | Intel® Xeon Phi™ Processor 7210F (16GB, 1.30 GHz, 64 core) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6157U | 951298 | Intel® Core™ i3-6157U Processor (3M Cache, 2.40 GHz) FC-BGA14C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3940 | 951358 | Intel Atom® Processor A3940 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3950 | 951366 | Intel Atom® Processor A3950 (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3930 | 951369 | Intel Atom® Processor A3930 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3960 | 951370 | Intel Atom® Processor A3960 (2M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3324 | 951429 | Intel Atom® Processor C3324 (4M Cache, up to 1.70) FC-BGA15Z, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3754 | 951434 | Intel Atom® Processor C3754 (16M Cache, up to 1.70) FC-BGA15Z, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1530 | 951482 | Intel® Xeon® Processor D-1530 (6M Cache, 2.40 GHz) FC-BGA14C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951483 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951484 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951485 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | J3355 | 951489 | Intel® Celeron® Processor J3355 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | J3455 | 951490 | Intel® Celeron® Processor J3455 (2M Cache, up to 2.30 GHz) FC-BGA15F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | P-8136 | 951595 | Intel® Xeon® Platinum P-8136 Processor (38.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | P-8124 | 951607 | Intel® Xeon® Platinum P-8124 Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | P-8136 | 951616 | Intel® Xeon® Platinum P-8136 Processor (38.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | J3355 | 951841 | Intel® Celeron® Processor J3355 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | J3455 | 951842 | Intel® Celeron® Processor J3455 (2M Cache, up to 2.30 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | J4205 | 951843 | Intel® Pentium® Processor J4205 (2M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 951956 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 951957 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 951958 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 951959 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7Y54 | 951960 | Intel® Core™ i5-7Y54 Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) M | M3-7Y30 | 951961 | Intel® Core™ m3-7Y30 Processor (4M Cache, up to 2.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2699AV4 | 952190 | Intel® Xeon® Processor E5-2699A v4 (55M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E5-2699RV4 | 952514 | Intel® Xeon® Processor E5-2699R v4 (55M Cache, 2.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1280V6 | 952786 | Intel® Xeon® Processor E3-1280 v6 (8M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1270V6 | 952787 | Intel® Xeon® Processor E3-1270 v6 (8M Cache, 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1240V6 | 952788 | Intel® Xeon® Processor E3-1240 v6 (8M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1230V6 | 952789 | Intel® Xeon® Processor E3-1230 v6 (8M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1220V6 | 952790 | Intel® Xeon® Processor E3-1220 v6 (8M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1275V6 | 952791 | Intel® Xeon® Processor E3-1275 v6 (8M Cache, 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1245V6 | 952792 | Intel® Xeon® Processor E3-1245 v6 (8M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1225V6 | 952793 | Intel® Xeon® Processor E3-1225 v6 (8M Cache, 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1205V6 | 952794 | Intel® Xeon® Processor E3-1205 v6 (8M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7600U | 952861 | Intel® Core™ i7-7600U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300U | 952866 | Intel® Core™ i5-7300U Processor (3M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 952874 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1535MV6 | 952949 | Intel® Xeon® Processor E3-1535M (8M Cache, 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1505MV6 | 952951 | Intel® Xeon® Processor E3-1505M (8M Cache, 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7920HQ | 952952 | Intel® Core™ i7-7920HQ Processor (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7820HQ | 952954 | Intel® Core™ i7-7820HQ Processor (8M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7820HK | 952955 | Intel® Core™ i7-7820HK Processor (8M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7440HQ | 952958 | Intel® Core™ i5-7440HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100H | 952960 | Intel® Core™ i3-7100H Processor (3M Cache, 3.00 GHz) FC-BGA14F, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | E7-8894V4 | 952962 | Intel® Xeon® Processor E7-8894 v4 (60M Cache, 2.40 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600K | 952985 | Intel® Core™ i5-7600K Processor (6M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560 | 952994 | Intel® Pentium® Processor G4560 (3M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7101E | 952995 | Intel® Core™ i3-7101E Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 952998 | Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600 | 953000 | Intel® Core™ i5-7600 Processor (6M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500 | 953001 | Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600T | 953002 | Intel® Core™ i5-7600T Processor (6M Cache, up to 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500T | 953003 | Intel® Core™ i5-7500T Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700T | 953005 | Intel® Core™ i7-7700T Processor (8M Cache, up to 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700K | 953006 | Intel® Core™ i7-7700K Processor (8M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3940 | 953082 | Intel Atom® Processor A3940 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3940 | 953083 | Intel Atom® x5-E3940 Processor (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3950 | 953084 | Intel Atom® Processor A3950 (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3950 | 953085 | Intel Atom® x7-E3950 Processor (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3930 | 953086 | Intel Atom® x5-E3930 Processor (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3930 | 953087 | Intel Atom® Processor A3930 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3960 | 953096 | Intel Atom® Processor A3960 (2M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7Y57 | 953349 | Intel® Core™ i5-7Y57 Processor (4M Cache, up to 3.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7600U | 953350 | Intel® Core™ i7-7600U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300U | 953351 | Intel® Core™ i5-7300U Processor (3M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7Y54 | 953356 | Intel® Core™ i5-7Y54 Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) M | M3-7Y32 | 953357 | Intel® Core™ m3-7Y32 Processor (4M Cache, up to 3.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) M | M3-7Y30 | 953358 | Intel® Core™ m3-7Y30 Processor (4M Cache, up to 2.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | 4415U | 953359 | Intel® Pentium® Processor 4415U (2M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 953360 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3965U | 953361 | Intel® Celeron® Processor 3965U (2M Cache, 2.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | 4410Y | 953362 | Intel® Pentium® Processor 4410Y (2M Cache, 1.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953654 | Boxed Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700K | 953655 | Boxed Intel® Core™ i7-7700K Processor (8M Cache, up to 4.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600K | 953680 | Boxed Intel® Core™ i5-7600K Processor (6M Cache, up to 4.20 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 953681 | Boxed Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600 | 953682 | Boxed Intel® Core™ i5-7600 Processor (6M Cache, up to 4.10 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500 | 953683 | Boxed Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600K | 953700 | Boxed Intel® Core™ i5-7600K Processor (6M Cache, up to 4.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 953701 | Boxed Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600 | 953702 | Boxed Intel® Core™ i5-7600 Processor (6M Cache, up to 4.10 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500 | 953703 | Boxed Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953712 | Boxed Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700K | 953713 | Boxed Intel® Core™ i7-7700K Processor (8M Cache, up to 4.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8124M | 953855 | Intel® Xeon® Platinum 8124M Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5117 | 953878 | Intel® Xeon® Gold 5117 Processor (19.25M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7820EQ | 953940 | Intel® Core™ i7-7820EQ Processor (8M Cache, up to 3.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7440EQ | 953941 | Intel® Core™ i5-7440EQ Processor (6M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7442EQ | 953942 | Intel® Core™ i5-7442EQ Processor (6M Cache, up to 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100E | 953943 | Intel® Core™ i3-7100E Processor (3M Cache, 2.90 GHz) FC-BGA14F, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7102E | 953944 | Intel® Core™ i3-7102E Processor (3M Cache, 2.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1505LV6 | 953947 | Intel® Xeon® Processor E3-1505L v6 (8M Cache, 2.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7320 | 954022 | Intel® Core™ i3-7320 Processor (4M Cache, 4.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300 | 954023 | Intel® Core™ i3-7300 Processor (4M Cache, 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7350K | 954030 | Intel® Core™ i3-7350K Processor (4M Cache, 4.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4620 | 954035 | Intel® Pentium® Processor G4620 (3M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600 | 954039 | Intel® Pentium® Processor G4600 (3M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3950 | 954042 | Intel® Celeron® Processor G3950 (2M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930 | 954043 | Intel® Celeron® Processor G3930 (2M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300T | 954045 | Intel® Core™ i3-7300T Processor (4M Cache, 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 954047 | Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600T | 954049 | Intel® Pentium® Processor G4600T (3M Cache, 3.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560T | 954051 | Intel® Pentium® Processor G4560T (3M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930T | 954053 | Intel® Celeron® Processor G3930T (2M Cache, 2.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7287U | 954104 | Intel® Core™ i5-7287U Processor (4M Cache, up to 3.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7167U | 954106 | Intel® Core™ i3-7167U Processor (3M Cache, 2.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7267U | 954107 | Intel® Core™ i5-7267U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7260U | 954108 | Intel® Core™ i5-7260U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7360U | 954110 | Intel® Core™ i5-7360U Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7560U | 954111 | Intel® Core™ i7-7560U Processor (4M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7567U | 954112 | Intel® Core™ i7-7567U Processor (4M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7660U | 954113 | Intel® Core™ i7-7660U Processor (4M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3338 | 954194 | Intel Atom® Processor C3338 (4M Cache, up to 2.20 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 954219 | Boxed Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600T | 954220 | Boxed Intel® Core™ i5-7600T Processor (6M Cache, up to 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500T | 954221 | Boxed Intel® Core™ i5-7500T Processor (6M Cache, up to 3.30 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700T | 954222 | Boxed Intel® Core™ i7-7700T Processor (8M Cache, up to 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 954225 | Boxed Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7600T | 954227 | Boxed Intel® Core™ i5-7600T Processor (6M Cache, up to 3.70 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500T | 954228 | Boxed Intel® Core™ i5-7500T Processor (6M Cache, up to 3.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700T | 954229 | Boxed Intel® Core™ i7-7700T Processor (8M Cache, up to 3.80 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300 | 954311 | Boxed Intel® Core™ i3-7300 Processor (4M Cache, 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954312 | Boxed Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560 | 954313 | Boxed Intel® Pentium® Processor G4560 (3M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600 | 954315 | Boxed Intel® Pentium® Processor G4600 (3M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1270V6 | 954318 | Boxed Intel® Xeon® Processor E3-1270 v6 (8M Cache, 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1240V6 | 954319 | Boxed Intel® Xeon® Processor E3-1240 v6 (8M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1230V6 | 954320 | Boxed Intel® Xeon® Processor E3-1230 v6 (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1275V6 | 954321 | Boxed Intel® Xeon® Processor E3-1275 v6 (8M Cache, 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1245V6 | 954323 | Boxed Intel® Xeon® Processor E3-1245 v6 (8M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1220V6 | 954324 | Boxed Intel® Xeon® Processor E3-1220 v6 (8M Cache, 3.00 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1225V6 | 954325 | Boxed Intel® Xeon® Processor E3-1225 v6 (8M Cache, 3.30 GHz) FC-LGA14C |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 954360 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON® | N3450 | 954361 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 954362 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3940 | 954396 | Intel Atom® Processor A3940 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3950 | 954399 | Intel Atom® Processor A3950 (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3950 | 954401 | Intel Atom® x7-E3950 Processor (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | E3930 | 954402 | Intel Atom® x5-E3930 Processor (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3930 | 954403 | Intel Atom® Processor A3930 (2M Cache, up to 1.80 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3960 | 954404 | Intel Atom® Processor A3960 (2M Cache, up to 2.40 GHz) FC-BGA15C, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6126F | 954691 | Intel® Xeon® Gold 6126F Processor (19.25M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7320 | 954808 | Boxed Intel® Core™ i3-7320 Processor (4M Cache, 4.10 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300 | 954809 | Boxed Intel® Core™ i3-7300 Processor (4M Cache, 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7350K | 954810 | Boxed Intel® Core™ i3-7350K Processor (4M Cache, 4.20 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954811 | Boxed Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560 | 954812 | Boxed Intel® Pentium® Processor G4560 (3M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4620 | 954813 | Boxed Intel® Pentium® Processor G4620 (3M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600 | 954814 | Boxed Intel® Pentium® Processor G4600 (3M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3950 | 954815 | Boxed Intel® Celeron® Processor G3950 (2M Cache, 3.00 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930 | 954816 | Boxed Intel® Celeron® Processor G3930 (2M Cache, 2.90 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300 | 954817 | Boxed Intel® Core™ i3-7300 Processor (4M Cache, 4.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7350K | 954818 | Boxed Intel® Core™ i3-7350K Processor (4M Cache, 4.20 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954819 | Boxed Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560 | 954821 | Boxed Intel® Pentium® Processor G4560 (3M Cache, 3.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4600 | 954822 | Boxed Intel® Pentium® Processor G4600 (3M Cache, 3.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930 | 954823 | Boxed Intel® Celeron® Processor G3930 (2M Cache, 2.90 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1285V6 | 955012 | Intel® Xeon® Processor E3-1285 v6 (8M Cache, 4.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7101TE | 955013 | Intel® Core™ i3-7101TE Processor (3M Cache, 3.40 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8180 | 955025 | Intel® Xeon® Platinum 8180 Processor (38.5M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8176 | 955028 | Intel® Xeon® Platinum 8176 Processor (38.5M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8170 | 955035 | Intel® Xeon® Platinum 8170 Processor (35.75M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8168 | 955036 | Intel® Xeon® Platinum 8168 Processor (33M Cache, 2.70 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6150 | 955037 | Intel® Xeon® Gold 6150 Processor (24.75M Cache, 2.70 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8173M | 955108 | Intel® Xeon® Platinum 8173M Processor (38.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8124M | 955109 | Intel® Xeon® Platinum 8124M Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5117 | 955110 | Intel® Xeon® Gold 5117 Processor (19.25M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8180M | 955111 | Intel® Xeon® Platinum 8180M Processor (38.5M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8176M | 955112 | Intel® Xeon® Platinum 8176M Processor (38.5M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3958 | 955144 | Intel Atom® Processor C3958 (16M Cache, up to 2.0 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3538 | 955146 | Intel Atom® Processor C3538 (8M Cache, up to 2.10 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3750 | 955157 | Intel Atom® Processor C3750 (16M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3850 | 955159 | Intel Atom® Processor C3850 (12M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3558 | 955160 | Intel Atom® Processor C3558 (8M Cache, up to 2.20 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3758 | 955161 | Intel Atom® Processor C3758 (16M Cache, up to 2.20 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3858 | 955162 | Intel Atom® Processor C3858 (12M Cache, up to 2.0 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3338 | 955163 | Intel Atom® Processor C3338 (4M Cache, up to 2.20 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3808 | 955164 | Intel Atom® Processor C3808 (12M Cache, up to 2.0 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3308 | 955165 | Intel Atom® Processor C3308 (4M Cache, up to 2.10 GHz) FC-BGA15C, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3708 | 955167 | Intel Atom® Processor C3708 (16M Cache, up to 1.70 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930E | 955177 | Intel® Celeron® Processor G3930E (2M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | G3930TE | 955178 | Intel® Celeron® Processor G3930TE (2M Cache, 2.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8167M | 955233 | Intel® Xeon® Platinum 8167M Processor (35.75M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300T | 955324 | Boxed Intel® Core™ i3-7300T Processor (4M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 955325 | Boxed Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7300T | 955326 | Boxed Intel® Core™ i3-7300T Processor (4M Cache, 3.50 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 955327 | Boxed Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8173M | 955508 | Intel® Xeon® Platinum 8173M Processor (38.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6150 | 955514 | Intel® Xeon® Gold 6150 Processor (24.75M Cache, 2.70 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3754 | 955790 | Intel Atom® Processor C3754 (16M Cache, up to 1.70) FC-BGA15Z, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6134 | 955887 | Intel® Xeon® Gold 6134 Processor (24.75M Cache, 3.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6134M | 955889 | Intel® Xeon® Gold 6134M Processor (24.75M Cache, 3.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5122 | 955974 | Intel® Xeon® Gold 5122 Processor (16.5M Cache, 3.60 GHz) FC-LGA14B, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8156 | 955978 | Intel® Xeon® Platinum 8156 Processor (16.5M Cache, 3.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6140 | 955989 | Intel® Xeon® Gold 6140 Processor (24.75M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6142 | 955993 | Intel® Xeon® Gold 6142 Processor (22M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6140M | 955996 | Intel® Xeon® Gold 6140M Processor (24.75M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8160 | 955998 | Intel® Xeon® Platinum 8160 Processor (33M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6142M | 956000 | Intel® Xeon® Gold 6142M Processor (22M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6136 | 956002 | Intel® Xeon® Gold 6136 Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6126 | 956004 | Intel® Xeon® Gold 6126 Processor (19.25M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6152 | 956006 | Intel® Xeon® Gold 6152 Processor (30.25M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6138 | 956008 | Intel® Xeon® Gold 6138 Processor (27.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6148 | 956010 | Intel® Xeon® Gold 6148 Processor (27.5M Cache, 2.40 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8158 | 956012 | Intel® Xeon® Platinum 8158 Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8160M | 956014 | Intel® Xeon® Platinum 8160M Processor (33M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130 | 956018 | Intel® Xeon® Gold 6130 Processor (22M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130 | 956019 | Intel® Xeon® Gold 6130 Processor (22M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8153 | 956021 | Intel® Xeon® Platinum 8153 Processor (22M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8164 | 956023 | Intel® Xeon® Platinum 8164 Processor (35.75M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8170M | 956027 | Intel® Xeon® Platinum 8170M Processor (35.75M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1501LV6 | 956300 | Intel® Xeon® Processor E3-1501L v6 (6M Cache, up to 2.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) | E3-1501MV6 | 956301 | Intel® Xeon® Processor E3-1501M v6 (6M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3955 | 956392 | Intel Atom® Processor C3955 (16M Cache, up to 2.40 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7740X | 957005 | Intel® Core™ i7-7740X X-series Processor (8M Cache, up to 4.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7740X | 957006 | Intel® Core™ i7-7740X X-series Processor (8M Cache, up to 4.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7640X | 957007 | Intel® Core™ i5-7640X X-series Processor (6M Cache, up to 4.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4110 | 957188 | Intel® Xeon® Silver 4110 Processor (11M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8175M | 957279 | Intel® Xeon® Platinum 8175M Processor (33M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8163 | 957286 | Intel® Xeon® Platinum 8163 Processor (33M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6149 | 957292 | Intel® Xeon® Gold 6149 Processor (22M Cache, 3.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6151 | 957296 | Intel® Xeon® Gold 6151 Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6161 | 957297 | Intel® Xeon® Gold 6161 Processor (30.25M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | 4415Y | 957336 | Intel® Pentium® Processor 4415Y (2M Cache, 1.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5115 | 957337 | Intel® Xeon® Gold 5115 Processor (13.75M Cache, 2.40 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5120T | 957338 | Intel® Xeon® Gold 5120T Processor (19.25M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5120 | 957339 | Intel® Xeon® Gold 5120 Processor (19.25M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5118 | 957341 | Intel® Xeon® Gold 5118 Processor (16.5M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3965Y | 957364 | Intel® Celeron® Processor 3965Y (2M Cache, 1.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4110 | 957416 | Intel® Xeon® Silver 4110 Processor (11M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4108 | 957417 | Intel® Xeon® Silver 4108 Processor (11M Cache, 1.80 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4114 | 957418 | Intel® Xeon® Silver 4114 Processor (13.75M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE | 3106 | 957419 | Intel® Xeon® Bronze 3106 Processor (11M Cache, 1.70 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE | 3104 | 957420 | Intel® Xeon® Bronze 3104 Processor (8.25M Cache, 1.70 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4112 | 957421 | Intel® Xeon® Silver 4112 Processor (8.25M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4109T | 957422 | Intel® Xeon® Silver 4109T Processor (11M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130T | 957552 | Intel® Xeon® Gold 6130T Processor (22M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4116 | 957661 | Intel® Xeon® Silver 4116 Processor (16.5M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6132 | 958178 | Intel® Xeon® Gold 6132 Processor (19.25M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6128 | 958179 | Intel® Xeon® Gold 6128 Processor (19.25M Cache, 3.40 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6154 | 958186 | Intel® Xeon® Gold 6154 Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8160T | 958187 | Intel® Xeon® Platinum 8160T Processor (33M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6138T | 958188 | Intel® Xeon® Gold 6138T Processor (27.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130T | 958189 | Intel® Xeon® Gold 6130T Processor (22M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6126T | 958190 | Intel® Xeon® Gold 6126T Processor (19.25M Cache, 2.60 GHz) FC-LGA14B, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6129 | 958220 | Intel® Xeon® Gold 6129 Processor (22M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3508 | 958405 | Intel Atom® Processor C3508 (8M Cache, up to 1.50) FC-BGA15C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130F | 958465 | Intel® Xeon® Gold 6130F Processor (22M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6126F | 958466 | Intel® Xeon® Gold 6126F Processor (19.25M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8160F | 958468 | Intel® Xeon® Platinum 8160F Processor (33M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6142F | 958469 | Intel® Xeon® Gold 6142F Processor (22M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6148F | 958470 | Intel® Xeon® Gold 6148F Processor (27.5M Cache, 2.40 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6138F | 958471 | Intel® Xeon® Gold 6138F Processor (27.5M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5117F | 958478 | Intel® Xeon® Gold 5117F Processor (19.25M Cache, 2.00 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3908 | 958484 | Intel Atom® Processor C3908 (16M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1533N | 958597 | Intel® Xeon® Processor D-1533N (9M Cache, 2.10 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1553N | 958598 | Intel® Xeon® Processor D-1553N (12M Cache, 2.30 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1513N | 958600 | Intel® Xeon® Processor D-1513N (6M Cache, 1.60 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1543N | 958602 | Intel® Xeon® Processor D-1543N (12M Cache, 1.90 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKY MEADOW | INTEL(R)XEON(R) | N/A | 958704 | [Missing External Name] CD8067303204102 |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7900X | 958960 | Intel® Core™ i9-7900X X-series Processor (13.75M Cache, up to 4.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 958962 | Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7820X | 958963 | Intel® Core™ i7-7820X X-series Processor (11M Cache, up to 4.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8180 | 958969 | Boxed Intel® Xeon® Platinum 8180 Processor (38.5M Cache, 2.50 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8176 | 958970 | Boxed Intel® Xeon® Platinum 8176 Processor (38.5M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8170 | 958971 | Boxed Intel® Xeon® Platinum 8170 Processor (35.75M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8160 | 958972 | Boxed Intel® Xeon® Platinum 8160 Processor (33M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8164 | 958973 | Boxed Intel® Xeon® Platinum 8164 Processor (35.75M Cache, 2.00 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6134 | 958974 | Boxed Intel® Xeon® Gold 6134 Processor (24.75M Cache, 3.20 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5122 | 958975 | Boxed Intel® Xeon® Gold 5122 Processor (16.5M Cache, 3.60 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6140 | 958976 | Boxed Intel® Xeon® Gold 6140 Processor (24.75M Cache, 2.30 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6142 | 958977 | Boxed Intel® Xeon® Gold 6142 Processor (22M Cache, 2.60 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6152 | 958978 | Boxed Intel® Xeon® Gold 6152 Processor (30.25M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6138 | 958979 | Boxed Intel® Xeon® Gold 6138 Processor (27.5M Cache, 2.00 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6148 | 958981 | Boxed Intel® Xeon® Gold 6148 Processor (27.5M Cache, 2.40 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6130 | 958982 | Boxed Intel® Xeon® Gold 6130 Processor (22M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8350U | 959020 | Intel® Core™ i5-8350U Processor (6M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3538 | 959047 | Intel Atom® Processor C3538 (8M Cache, up to 2.10 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 959053 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8650U | 959152 | Intel® Core™ i7-8650U Processor (8M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8350U | 959155 | Intel® Core™ i5-8350U Processor (6M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7740X | 959157 | Boxed Intel® Core™ i7-7740X X-series Processor (8M Cache, up to 4.50 GHz) FC-LGA14B |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7640X | 959158 | Boxed Intel® Core™ i5-7640X X-series Processor (6M Cache, up to 4.20 GHz) FC-LGA14B |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7740X | 959159 | Boxed Intel® Core™ i7-7740X X-series Processor (8M Cache, up to 4.50 GHz) FC-LGA14B, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7640X | 959161 | Boxed Intel® Core™ i5-7640X X-series Processor (6M Cache, up to 4.20 GHz) FC-LGA14B, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959162 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2102 | 959167 | Intel® Xeon® W-2102 Processor (8.25M Cache, 2.90 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2104 | 959168 | Intel® Xeon® W-2104 Processor (8.25M Cache, 3.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2123 | 959169 | Intel® Xeon® W-2123 Processor (8.25M Cache, 3.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2140B | 959170 | Intel® Xeon® W-2140B Processor (11M Cache, 3.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2133 | 959171 | Intel® Xeon® W-2133 Processor (8.25M Cache, 3.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2125 | 959172 | Intel® Xeon® W-2125 Processor (8.25M Cache, 4.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2135 | 959173 | Intel® Xeon® W-2135 Processor (8.25M Cache, 3.70 GHz) FC-LGA14B, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2145 | 959175 | Intel® Xeon® W-2145 Processor (11M Cache, 3.70 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2155 | 959176 | Intel® Xeon® W-2155 Processor (13.75M Cache, 3.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2150B | 959177 | Intel® Xeon® W-2150B Processor (13.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8171M | 959466 | Intel® Xeon® Platinum 8171M Processor (35.75M Cache, 2.60 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8151 | 959467 | Intel® Xeon® Platinum 8151 Processor (24.75M Cache, 3.40 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6133 | 959468 | Intel® Xeon® Gold 6133 Processor (27.5M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6137 | 959470 | Intel® Xeon® Gold 6137 Processor (24.75M Cache, 3.90 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6143 | 959474 | Intel® Xeon® Gold 6143 Processor (22M Cache, 2.80 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8165 | 959475 | Intel® Xeon® Platinum 8165 Processor (33M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6146 | 959503 | Intel® Xeon® Gold 6146 Processor (24.75M Cache, 3.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6144 | 959504 | Intel® Xeon® Gold 6144 Processor (24.75M Cache, 3.50 GHz) FC-LGA14B, Tray |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3314 | 959594 | EMB [DENVERTON] Processor C3314 1.20 GHz, 4M Cache, FC-BGA15Z, T&R, 9W, HW8076502693601 |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3324 | 959595 | EMB [DENVERTON] Processor C3324 1.70 GHz, 4M Cache, FC-BGA15Z, T&R, 10W, HW8076502693701 |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8176F | 959636 | Intel® Xeon® Platinum 8176F Processor (38.5M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5120 | 959684 | Boxed Intel® Xeon® Gold 5120 Processor (19.25M Cache, 2.20 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4116 | 959685 | Boxed Intel® Xeon® Silver 4116 Processor (16.5M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4114T | 959707 | Intel® Xeon® Silver 4114T Processor (13.75M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE | 3106 | 959761 | Boxed Intel® Xeon® Bronze 3106 Processor (11M Cache, 1.70 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE | 3104 | 959762 | Boxed Intel® Xeon® Bronze 3104 Processor (8.25M Cache, 1.70 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4110 | 959763 | Boxed Intel® Xeon® Silver 4110 Processor (11M Cache, 2.10 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4108 | 959764 | Boxed Intel® Xeon® Silver 4108 Processor (11M Cache, 1.80 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4114 | 959765 | Boxed Intel® Xeon® Silver 4114 Processor (13.75M Cache, 2.20 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4112 | 959766 | Boxed Intel® Xeon® Silver 4112 Processor (8.25M Cache, 2.60 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6128 | 959767 | Boxed Intel® Xeon® Gold 6128 Processor (19.25M Cache, 3.40 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 5119T | 959780 | Intel® Xeon® Gold 5119T Processor (19.25M Cache, 1.90 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6127M | 959783 | Intel® Xeon® Gold 6127M Processor (22M Cache, 2.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4116T | 959790 | Intel® Xeon® Silver 4116T Processor (16.5M cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7900X | 959986 | Boxed Intel® Core™ i9-7900X X-series Processor (13.75M Cache, up to 4.30 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 959987 | Boxed Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7820X | 959988 | Boxed Intel® Core™ i7-7820X X-series Processor (11M Cache, up to 4.30 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7900X | 959989 | Boxed Intel® Core™ i9-7900X X-series Processor (13.75M Cache, up to 4.30 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 959991 | Boxed Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7820X | 959993 | Boxed Intel® Core™ i7-7820X X-series Processor (11M Cache, up to 4.30 GHz) FC-LGA14B, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960006 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8350K | 960011 | Intel® Core™ i3-8350K Processor (8M Cache, 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 960019 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7920X | 960064 | Intel® Core™ i9-7920X X-series Processor (16.5M Cache, up to 4.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 960065 | Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700K | 960617 | Intel® Core™ i7-8700K Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600K | 960620 | Intel® Core™ i5-8600K Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | STRIKE RIDGE | INTEL(R) XEON PHI(TM) | | 960869 | SRV [STRIKE RIDGE] Processor 2.20 GHz, 2M Cache, FC-LGA14B, Tray, 300W, HJ8069303810101 |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8350K | 961059 | Boxed Intel® Core™ i3-8350K Processor (8M Cache, 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 961060 | Boxed Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8350K | 961083 | Boxed Intel® Core™ i3-8350K Processor (8M Cache, 4.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 961084 | Boxed Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8706G | 961153 | Intel® Core™ i7-8706G Processor with Radeon™ RX Vega M GL graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8705G | 961154 | Intel® Core™ i7-8705G Processor with Radeon™ RX Vega M GL graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8305G | 961161 | Intel® Core™ i5-8305G Processor with Radeon™ RX Vega M GL graphics (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8709G | 961162 | Intel® Core™ i7-8709G Processor with Radeon™ RX Vega M GH graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7920X | 961170 | Boxed Intel® Core™ i9-7920X X-series Processor (16.5M Cache, up to 4.30 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7920X | 961171 | Boxed Intel® Core™ i9-7920X X-series Processor (16.5M Cache, up to 4.30 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7940X | 961191 | Intel® Core™ i9-7940X X-series Processor (19.25M Cache, up to 4.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7960X | 961201 | Intel® Core™ i9-7960X X-series Processor (22M Cache, up to 4.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7980XE | 961202 | Intel® Core™ i9-7980XE Extreme Edition Processor (24.75M Cache, up to 4.20 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2191B | 961299 | Intel® Xeon® W-2191B Processor (24.75M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2195 | 961300 | Intel® Xeon® W-2195 Processor (24.75M Cache, 2.30 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700K | 961566 | Boxed Intel® Core™ i7-8700K Processor (12M Cache, up to 4.70 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 961567 | Boxed Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 961568 | Boxed Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600K | 961570 | Boxed Intel® Core™ i5-8600K Processor (9M Cache, up to 4.30 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700K | 961573 | Boxed Intel® Core™ i7-8700K Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 961574 | Boxed Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 961575 | Boxed Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600K | 961576 | Boxed Intel® Core™ i5-8600K Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, for China |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | J5005 | 961642 | Intel® Pentium® Silver J5005 Processor (4M Cache, up to 2.80 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | J4105 | 961643 | Intel® Celeron® J4105 Processor (4M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | J4005 | 961644 | Intel® Celeron® J4005 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2123 | 961844 | Boxed Intel® Xeon™ W-2123 Processor (8.25M Cache, 3.60 GHz) FC-LGA14B |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 961968 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 962010 | Boxed Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-7800X | 962011 | Boxed Intel® Core™ i7-7800X X-series Processor (8.25M Cache, up to 4.00 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6144 | 962201 | Intel® Xeon® Gold 6144 Processor (24.75M Cache, 3.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2135 | 962353 | Boxed Intel® Xeon™ W-2135 Processor (8.25M Cache, 3.70 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7940X | 962501 | Boxed Intel® Core™ i9-7940X Processor (19.25M Cache, up to 4.30 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7960X | 962502 | Boxed Intel® Core™ i9-7960X Processor (22M Cache, up to 4.20 GHz) FC-LGA14B |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7940X | 962506 | Boxed Intel® Core™ i9-7940X Processor (19.25M Cache, up to 4.30 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7960X | 962507 | Boxed Intel® Core™ i9-7960X Processor (22M Cache, up to 4.20 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7980XE | 962508 | Boxed Intel® Core™ i9-7980XE Extreme Edition Processor (24.75M Cache, up to 4.20 GHz) FC-LGA14B, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-7980XE | 962509 | Boxed Intel® Core™ i9-7980XE Extreme Edition Processor (24.75M Cache, up to 4.20 GHz) FC-LGA14B |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3754 | 962679 | Intel® Atom™ Processor C3754 (16M Cache, 1.70 GHz) FC-BGA15Z, Tray |
| 1272 | 14nm | KNIGHTS MILL | INTEL(R) XEON PHI(TM) | 7295 | 962788 | Intel® Xeon Phi™ Processor 7295 (16GB, 1.5 GHz, 72 Core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS MILL | INTEL(R) XEON PHI(TM) | 7285 | 962808 | Intel® Xeon Phi™ Processor 7285 (16GB, 1.3 GHz, 68 Core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS MILL | INTEL(R) XEON PHI(TM) | 7235 | 962809 | Intel® Xeon Phi™ Processor 7235 (16GB, 1.3 GHz, 64 Core) FC-LGA14B, Tray |
| 1272 | 14nm | KNIGHTS MILL | INTEL(R) XEON PHI(TM) | 7255 | 962810 | Intel® Xeon Phi™ Processor 7255 (16GB, 1.1 GHz, 68 Core) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5400 | 962838 | Intel® Pentium® Gold G5400 Processor (4M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 962883 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER | 4123 | 963002 | Intel® Xeon® Silver 4123 Processor (11M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | N/A | I5-8300H | 963136 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2175 | 963212 | Intel® Xeon™ W-2175 Processor (19.25M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | W-2170B | 963214 | Intel® Xeon® Processor W-2170B (19.25M Cache, 2.50 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4900 | 963375 | Intel® Celeron® Processor G4900 (2M Cache, 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2124G | 963428 | Intel® Xeon® E-2124G Processor (8M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2144G | 963429 | Intel® Xeon® E-2144G Processor (8M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2174G | 963430 | Intel® Xeon® E-2174G Processor (8M Cache, up to 4.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2134 | 963443 | Intel® Xeon® E-2134 Processor (8M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2124 | 963447 | Intel® Xeon® E-2124 Processor (8M Cache, up to 4.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2186G | 963448 | Intel® Xeon® E-2186G Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, Tray |

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| INTEL | | | | | | |
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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2176G | 963450 | Intel® Xeon® E-2176G Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2146G | 963454 | Intel® Xeon® E-2146G Processor (12M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2126G | 963464 | Intel® Xeon® E-2126G Processor (12M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2104G | 963465 | Intel® Xeon® Processor E-2104G (8M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2136 | 963466 | Intel® Xeon® E-2136 Processor (12M Cache, up to 4.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700T | 963506 | Intel® Core™ i7-8700T Processor (12M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600 | 963534 | Intel® Core™ i5-8600 Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600T | 963537 | Intel® Core™ i5-8600T Processor (9M Cache, up to 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400T | 963540 | Intel® Core™ i5-8400T Processor (9M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5400 | 963543 | Intel® Pentium® Gold G5400 Processor (4M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5400T | 963566 | Intel® Pentium® Gold G5400T Processor (4M Cache, 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8300 | 963643 | Intel® Core™ i3-8300 Processor (8M Cache, 3.70 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8300T | 963646 | Intel® Core™ i3-8300T Processor (8M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100T | 963660 | Intel® Core™ i3-8100T Processor (6M Cache, 3.10 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5600 | 963663 | Intel® Pentium® Gold G5600 Processor (4M Cache, 3.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5500 | 963670 | Intel® Pentium® Gold G5500 Processor (4M Cache, 3.80 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5500T | 963678 | Intel® Pentium® Gold G5500T Processor (4M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4920 | 963694 | Intel® Celeron® Processor G4920 (2M Cache, 3.20 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4900T | 963697 | Intel® Celeron® Processor G4900T (2M Cache, 2.90 GHz) FC-LGA14C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON® | E-2176M | 963717 | Intel® Xeon® E-2176M Processor (12M Cache, up to 4.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8850H | 963719 | Intel® Core™ i7-8850H Processor (9M Cache, up to 4.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400H | 963721 | Intel® Core™ i5-8400H Processor (8M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8174 | 963757 | Intel® Xeon® Platinum 8174 Processor (33M Cache, 3.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4900 | 963823 | Boxed Intel® Celeron® Processor G4900 (2M Cache, 3.10 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4900 | 963825 | Boxed Intel® Celeron® Processor G4900 (2M Cache, 3.10 GHz) FC-LGA14C, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2187NT | 964082 | Intel® Xeon® D-2187NT Processor (22M Cache, 2.00 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2161I | 964083 | Intel® Xeon® D-2161I Processor (16.5M Cache, 2.20 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2163IT | 964084 | Intel® Xeon® D-2163IT Processor (16.5M Cache, 2.10 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2183IT | 964085 | Intel® Xeon® D-2183IT Processor (22M Cache, 2.20 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2146NT | 964087 | Intel® Xeon® D-2146NT Processor (11M Cache, 2.30 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2173IT | 964088 | Intel® Xeon® D-2173IT€Processor (19.25M Cache, 1.70 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2145NT | 964089 | Intel® Xeon® D-2145NT Processor (11M Cache, 1.90 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2143IT | 964090 | Intel® Xeon® D-2143IT Processor (11M Cache, 2.20 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2141I | 964091 | Intel® Xeon® D-2141I Processor (11M Cache, 2.20 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2123IT | 964092 | Intel® Xeon® D-2123IT Processor (8.25M Cache, 2.20 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2166NT | 964093 | Intel® Xeon® D-2166NT Processor (16.5M Cache, 2.00 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2177NT | 964094 | Intel® Xeon® D-2177NT Processor (19.25M Cache, 1.90 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2142IT | 964095 | Intel® Xeon® D-2142IT Processor (11M Cache, 1.90 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2191 | 964672 | Intel® Xeon® D-2191 Processor (24.75M Cache, 1.60 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CELERON(R) | G4920 | 973459 | Boxed Intel® Celeron® Processor G4920 (2M Cache, 3.20 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2176G | 973773 | Boxed Intel® Xeon® E-2176G Processor (12M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2146G | 974864 | Boxed Intel® Xeon® E-2146G Processor (12M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2191 | 974910 | Intel® Xeon® D-2191 Processor (24.75M Cache, 1.60 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8559U | 974938 | Intel® Core™ i7-8559U Processor (8M Cache, up to 4.50 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8269U | 974943 | Intel® Core™ i5-8269U Processor (6M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600 | 974956 | Boxed Intel® Core™ i5-8600 Processor (9M Cache, up to 4.30 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 974957 | Boxed Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8300 | 974959 | Boxed Intel® Core™ i3-8300 Processor (8M Cache, 3.70 GHz) FC-LGA14C |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5600 | 974960 | Boxed Intel® Pentium® Gold G5600 Processor (4M Cache, 3.90 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5500 | 974961 | Boxed Intel® Pentium® Gold G5500 Processor (4M Cache, 3.80 GHz) FC-LGA14C |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 6162 | 974994 | Intel® Xeon® Platinum 6162 Processor (33M Cache, 1.90 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD | 6122 | 974995 | Intel® Xeon® Gold 6122 Processor (27.5M Cache, 1.80 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-8950HK | 975241 | Intel® Core™ i9-8950HK Processor (12M Cache, up to 4.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2186M | 975245 | Intel® Xeon® E-2186M Processor (12M Cache, up to 4.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8109U | 975758 | Intel® Core™ i3-8109U Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8259U | 975759 | Intel® Core™ i5-8259U Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600 | 975870 | Boxed Intel® Core™ i5-8600 Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 975871 | Boxed Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5500 | 975872 | Boxed Intel® Pentium® Gold G5500 Processor (4M Cache, 3.80 GHz) FC-LGA14C, for China |
| 1274 | 10nm | CANNON LAKE | INTEL (R) CORE (TM) I3 | I3-8121U | 975938 | Intel® Core™ i3-8121U Processor (4M Cache, up to 3.20 GHz) FC-BGA16F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) | D-2191A | 976094 | Intel® Xeon® D-2191A Processor (24.75M Cache, 1.60 GHz) FC-BGA14B, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8700B | 976523 | Intel® Core™ i7-8700B Processor (12M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500B | 976526 | Intel® Core™ i5-8500B Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400B | 976531 | Intel® Core™ i5-8400B Processor (9M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5400 | 976952 | Boxed Intel® Pentium® Gold G5400 Processor (4M Cache, 3.70 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD | G5400 | 976953 | Boxed Intel® Pentium® Gold G5400 Processor (4M Cache, 3.70 GHz) FC-LGA14C, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2124G | 977233 | Boxed Intel® Xeon® E-2124G Processor (8M Cache, 3.40 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) | E-2134 | 977235 | Boxed Intel® Xeon® E-2134 Processor (8M Cache, 3.50 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 977399 | Boxed Intel® Core™ i7+8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, includes Intel® Optane™ Memory (16GB) |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 977518 | Boxed Intel® Core™ i5+8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, includes Intel® Optane™ Memory (16GB) |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 977519 | Boxed Intel® Core™ i5+8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, includes Intel® Optane™ Memory (16GB) |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8706G | 978295 | Intel® Core™ i7-8706G Processor with Radeon™ Pro WX Vega M GL graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8086K | 978581 | Boxed Intel® Core™ i7-8086K Processor (12M Cache, up to 5.00 GHz) FC-LGA14C |
| 1273 | 14nm | DENVERTON | INTEL(R) ATOM(TM) | C3534 | 978654 | [Missing External Name] FH82CM248 |
| 1273 | 14nm | DENVERTON | INTEL (R) PROCESSOR | C3336 | 979019 | Intel Atom® Processor C3336 (4M Cache, 1.50 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8086K | 979349 | Boxed Intel® Core™ i7-8086K Processor (12M Cache, up to 5.00 GHz) FC-LGA14C, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8305G | 979456 | Intel® Core™ i5-8305G Processor with Radeon™ Pro WX Vega M GL graphics (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | MONTAGE(R) JINTIDE(R) C | C2460 1 | 980100 | Montage® Jintide® C C2460 1 Processor (33M Cache, 2.10 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980657 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM | 8124M | 980660 | Intel® Xeon® Platinum 8124M Processor (24.75M Cache, 3.00 GHz) FC-LGA14B, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8500Y | 980666 | Intel® Core™ i7-8500Y Processor (4M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8200Y | 980667 | Intel® Core™ i5-8200Y Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) M | M3-8100Y | 980672 | Intel® Core™ m3-8100Y Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) M | M3-8100Y | 980678 | Intel® Core™ m3-8100Y Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I3 | I3-8100B | 981451 | Intel® Core™ i3-8100B Processor (4M Cache, 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982922 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | SKY MEADOW | INTEL(R)XEON® | N/A | 982924 | SRV [SKY MEADOW] Processor 2.00 GHz, 33M Cache, FC-LGA14B, Tray, 205W, CM8067303405604 |
| 1272 | 14nm | SKY MEADOW | INTEL(R)XEON(R) | N/A | 982925 | SRV [SKY MEADOW] Processor 2.10 GHz, 22M Cache, FC-LGA14B, Tray, 180W, CM8067303409003 |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) GOLD | 6267 | 982945 | |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) PLATINUM | 8263C | 982995 | |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) GOLD | 6261 | 982997 | |
| 1273 | 14nm | APOLLO LAKE | INTEL(R) ATOM(TM) | A3920 | 983175 | Intel Atom® Processor A3920 (2M Cache, up to 2.00 GHz) FC-BGA15C, Tray |
| 1272 | 14nm | AMBER LAKE | INTEL (R) CORE (TM) I7 | I7-8510Y | 983287 | Intel® Core™ i7-8510Y Processor (4M Cache, up to 4.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | AMBER LAKE | INTEL(R) CORE(TM) I5 | I5-8310Y | 983288 | Intel® Core™ i5-8310Y Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | AMBER LAKE | INTEL(R) CORE(TM) I5 | I5-8210Y | 983289 | Intel® Core™ i5-8210Y Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-9900K | 983354 | Intel® Core™ i9-9900K Processor (16M Cache, up to 5.00 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-9700K | 983355 | Intel® Core™ i7-9700K Processor (12M Cache, up to 4.90 GHz) FC-LGA14A, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-9600K | 983356 | Intel® Core™ i5-9600K Processor (9M Cache, up to 4.60 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-9900K | 984503 | Boxed Intel® Core™ i9-9900K Processor (16M Cache, up to 5.00 GHz) FC-LGA14A |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-9600K | 984505 | Boxed Intel® Core™ i5-9600K Processor (9M Cache, up to 4.60 GHz) FC-LGA14C |
| 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-9700K | 984509 | Boxed Intel® Core™ i7-9700K Processor (12M Cache, up to 4.90 GHz) FC-LGA14A, for China |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-9600K | 984512 | Boxed Intel® Core™ i5-9600K Processor (9M Cache, up to 4.60 GHz) FC-LGA14A, for China |
| 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | 4417U | 984527 | Intel® Pentium® Processor 4417U (2M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | INTEL(R) PENTIUM(R) | 5405U | 984529 | Intel® Pentium® Gold 5405U Processor (2M Cache, 2.30 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | WHISKEY LAKE | INTEL(R) CELERON(R) | 4205U | 984533 | Intel® Celeron® Processor 4205U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE EVO(TM) I7 | I7-9700K | 985083 | Boxed Intel® Core™ i7-9700K Processor (12M Cache, up to 4.90 GHz) FC-LGA14A |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1573N | 985835 | Intel® Xeon® Processor D-1573N (12M Cache, 2.70 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) | D-1563N | 985836 | Intel® Xeon® Processor D-1563N (12M Cache, 2.00 GHz) FC-BGA14C, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9980XE | 986447 | Intel® Core™ i9-9980XE Extreme Edition Processor (24.75M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9960X | 986448 | Intel® Core™ i9-9960X X-series Processor (22M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9940X | 986449 | Intel® Core™ i9-9940X X-series Processor (19.25M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9920X | 986450 | Intel® Core™ i9-9920X X-series Processor (19.25M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9900X | 986451 | Intel® Core™ i9-9900X X-series Processor (19.25M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9820X | 986452 | Intel® Core™ i9-9820X X-series Processor (16.5M Cache, up to 4.20 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-9800X | 986453 | Intel® Core™ i7-9800X X-series Processor (16.5M Cache, up to 4.50 GHz) FC-LGA14A, Tray |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) GOLD | 6230 | 999C00 | |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) GOLD | 6248 | 999C09 | |
| 1272 | 14nm | CASCADE LAKE | INTEL(R) XEON(R) PLATINUM | 8280L | 999C16 | |
| 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-9900K | 999AGF | Boxed Intel® Core™ i9-9900K Processor (16M Cache, up to 5.00 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-9800X | 999AC3 | Boxed Intel® Core™ i7-9800X X-series Processor (16.5M Cache, up to 4.40 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-9800X | 999ACM | Boxed Intel® Core™ i7-9800X X-series Processor (16.5M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9820X | 999AC8 | Boxed Intel® Core™ i9-9820X X-series Processor (16.5M Cache, up to 4.10 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9820X | 999ACL | Boxed Intel® Core™ i9-9820X X-series Processor (16.5M Cache, up to 4.10 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9900X | 999AC5 | Boxed Intel® Core™ i9-9900X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9900X | 999ACK | Boxed Intel® Core™ i9-9900X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9920X | 999AC6 | Boxed Intel® Core™ i9-9920X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9920X | 999ACJ | Boxed Intel® Core™ i9-9920X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9940X | 999AC9 | Boxed Intel® Core™ i9-9940X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9940X | 999ACG | Boxed Intel® Core™ i9-9940X X-series Processor (19.25M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9960X | 999AC7 | Boxed Intel® Core™ i9-9960X X-series Processor (22M Cache, up to 4.40 GHz) FC-LGA14A |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9960X | 999ACF | Boxed Intel® Core™ i9-9960X X-series Processor (22M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9980XE | 999ACD | Boxed Intel® Core™ i9-9980XE Processor Extreme Edition (24.75M Cache, up to 4.40 GHz) FC-LGA14A, for China |
| 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I9 | I9-9980XE | 999AD1 | Boxed Intel® Core™ i9-9980XE Processor Extreme Edition (24.75M Cache, up to 4.40 GHz) FC-LGA14A |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 949752 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | N/A | | 951425 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | N/A | | 951591 | [Missing External Name] EY82075PCH |
| 1273 | 14nm | LEWISBURG | INTEL(R) C628 | | 953061 | Intel ® C628 chipset (Intel ® EY82C628 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C627 | | 953062 | Intel ® C627 chipset (Intel ® EY82C627 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 953098 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 953999 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 954858 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | INTEL(R) C628 | | 954859 | Intel ® C628 chipset (Intel ® EY82C628 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C627 | | 954860 | Intel ® C627 chipset (Intel ® EY82C627 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C626 | | 954861 | Intel ® C626 chipset (Intel ® EY82C626 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C625 | | 954862 | Intel ® C625 chipset (Intel ® EY82C625 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C622 | | 954863 | Intel ® C622 chipset (Intel ® EY82C622 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C624 | | 954864 | Intel ® C624 chipset (Intel ® EY82C624 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 957625 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | INTEL(R) C628 | | 957626 | Intel ® C628 chipset (Intel ® EY82C628 PCH) |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1273 | 14nm | LEWISBURG | INTEL(R) C627 | | 957627 | Intel ® C627 chipset (Intel ® EY82C627 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C626 | | 957628 | Intel ® C626 chipset (Intel ® EY82C626 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C625 | | 957629 | Intel ® C625 chipset (Intel ® EY82C625 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C622 | | 957630 | Intel ® C622 chipset (Intel ® EY82C622 PCH) |
| 1273 | 14nm | LEWISBURG | INTEL(R) C621 | | 957631 | Intel® EY82C621 Platform Controller Hub |
| 1273 | 14nm | LEWISBURG | INTEL(R) C624 | | 957632 | Intel ® C624 chipset (Intel ® EY82C624 PCH) |
| 1273 | 14nm | CANNON LAKE | N/A | | 964246 | Intel® FH82Q370 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964247 | Intel® FH82H370 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964256 | [Missing External Name] FH82Z390 |
| 1273 | 14nm | CANNON LAKE | N/A | | 964265 | Intel® FH82B360 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964267 | [Missing External Name] FH82H310 |
| 1273 | 14nm | CANNON LAKE | N/A | | 964268 | Intel® FH82C246 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964269 | Intel® FH82HM370 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964270 | Intel® FH82C242 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964271 | Intel® FH82QM370 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964272 | Intel® FH82CM246 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 964273 | Intel® FH82QMS380 Platform Controller Hub |
| 1273 | 14nm | CANNON LAKE | N/A | | 978829 | Intel® FH82H310 Platform Controller Hub |
| 1275 | 10nm | SHUTTLE CREEK | N/A | | 951940 | [Missing External Name] LUZONTC1 |
| 1273 | 14nm | CHERRY TRAIL | INTEL (R) PROCESSOR | N/A | 936018 | CE [CHERRY TRAIL] Processor ULV 1.60 GHz, 2M Cache, FC-MB6T, Tray, N/AW, GB8066401885800 |
| 1273 | 14nm | CHERRY TRAIL | GENUINE INTEL (R) CPU | Z8700 | 940953 | Intel Atom® x7-Z8700 Processor (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8500 | 940954 | Intel Atom® x5-Z8500 Processor (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3150 | 942230 | Intel® Celeron® Processor N3150 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3050 | 942232 | Intel® Celeron® Processor N3050 (2M Cache, up to 2.16 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3700 | 942599 | Intel® Pentium® Processor N3700 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3150 | 942600 | Intel® Celeron® Processor N3150 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3050 | 942602 | Intel® Celeron® Processor N3050 (2M Cache, up to 2.16 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3000 | 942603 | Intel® Celeron® Processor N3000 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | GENUINE INTEL (R) CPU | Z8700 | 943102 | Intel Atom® x7-Z8700 Processor (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8300 | 943165 | Intel Atom® x5-Z8300 Processor (2M Cache, up to 1.84 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3700 | 943327 | Intel® Pentium® Processor N3700 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3150 | 943328 | Intel® Celeron® Processor N3150 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3050 | 943329 | Intel® Celeron® Processor N3050 (2M Cache, up to 2.16 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8100P | 944058 | Intel Atom® x5-Z8100P Processor (2M Cache, up to 1.04 GHz) FC-MB6T, T&R |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 944573 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8500 | 944708 | Intel Atom® x5-Z8500 Processor (2M Cache, up to 2.24 GHz) FC-BGA15F, T&R |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 944993 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | J3060 | 944995 | Intel® Celeron® Processor J3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | GENUINE INTEL (R) CPU | Z8750 | 945048 | Intel Atom® x7-Z8750 Processor (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 946849 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | CHERRY TRAIL | GENUINE INTEL (R) CPU | Z8750 | 947016 | Intel Atom® x7-Z8750 Processor (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8550 | 947017 | Intel Atom® x5-Z8550 Processor (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3710 | 947020 | Intel® Pentium® Processor N3710 (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3010 | 947021 | Intel® Celeron® Processor N3010 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | J3710 | 947024 | Intel® Pentium® Processor J3710 (2M Cache, up to 2.64 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | J3060 | 947025 | Intel® Celeron® Processor J3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | J3160 | 947026 | Intel® Celeron® Processor J3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8330 | 947028 | Intel Atom® x5-Z8330 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | BRASWELL | INTEL(R) ATOM(TM) | E8000 | 947286 | Intel Atom® x5-E8000 Processor (2M Cache, up to 2.00 GHz) FC-BGA15F, Tray |

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| PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
| 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8550 | 947827 | Intel Atom® Processor Z8550 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 947911 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 948716 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 949226 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 949336 | Intel® Puma™ 7 SoC CE2712 DOCSIS3.1 Entry Level Networking GW |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 949870 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 949871 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 949874 | Intel® Puma™ 7 SoC CE2712M DOCSIS3.1 Entry Level Networking GW with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 950572 | Intel® Puma™ 7 SoC CE2712 DOCSIS3.1 Entry Level Networking GW |
| 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 951881 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952283 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952322 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952331 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952346 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952347 | Intel® Puma™ 7 SoC CE2712 DOCSIS3.1 Entry Level Networking GW |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952348 | Intel® Puma™ 7 SoC CE2712M DOCSIS3.1 Entry Level Networking GW with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952485 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952487 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952488 | Intel® Puma™ 7 SoC CE2712 DOCSIS3.1 Entry Level Networking GW |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952489 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952492 | Intel® Puma™ 7 SoC CE2712M DOCSIS3.1 Entry Level Networking GW with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952555 | Intel® Puma™ 7 SoC CE2703i DOCSIS3.1 Modem/eMTA (5Gbps service) industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 952561 | Intel® Puma™ 7 SoC CE2753 DOCSIS3.1 Enterprise Services industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961654 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961655 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961656 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961657 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961659 | Intel® Puma™ 7 SoC CE2712M DOCSIS3.1 Entry Level Networking GW with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961661 | Intel® Puma™ 7 SoC CE2712 DOCSIS3.1 Entry Level Networking GW |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961663 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961667 | Intel® Puma™ 7 SoC CE2703i DOCSIS3.1 Modem/eMTA (5Gbps service) industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961668 | Intel® Puma™ 7 SoC CE2753 DOCSIS3.1 Enterprise Services industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 961669 | Intel® Puma™ 7 SoC CE2753 DOCSIS3.1 Enterprise Services industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 962685 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 963196 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975635 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway with MOCA |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975636 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975639 | Intel® Puma™ 7 SoC CE2703 DOCSIS3.1 Modem/eMTA (5Gbps service) |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975641 | Intel® Puma™ 7 SoC CE2703i DOCSIS3.1 Modem/eMTA (5Gbps service) industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975642 | Intel® Puma™ 7 SoC CE2753 DOCSIS3.1 Enterprise Services industrial |
| 1273 | 14nm | COUGAR MOUNTAIN | INTEL(R) PUMA(TM) | | 975644 | Intel® Puma™ 7 SoC CE2752 DOCSIS3.1 Services & All-IP Video Gateway |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.GTMAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTMAA.002 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NT.LEPAA.001 | CI78550U | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q1TAA.001 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GNZAA.002 | CM3855U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | 3855U | 944335 | Intel® Celeron® Processor 3855U (2M Cache, 1.60 GHz) FC-BGA14C, Tray |
| NX.GC2AA.016 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GVFAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GP2AA.003 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NT.LCWAA.002 | ATMZ8350 | WINDOWS TABLET-NB | 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| NX.GC2AA.017 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GC2AA.010 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GP7AA.002 | CI57200U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 951957 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GG5AA.005 | CI37100U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 951959 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.GRMAA.005 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.G54AA.018 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NT.LCQAA.004 | ATMZ8350 | WINDOWS TABLET-NB | 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| NX.GHJAA.009 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GHJAA.007 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GC2AA.007 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GHJAA.002 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GTSAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GF4AA.004 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GP4AA.003 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GTQAA.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.G54AA.002 | ICQN3150 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3150 | 942600 | Intel® Celeron® Processor N3150 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| NX.GR7AA.007 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VDCAA.016 | CI36100U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| NX.GSFAA.001 | CI58250U | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNTAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.G4XAA.001 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GNTAA.010 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GMWAA.004 | 7Y75 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 951956 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| N9.VHKWW.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GRMAA.008 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NT.LCQAA.005 | ATMZ8350 | WINDOWS TABLET-NB | 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| NX.GP6AA.004 | CI36100U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| NX.GP6AA.003 | CI56200U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.GM8AA.001 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GPZAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GSUAA.001 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.G4XAA.002 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GNPAA.021 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GS6AA.001 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GS5AA.001 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GNPAA.022 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GS6AA.002 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GS5AA.002 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GHJAA.008 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GRMAA.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GRMAA.006 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GTPAA.003 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GSYAA.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GR5AA.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q29AA.003 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GFTAA.011 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GR7AA.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.GV2WW.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.GVFWW.001 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| N9.GV3WW.002 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GVJAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VG0AA.001 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NH.Q2LAA.001 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GT0AA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GN2AL.006 | 7Y54 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7Y54 | 951960 | Intel® Core™ i5-7Y54 Processor (4M Cache, up to 3.20 GHz) FC-BGA14F, Tray |
| NX.GHJAA.006 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GR7AL.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GUWAA.004 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GQJAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| N9.GWGWW.005 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.GWGWW.007 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.VCYAA.001 | CI56300U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6300U | 944340 | Intel® Core™ i5-6300U Processor (3M Cache, up to 3.00 GHz) FC-BGA14C, Tray |
| NX.GQGAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q2YAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.EFJWW.004 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GULAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q2QAA.006 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GNPAA.001 | CI37100U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.GS1AA.001 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q2BAA.003 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NH.Q29AA.002 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GL2AA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GM9AA.001 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NT.LDRAA.003 | PQCN4200 | WINDOWS TABLET-NB | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.G55AA.005 | ICQN3150 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3150 | 942600 | Intel® Celeron® Processor N3150 (2M Cache, up to 2.08 GHz) FC-BGA15F, Tray |
| NX.GP6AA.001 | CM3855U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | 3855U | 944335 | Intel® Celeron® Processor 3855U (2M Cache, 1.60 GHz) FC-BGA14C, Tray |
| N9.EFJWW.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H0SWW.003 | CM3865U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 953360 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| NX.GP4AA.012 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GC7AA.001 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GTPAA.008 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNUAL.013 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NT.LCDAL.010 | CI36100U | WINDOWS TABLET-NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| NX.GS5AL.013 | CI37100U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.GFSAL.004 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GNSAL.008 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q2BAL.007 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GWHAL.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GT1AL.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.023 | CI57300HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.014 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NH.Q29AL.009 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GC2AA.009 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GHJAA.004 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.VDKAA.009 | CI56200U | Notebook | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.GC2AA.013 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NH.Q2RAA.013 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.GR7AA.006 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTCAA.012 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSXAA.004 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GQGAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GL2AA.003 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GPTAA.004 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.GQJAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GP8AA.005 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.GH4AA.003 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GTCAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSXAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTCAA.003 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.G4XAA.004 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GTCAA.006 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSXAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GR7AA.004 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GR5AA.005 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.G4XAA.003 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GP1AA.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GM8AA.004 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NT.GDQAA.006 | CI36100U | Windows Tablet -NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| N9.GY0WW.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q1ZAA.001 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GNTAA.005 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.G55AA.018 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NH.Q2RAA.001 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.SHXAA.006 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| N9.H1WWW.001 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.GUNWW.003 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q2QAA.015 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NH.Q28AA.005 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NT.LDSAA.001 | CI57200U/H22 | Windows Tablet -NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q2RAA.016 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| N9.GUHWW.001 | CI77Y75/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| NX.G55AA.017 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.G55AA.019 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GM8AA.005 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GM9AA.004 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.G54AA.012 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GTMAA.005 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.SHXAA.005 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.G55AA.006 | ICDN3050 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3050 | 942602 | Intel® Celeron® Processor N3050 (2M Cache, up to 2.16 GHz) FC-BGA15F, Tray |
| NX.G54AA.016 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GZRAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSKAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTPAA.001 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GSYAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q2RAA.002 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GRYAA.001 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.GUHWW.002 | CI77Y75/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| N9.GZAWW.002 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GPGAA.002 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.Q1EAA.003 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GUKAA.002 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GULAA.002 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NT.LCDAA.003 | CI36100U | Windows Tablet -NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| NX.GUKAA.001 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q2RAA.014 | CI57300HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| N9.VHRWW.001 | ICQN4100 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GU7AA.001 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GUHAA.001 | CI77Y75/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| NX.GR4AL.010 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GP2AA.002 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NH.Q1XAA.003 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| N9.Q3FWW.001 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.H1LWW.003 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q2YAA.002 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GTPAA.007 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GZRAA.002 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTPAA.006 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GYAAA.001 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VD4AA.016 | CI56200U | Notebook | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NH.Q2YAA.004 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.G55AA.010 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GXZAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VCGAA.037 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| N9.H8WWW.001 | ICQN4100 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.EFJAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H1WAA.001 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H93WW.002 | ICDN4000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.H99WW.001 | PQCN5000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| N9.H8VWW.002 | ICDN4000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.H91WW.002 | ICQN4100 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.H98WW.001 | CI78500Y | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8500Y | 980666 | Intel® Core™ i7-8500Y Processor (4M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| N9.H8YWW.002 | PQCN5000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| N9.H99WW.003 | PQCN5000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.EFJAA.010 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GH4AA.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NT.LCDAA.001 | CI56200U | Windows Tablet -NB | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| N9.HAWWW.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.HB0WW.002 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.HB3WW.001 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.HAZWW.001 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GY0AA.001 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VHSAA.002 | ICDN4000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.H98WW.002 | CI78500Y | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8500Y | 980666 | Intel® Core™ i7-8500Y Processor (4M Cache, up to 4.20 GHz) FC-BGA14F, Tray |
| NX.GWGAA.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.HAWWW.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| N9.HB0WW.004 | PMD4417U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | 4417U | 984527 | Intel® Pentium® Processor 4417U (2M Cache, 2.30 GHz) FC-BGA14F, Tray |
| N9.HDEWW.001 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NH.Q3DAA.001 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GMBAA.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.VHQAA.003 | PQCN5000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.VHRAA.001 | ICDN4000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.Q28AA.006 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.VDKAA.192 | CI56200U | Notebook | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| N9.H3UWW.002 | CI38145U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.GYSWW.001 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q1FAA.001 | CI77820HK | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7820HK | 952955 | Intel® Core™ i7-7820HK Processor (8M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.H69WW.001 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GTCAA.019 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GR7AA.003 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSXAA.006 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNPAA.009 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.VDKAA.186 | CI56200U | Notebook | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.GR7AA.011 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GSUAL.003 | CI77500U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.GP4AL.015 | CI77500U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.H3UAA.001 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.H69WW.003 | CI78565U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| NX.H7QAA.001 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.VCGAA.015 | ICQN3160 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.VCHAA.019 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NH.Q1YAA.002 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| N9.VK8WW.002 | CI78565U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| N9.VK9WW.002 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.Q52WW.005 | CI78705G | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8705G | 961154 | Intel® Core™ i7-8705G Processor with Radeon™ RX Vega M GL graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3FAA.001 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NT.LCQAA.003 | ATMZ8350 | Windows Tablet -NB | 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| NX.GZAAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.HD4WW.001 | CI38145U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.VK8WW.004 | CI78565U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| N9.Q52WW.003 | CI78705G | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8705G | 961154 | Intel® Core™ i7-8705G Processor with Radeon™ RX Vega M GL graphics (8M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GP4AA.006 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GP5AA.004 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GTBAA.001 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GR7AA.012 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GR7AA.013 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.GTQAA.002 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.VJZWW.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GZRAA.006 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q3NAA.003 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.VG0AA.004 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| N9.VJCWW.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H0DAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.VJDWW.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.GXCAA.001 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.GXBAA.003 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GNJAA.002 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.GXNWW.001 | CM3965U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3965U | 953361 | Intel® Celeron® Processor 3965U (2M Cache, 2.20 GHz) FC-BGA14F, Tray |
| N9.H09WW.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.H0AWW.002 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GZAAA.002 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GTCAA.020 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNPAA.017 | CI37100U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.GNPAA.013 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| N9.H0KWW.002 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| N9.H0KWW.003 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.SHXAA.003 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q28AA.001 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GHJAA.010 | ICDN3060 | Notebook | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| N9.EFJWW.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H0SWW.002 | CM3865U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 953360 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| NX.GR7AA.008 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.001 | CI58300H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3YAA.001 | CI58300H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.H09AA.001 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GSFAA.003 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GRDAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H1LWW.001 | PQCN4200 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.H1QWW.002 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.GVZAA.003 | ICDN4000 | Notebook | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.Q28AL.008 | CI77700HQ | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GTQAA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H0KAA.003 | ICQN3450 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.GNPAA.005 | CI37100U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.GVNAL.001 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GR4AL.008 | ICDN3350 | Notebook | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GYYAL.002 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.GXBAL.001 | CI58300H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.Q3PWW.001 | CI98950HK | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-8950HK | 975241 | Intel® Core™ i9-8950HK Processor (12M Cache, up to 4.80 GHz) FC-BGA14F, Tray |
| N9.VJSWW.001 | CI58265U | Notebook | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.Q53WW.001 | CI58300H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.Q5RWW.001 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GZRAA.008 | CI38130U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGGAA.004 | CI77500U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.GXEAA.005 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H1CAA.001 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTPAA.012 | CI78550U | Notebook | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.003 | CI58300H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3YAA.004 | CI78750H | Notebook | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GS1AA.003 | CI57200U/H22 | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.H37AA.002 | CI58250U | Notebook | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.Q4HWW.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.H14WW.002 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GXGAA.002 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.H54AA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H87AA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.VJ7WW.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GZLAA.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.GZGAA.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.H5CAL.002 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H8AAA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.Q4WWW.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.Q4WWW.002 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.VFXAA.007 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.GYLAL.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.Q5BWW.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.Q4VWW.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.VCGAA.006 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GR7AA.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNWAA.001 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GV2AA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GVWAA.001 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.Q55WW.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q50AA.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q4WAA.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3FAA.004 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.GXEAA.003 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.GXCAA.002 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.GXDAA.002 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.GXBAA.006 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GRMAA.009 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.Q4WWW.003 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GTPAA.011 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VCSAA.002 | CI76500U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6500U | 944339 | Intel® Core™ i7-6500U Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| N9.Q4VWW.004 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.002 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3FAA.005 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GZ9AA.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GPTAA.001 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.Q5FWW.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GPTAA.008 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.Q5DWW.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| N9.Q5BWW.002 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.HDRWW.001 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H62AA.008 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.HE4WW.001 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.GUHAA.002 | CI77Y75/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| NH.Q4AAL.003 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q4AAL.004 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H1SAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNPAL.038 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.GR4AL.006 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GR5AL.005 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VGTAA.003 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGTAA.004 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.GZGWW.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.VGTAA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGTAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GUWAL.002 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.VGUAA.003 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGUAA.004 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGUAA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGUAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GC2AA.019 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GSFAA.004 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GPTAA.011 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NH.Q3NAA.005 | CI98950HK | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-8950HK | 975241 | Intel® Core™ i9-8950HK Processor (12M Cache, up to 4.80 GHz) FC-BGA14F, Tray |
| NX.GNPAA.004 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GXZAA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H0AAA.001 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NH.Q2YAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q3FAA.006 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3DAA.005 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GXGAA.003 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.GY3AA.003 | PQCN3710 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3710 | 947020 | Intel® Pentium® Processor N3710 (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| NX.GTMAA.004 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H2LAL.002 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q4AAL.007 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H1SAA.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSYAA.007 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H37AA.001 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSYAA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H2QAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q2KAL.002 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GC2AA.021 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| N9.GZCWW.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q2LAA.002 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.H2MAL.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H2MAL.005 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3NAA.007 | CI98950HK | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 | I9-8950HK | 975241 | Intel® Core™ i9-8950HK Processor (12M Cache, up to 4.80 GHz) FC-BGA14F, Tray |
| NX.GY0AL.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GT1AL.003 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.GXBAL.002 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NT.LDSAL.003 | CI57200U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q4DAA.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GTMAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q3NAA.006 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GYYAA.002 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTPAA.013 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GZAAA.004 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GYGAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.GXCAA.003 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.005 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.006 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H2LAL.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H2LAL.004 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H37AA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GXGAA.005 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.H38AA.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H38AA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.GNPAA.003 | CI37100U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100U | 953354 | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) FC-BGA14F, Tray |
| NX.H0UAA.003 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.Q3ZAA.007 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GXGAA.007 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.Q3EAA.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q4CAA.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.VFUAA.005 | CI37130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| NX.H3YAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H67WW.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.H3FAL.002 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H0UWW.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| N9.GNLWW.001 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.Q3LWW.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.Q3DWW.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.GY3WW.001 | PQCN3710 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3710 | 947020 | Intel® Pentium® Processor N3710 (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| NX.GNWAA.002 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.H1SAA.003 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q4AAL.008 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H3GAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NT.LDTAA.002 | CI37130U | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| NT.LDTAA.003 | CI57200U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GZBAA.001 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GZ9AA.002 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H1MAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H18WW.001 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H6GWW.002 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NH.Q3YAA.005 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3ZAA.004 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| N9.H60WW.004 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GP3AA.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.H7KWW.002 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.VGGAA.005 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| N9.H6NWW.002 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NH.Q4CAA.002 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.H6AWW.001 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NH.Q3YAA.003 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| N9.H62WW.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NH.Q2YAA.006 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VD2AA.001 | CI76500U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 | I7-6500U | 944339 | Intel® Core™ i7-6500U Processor (4M Cache, up to 3.10 GHz) FC-BGA14C, Tray |
| NX.GNTAL.012 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VGTAA.013 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GZRAA.012 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GJEAA.001 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GPLAL.007 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GVZAA.004 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.H2AAL.001 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.GNPAL.015 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.H2NAL.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q4AAL.009 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q4WAA.002 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GQGAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGGAA.001 | CI77500U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.VCSAA.001 | CI56200U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.EFJAA.001 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.EFJAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H1CAL.004 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H2LAL.007 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VCYAA.009 | CI56200U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.VDKAA.196 | CI56200U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NT.LDSAA.007 | CI57200U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GL2AA.005 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GVZAA.005 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VGGAA.006 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.VGGAA.007 | CI77500U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.GR7AA.017 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GR7AA.015 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H0DAA.003 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VFXAA.009 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.GPTAA.002 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GP0AA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.VGTAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GSFAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.G4XAA.005 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.H0UAA.005 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.GTQAA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GXZAA.010 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GVZAA.006 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NH.GXCAA.004 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3FAA.007 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q2KAA.001 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.VGGAA.011 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.VGGAA.012 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NT.LDSAA.002 | CI57200U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q4HAA.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GRMAA.011 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NH.GXDAA.004 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.GXDAA.003 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3YAA.006 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.VGVAA.001 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGVAA.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VGVAA.003 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.H1WAA.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GTCAA.023 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VHJAA.004 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VHJAA.005 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.VHJAA.003 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GVWAA.002 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GW5AA.001 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GW4AA.001 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H37AA.005 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H4QAA.002 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H47AA.002 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H47AA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H4QAA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GVZAA.007 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.GS3AA.003 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GE8AA.003 | CI56200U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 | I5-6200U | 944338 | Intel® Core™ i5-6200U Processor (3M Cache, up to 2.80 GHz) FC-BGA14C, Tray |
| NX.GNSAL.003 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GNSAL.015 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GTGAL.013 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GTHAL.017 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H2BAL.005 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.H2BAL.007 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.H2BAL.006 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.H2AAL.005 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.H1PAL.004 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q3FAL.007 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q4HAL.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H1SAL.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GUWAL.009 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| N9.GUMWW.004 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NH.Q3NAL.008 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GZRAA.010 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H5UAA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GZRAA.011 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GY1AA.001 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H37AA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GXZAA.011 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GNZAA.001 | CM3855U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | 3855U | 944335 | Intel® Celeron® Processor 3855U (2M Cache, 1.60 GHz) FC-BGA14C, Tray |
| NX.GUJAA.001 | CI77Y75/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| NX.H2AAA.001 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| N9.GWGWW.008 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GWGAA.002 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GWGAA.003 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NT.LDSAA.003 | CI57200U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NT.LDRAA.004 | PQCN4200 | WINDOWS TABLET-NB | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.H60AA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H62AA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H2AAL.002 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.VGVAA.004 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GXGAA.009 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NH.GXCAA.005 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3NAL.007 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H0UAA.006 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NH.Q3DAL.009 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.GXCAA.006 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.H0UAA.004 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NT.LDRAA.002 | PQCN4200 | WINDOWS TABLET-NB | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| N9.HB0WW.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GT0AA.001 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H1LAA.001 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.GTCAA.025 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.EFJAA.004 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H3UAA.002 | CI78565U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| NX.H3WAA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GRMAA.004 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.H1QAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H8AAA.003 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GC2AA.005 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GC7AA.003 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GK4AA.025 | CI57200U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 951957 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.VG0AA.002 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.H89AA.003 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.H89AA.004 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.EFJWW.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H7QAA.002 | CI78565U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| N9.H92WW.001 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.H1WWW.002 | CI38130U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-8130U | 963178 | Intel® Core™ i3-8130U Processor (4M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H09WW.003 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H4BAA.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H4BAA.003 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.H1LAA.002 | ICQN3450 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3450 | 951833 | Intel® Celeron® Processor N3450 (2M Cache, up to 2.20 GHz) FC-BGA15F, Tray |
| NX.H1LAA.003 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.GY3AL.003 | ICDN3060_OFF | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 951881 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GY3AL.004 | ICDN3060_OFF | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 951881 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.H2BAL.015 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NX.GYGAL.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NH.Q3MAL.010 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GWGAA.004 | PQCN4200 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) | N4200 | 951830 | Intel® Pentium® Processor N4200 (2M Cache, up to 2.50 GHz) FC-BGA15F, Tray |
| NX.H3WAA.002 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GSWAA.004 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H8AAA.004 | CI78565U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I7-8565U | 982918 | Intel® Core™ i7-8565U Processor (8M Cache, up to 4.60 GHz) FC-BGA14F, Tray |
| NH.Q4QAA.001 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GXZAA.012 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H64AA.001 | PQCN3710 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) | N3710 | 947020 | Intel® Pentium® Processor N3710 (2M Cache, up to 2.56 GHz) FC-BGA15F, Tray |
| NX.GXZAA.013 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H89AA.006 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.G4XAA.006 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.H89AA.005 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GNSAL.021 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GNPAL.037 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.GS6AL.026 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.GNPAL.034 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.GM8AA.006 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.GR4AL.012 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| N9.G55WW.010 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.VGTAA.011 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GR4AL.007 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.EFJAA.005 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H1WAA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GVWAA.003 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NT.LDTAA.006 | CI77500U/H22 | WINDOWS TABLET-NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NX.GR7AA.014 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GUJAL.003 | CI77Y75/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| NX.GTMAL.002 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.VCGAL.013 | ICQN3160 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3160 | 947023 | Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz) FC-BGA15F, Tray |
| NX.GUJAL.002 | CI77Y75/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7Y75 | 953348 | Intel® Core™ i7-7Y75 Processor (4M Cache, up to 3.60 GHz) FC-BGA14F, Tray |
| NX.GV2AA.002 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NT.LCQAA.006 | ATMZ8350 | WINDOWS TABLET-NB | 1273 | 14nm | CHERRY TRAIL | INTEL(R) ATOM(TM) | Z8350 | 947027 | Intel Atom® x5-Z8350 Processor (2M Cache, up to 1.92 GHz) FC-BGA15F, Tray |
| NX.H62AA.003 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.H99WW.005 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.EFJAA.009 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H89AA.007 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.VHUAA.002 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.H4CAA.003 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| N9.HB0WW.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| N9.H94WW.003 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| N9.H90WW.002 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.H93AA.001 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.H99AA.002 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H4EAA.001 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.VHTAA.001 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GZJAA.001 | ICQN4100 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4100 | 961639 | Intel® Celeron® N4100 Processor (4M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H9FAA.001 | CI37020U23 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 960019 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.H8YAA.001 | ICDN4000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) | N4000 | 961640 | Intel® Celeron® N4000 Processor (4M Cache, up to 2.60 GHz) FC-BGA15F, Tray |
| NX.GXUAA.002 | PQCN5000 | NOTEBOOK | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER | N5000 | 961638 | Intel® Pentium® Silver N5000 Processor (4M Cache, up to 2.70 GHz) FC-BGA15F, Tray |
| NX.H38AA.006 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GN3AA.001 | ICDN3060 | NOTEBOOK | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) | N3060 | 947022 | Intel® Celeron® Processor N3060 (2M Cache, up to 2.48 GHz) FC-BGA15F, Tray |
| NX.H4CAA.002 | CI58265U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I5-8265U | 982921 | Intel® Core™ i5-8265U Processor (6M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.VGQAA.002 | CI78550U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GZ9AA.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.H89AA.008 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GTJAA.001 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H16AA.002 | CI38145U | NOTEBOOK | 1272 | 14nm | WHISKEY LAKE | N/A | I3-8145U | 980656 | Intel® Core™ i3-8145U Processor (4M Cache, up to 3.90 GHz) FC-BGA14F, Tray |
| NX.GTGAL.007 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GNSAL.014 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.GNPAL.008 | CI36006U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6006U | 950664 | Intel® Core™ i3-6006U Processor (3M Cache, 2.00 GHz) FC-BGA14C, Tray |
| NX.GPAAL.004 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.007 | CI57300HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.011 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NH.Q2BAL.009 | CI57300HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.Q2BAL.008 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.029 | CI57300HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7300HQ | 952959 | Intel® Core™ i5-7300HQ Processor (6M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| NH.Q2RAL.028 | CI77700HQ | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700HQ | 952957 | Intel® Core™ i7-7700HQ Processor (6M Cache, up to 3.80 GHz) FC-BGA14F, Tray |
| NX.GNPAL.005 | CI57200U/H22 | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7200U | 953353 | Intel® Core™ i5-7200U Processor (3M Cache, up to 3.10 GHz) FC-BGA14F, Tray |
| NH.Q3MAL.004 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NH.Q3LAL.003 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NH.Q3FAL.001 | CI78750H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 | I7-8750H | 963718 | Intel® Core™ i7-8750H Processor (9M Cache, up to 4.10 GHz) FC-BGA14F, Tray |
| NX.GTGAL.014 | ICDN3350 | NOTEBOOK | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) | N3350 | 951834 | Intel® Celeron® Processor N3350 (2M Cache, up to 2.40 GHz) FC-BGA15F, Tray |
| NX.H2BAL.014 | CI37020UF | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7020U | 959164 | Intel® Core™ i3-7020U Processor (3M Cache, 2.30 GHz) FC-BGA14F, Tray |
| NX.H23AL.004 | CI58300H | NOTEBOOK | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8300H | 963720 | Intel® Core™ i5-8300H Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| NX.GWTAL.003 | CI58250U | NOTEBOOK | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| NX.GDDAL.002 | CI36100U | NOTEBOOK | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 | I3-6100U | 944334 | Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz) FC-BGA14C, Tray |
| DT.Z09AA.004 | 937260 | | 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3205U | 937260 | Intel® Celeron® Processor 3205U (2M Cache, 1.50 GHz) FC-BGA14F, Tray |
| DQ.VPFAA.002 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DG.E04AA.002 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DG.E04AA.001 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DG.B83AA.003 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DQ.BA9AA.002 | 959160 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| DQ.B86AA.004 | 952998 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 952998 | Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, Tray |
| DT.Z0KAA.001 | 939367 | | 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3215U | 939367 | Intel® Celeron® Processor 3215U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| DT.Z0JAA.001 | 939360 | | 1272 | 14nm | BROADWELL | N/A | I7-5500U | 939360 | Intel® Core™ i7-5500U Processor (4M Cache, up to 3.00 GHz) FC-BGA14F, Tray |
| DQ.Z0EAA.001 | 939367 | | 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3215U | 939367 | Intel® Celeron® Processor 3215U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| DQ.Z0DAA.001 | 939367 | | 1272 | 14nm | BROADWELL | INTEL(R) CELERON(R) | 3215U | 939367 | Intel® Celeron® Processor 3215U (2M Cache, 1.70 GHz) FC-BGA14F, Tray |
| DQ.Z0FAA.001 | 939362 | | 1272 | 14nm | BROADWELL | N/A | I5-5200U | 939362 | Intel® Core™ i5-5200U Processor (3M Cache, up to 2.70 GHz) FC-BGA14F, Tray |
| DQ.Z0GAA.001 | 939360 | | 1272 | 14nm | BROADWELL | N/A | I7-5500U | 939360 | Intel® Core™ i7-5500U Processor (4M Cache, up to 3.00 GHz) FC-BGA14F, Tray |
| DT.VQ0AA.005 | 954047 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 954047 | Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C, Tray |
| DT.VQ0AA.006 | 952998 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 952998 | Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, Tray |
| DT.VQ0AA.017 | 945383 | | 1272 | 14nm | SKYLAKE | INTEL(R) CELERON(R) | G3900T | 945383 | Intel® Celeron® Processor G3900T (2M Cache, 2.60 GHz) FC-LGA14C, Tray |
| DQ.VPKAA.003 | 953001 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7500 | 953001 | Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz) FC-LGA14C, Tray |
| DQ.VPJAA.003 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DQ.BACAA.001 | 958406 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| DT.B89AA.024 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DT.B89AA.029 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.B89AA.033 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.B89AA.034 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DG.E06AA.001 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DG.B83AA.018 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DG.E04AA.020 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DQ.VPGAA.001 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DQ.B8UAA.002 | 954047 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100T | 954047 | Intel® Core™ i3-7100T Processor (3M Cache, 3.40 GHz) FC-LGA14C, Tray |
| DQ.B8UAA.003 | 952998 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400T | 952998 | Intel® Core™ i5-7400T Processor (6M Cache, up to 3.00 GHz) FC-LGA14C, Tray |
| DG.B83AA.013 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.B89AA.030 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.B89AA.010 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DQ.B8RAA.004 | 953352 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7500U | 953352 | Intel® Core™ i7-7500U Processor (4M Cache, up to 3.50 GHz) FC-BGA14F, Tray |
| DT.B89AA.004 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DT.B89AA.005 | 953004 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-7700 | 953004 | Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz) FC-LGA14C, Tray |
| DT.B89AA.028 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.B89AA.008 | 952986 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-7400 | 952986 | Intel® Core™ i5-7400 Processor (6M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.BAPAA.002 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BAQAA.001 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.Z0NAA.001 | 953360 | | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 953360 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| DT.Z0RAA.001 | 958406 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| DT.Z0SAA.001 | 959160 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| DT.Z0TAA.001 | 959163 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 | I7-8550U | 959163 | Intel® Core™ i7-8550U Processor (8M Cache, up to 4.00 GHz) FC-BGA14F, Tray |
| DG.E0HAA.004 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.005 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.006 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.007 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.BAPAA.003 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BAPAA.004 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BAPAA.006 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.BAPAA.007 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DG.E0QAA.001 | 960620 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600K | 960620 | Intel® Core™ i5-8600K Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, Tray |
| DG.E0QAA.002 | 960620 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8600K | 960620 | Intel® Core™ i5-8600K Processor (9M Cache, up to 4.30 GHz) FC-LGA14C, Tray |
| DG.E0QAA.003 | 960617 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700K | 960617 | Intel® Core™ i7-8700K Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, Tray |
| DG.E0QAA.004 | 960617 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700K | 960617 | Intel® Core™ i7-8700K Processor (12M Cache, up to 4.70 GHz) FC-LGA14C, Tray |
| DT.BARAA.001 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.BARAA.002 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BARAA.003 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.008 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.009 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.VRAAA.001 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.BAPAA.001 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.BAPAA.012 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BAPAA.013 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BARAA.004 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.Z0NAA.002 | 953360 | | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) | 3865U | 953360 | Intel® Celeron® Processor 3865U (2M Cache, 1.80 GHz) FC-BGA14F, Tray |
| DT.Z0RAA.002 | 958406 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7130U | 958406 | Intel® Core™ i3-7130U Processor (3M Cache, 2.70 GHz) FC-BGA14F, Tray |
| DT.VPUAA.001 | 952994 | | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) | G4560 | 952994 | Intel® Pentium® Processor G4560 (3M Cache, 3.50 GHz) FC-LGA14C, Tray |
| DQ.BBUAA.001 | 959160 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| DG.E0HAA.014 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.BAPAA.021 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DQ.BBUAA.004 | 959160 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| DT.BARAA.005 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.BAPAA.023 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.VPUAA.002 | 954033 | | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 | I3-7100 | 954033 | Intel® Core™ i3-7100 Processor (3M Cache, 3.90 GHz) FC-LGA14C, Tray |
| DG.E11AA.001 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.BAPAA.011 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DG.E0HAA.021 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.022 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E0HAA.023 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DQ.BA9AA.003 | 959160 | | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 | I5-8250U | 959160 | Intel® Core™ i5-8250U Processor (6M Cache, up to 3.40 GHz) FC-BGA14F, Tray |
| DQ.BCEAA.001 | 963540 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400T | 963540 | Intel® Core™ i5-8400T Processor (9M Cache, up to 3.30 GHz) FC-LGA14C, Tray |
| DQ.BCEAA.002 | 963506 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700T | 963506 | Intel® Core™ i7-8700T Processor (12M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.VRDAA.001 | 963660 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100T | 963660 | Intel® Core™ i3-8100T Processor (6M Cache, 3.10 GHz) FC-LGA14C, Tray |
| DT.VRDAA.002 | 963660 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100T | 963660 | Intel® Core™ i3-8100T Processor (6M Cache, 3.10 GHz) FC-LGA14C, Tray |
| DT.VRDAA.003 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.VRDAA.004 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |

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| ITEM NUMBER | CPU | PRODUCT TYPE | PROCESS CODE | PROCESS NODE | ARCHITECTURE | PROCESSOR | PROCESSOR# | MMID | EXTERNAL PRODUCT MARKETING NAME |
|---|---|---|---|---|---|---|---|---|---|
| DT.VRDAA.005 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.VRDAA.006 | 963506 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700T | 963506 | Intel® Core™ i7-8700T Processor (12M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E11AA.012 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E11AA.004 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.BARAA.006 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.BARAA.007 | 960619 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8400 | 960619 | Intel® Core™ i5-8400 Processor (9M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DG.E11AA.014 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DQ.VS0AA.001 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DQ.VS0AA.002 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DQ.VS0AA.003 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DQ.VRZAA.001 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DQ.VRZAA.002 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DQ.VRZAA.003 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DQ.VRZAA.004 | 960618 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700 | 960618 | Intel® Core™ i7-8700 Processor (12M Cache, up to 4.60 GHz) FC-LGA14C, Tray |
| DT.VQVAA.001 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.VQVAA.002 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.VR0AA.002 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.VR0AA.003 | 960012 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100 | 960012 | Intel® Core™ i3-8100 Processor (6M Cache, 3.60 GHz) FC-LGA14C, Tray |
| DT.VQVAA.005 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DT.VQVAA.006 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DT.VR0AA.006 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DT.VR0AA.007 | 963598 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500 | 963598 | Intel® Core™ i5-8500 Processor (9M Cache, up to 4.10 GHz) FC-LGA14C, Tray |
| DT.VRDAA.018 | 963506 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 | I7-8700T | 963506 | Intel® Core™ i7-8700T Processor (12M Cache, up to 4.00 GHz) FC-LGA14C, Tray |
| DT.VRDAA.017 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.VRDAA.013 | 963660 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100T | 963660 | Intel® Core™ i3-8100T Processor (6M Cache, 3.10 GHz) FC-LGA14C, Tray |
| DT.VRDAA.014 | 963660 | | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 | I3-8100T | 963660 | Intel® Core™ i3-8100T Processor (6M Cache, 3.10 GHz) FC-LGA14C, Tray |
| DT.VRDAA.016 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |
| DT.VRDAA.015 | 963592 | | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 | I5-8500T | 963592 | Intel® Core™ i5-8500T Processor (9M Cache, up to 3.50 GHz) FC-LGA14C, Tray |

| ASUS | | | | | | |
|---|---|---|---|---|---|---|
| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| PE200S | Motherboard | PE200S | E3930 | 14 nm | APOLLO LAKE | INTEL(R) ATOM(TM) |
| PE200S | Motherboard | PE200S | E3940 | 14 nm | APOLLO LAKE | INTEL(R) ATOM(TM) |
| PE200S | Motherboard | PE200S | E3950 | 14 nm | APOLLO LAKE | INTEL(R) ATOM(TM) |
| PRIME J3355I-C | Motherboard | PRIME J3355I-C | J3355 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | E201NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | E203NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | E402NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| E Series | Laptop | E403NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | TP202NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | TP203NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | TP203NAH | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | X540NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| X Series | Laptop | X541NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C213NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C223NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C423NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C523NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C403NA | N3350 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| | Laptop | C223NA | N3350/N4200 | 14 nm | APOLLO LAKE | INTEL(R) CELERON®, PENTIUM ® |
| VivoBook | Laptop | TP401NA | N3450 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| X Series | Laptop | X541NA | N3450 | 14 nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | E402NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| E Series | Laptop | E403NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| VivoBook | Laptop | TP203NAH | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| VivoBook | Laptop | TP401NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| X Series | Laptop | X541NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| VivoBook | Laptop | X751NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| Chromebook | Laptop | C423NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| Chromebook | Laptop | C523NA | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| ASUSPRO | Laptop | P2540NV | N4200 | 14 nm | APOLLO LAKE | INTEL(R) PENTIUM® |
| ASUSPRO | Desktop | E410 | Celeron N3150 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| ASUSPRO | AIO | A4110 | J3160 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| E Series | Laptop | E402SA | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| X Series | Laptop | X540SA | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| X Series | Laptop | X553SA | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| ASUSPRO | Laptop | P552SA | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| N3050I-C | Motherboard | N3050I-C | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| N3050T R2.0 | Motherboard | N3050T R2.0 | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |

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| ASUS | | | | | | |
|---|---|---|---|---|---|---|
| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| N3050T | Motherboard | N3050T | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| N3150I-C | Motherboard | N3150I-C | N3050 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C300SA | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| E Series | Laptop | E402SA | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| | Laptop | E406SA | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C202SA | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| PRIME N3060T | Motherboard | PRIME N3060T | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| N3060I-CM-A | Motherboard | N3060I-CM-A | N3060 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| E Series | Laptop | E402SA | N3150 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| ASUSPRO | AIO | A4110 | N3150 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| Chromebook | Laptop | C300SA | N3160 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| VivoBook | Laptop | X541SA | N3160 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| N3160TH | Motherboard | N3160TH | N3160 | 14 nm | BRASWELL | INTEL(R) CELERON(R) |
| X Series | Laptop | X540SA | N3700 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| X Series | Laptop | X553SA | N3700 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| X Series | Laptop | X751SA | N3700 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| N3700T | Motherboard | N3700T | N3700 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| E Series | Laptop | E402SA | N3710 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| | Laptop | E406SA | N3710 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| X Series | Laptop | X540SA | N3710 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| VivoBook | Laptop | X541SA | N3710 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| X Series | Laptop | X751SA | N3710 | 14 nm | BRASWELL | INTEL(R) PENTIUM(R) |
| Chromebox | Chrome Device | CN62 | Celeron 3205U | 14 nm | BROADWELL | INTEL(R) CELERON(R) |
| Chromebox | Chrome Device | CN62 | Celeron 3215U | 14 nm | BROADWELL | INTEL(R) CELERON(R) |
| Transformer Book | Laptop | TP300LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X540LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X555LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X751LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| ASUSPRO | Laptop | P552LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X455LA | i3-5005U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| Transformer Book | Laptop | TP300LA | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| Transformer Book | Laptop | TP500LA | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X555LA | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X751LA | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X455LA | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| Chromebox | Chrome Device | CN62 | i3-5010U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| Transformer Book | Laptop | TP300LA | i3-5020U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X540LA | i3-5020U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| VivoBook | Laptop | X555LA | i3-5020U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I3 |
| Transformer Book | Laptop | TP300LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| Transformer Book | Laptop | TP300LD | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| Transformer Book | Laptop | TP500LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| Transformer Book | Laptop | TP550LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| ZenBook | Laptop | UX303LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| X Series | Laptop | X540LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| VivoBook | Laptop | X555LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| X Series | Laptop | X751LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| ASUSPRO | Laptop | P552LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| ET2323I | AIO | ET2323I | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| PT2001 | AIO | PT2001 | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| K/A Series | Laptop | K401LB | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| K Series | Laptop | K501LX | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| | Laptop | N542LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| ZenBook | Laptop | UX305LA | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| X Series | Laptop | X555LB | i5-5200U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I5 |
| | Laptop | N591LN | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP300LD | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP500LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP500LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP550LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX301LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX303LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX303LN | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X555LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X751LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Laptop | P552LA | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| K/A Series | Laptop | K401LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| K Series | Laptop | K501LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| K Series | Laptop | K501LX | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| | Laptop | N591LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP300LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | TP550LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX303LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X302LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X455LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X455LN | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| X Series | Laptop | X540LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X555LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X555LJ | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X751LB | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X751LX | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Chromebox | Chrome Device | CN62 | i7-5500U | 14 nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| Transformer Book | Laptop | T300CHI | M-5Y10 | 14 nm | BROADWELL | Intel® Core™ M-5Y10a |
| Transformer Book | Laptop | T300FA | M-5Y10 | 14 nm | BROADWELL | Intel® Core™ M-5Y10a |
| ZenBook | Laptop | UX305FA | M-5Y10 | 14 nm | BROADWELL | Intel® Core™ M-5Y10a |
| Transformer Book | Laptop | T300CHI | M-5Y71 | 14 nm | BROADWELL | Intel® Core™ M-5Y71 |
| ZenBook | Laptop | UX305FA | M-5Y71 | 14 nm | BROADWELL | Intel® Core™ M-5Y71 |
| VivoStick | Stick PC | TS10 | Z8300 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| Transformer Book | Laptop | T101HA | Z8350 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| Transformer Book | Laptop | T102HA | Z8350 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| Transformer Book | Laptop | T103HAF | Z8350 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| VivoStick | Stick PC | TS10 | Z8350 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| Transformer Book | Laptop | T100HA | Z8500 | 14 nm | CHERRY TRAIL | INTEL(R) ATOM(TM) |
| VivoMini | Mini PC | VC66-C | Celeron G4900 | 14 nm | COFFEE LAKE | INTEL(R) CELERON(R) |
| VivoMini | Mini PC | VC66-C | i3-8100 | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 |
| PB Series | Mini PC | PB60 | i3-8100T | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 |
| PB Series | Mini PC | PB60G | i3-8100T | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I3 |
| TUF | Laptop | FX504GD | i5-8300H | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Laptop | FX504GE | i5-8300H | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Laptop | FX504GM | i5-8300H | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Laptop | FX705GM | i5-8300H | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL503GE | i5-8300H | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Desktop | FX10CP | I5-8400 | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Desktop | GL12CP | I5-8400 | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Desktop | FX10CS | I5-8400 | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC66-C | i5-8400 | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| PB Series | Mini PC | PB60 | i5-8400T | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| PB Series | Mini PC | PB60G | i5-8400T | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC66-C | i5-8500 | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Desktop | G21CN | I7-8700 | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Desktop | GL12CM | I7-8700 | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Desktop | GL12CP | I7-8700 | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Desktop | FX10CS | I7-8700 | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| VivoMini | Mini PC | VC66-C | i7-8700 | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ROG | Desktop | GL12CM | I7-8700K | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| Zen AiO | AIO | Z272SD | I7-8700T | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| PB Series | Mini PC | PB60 | i7-8700T | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| PB Series | Mini PC | PB60G | i7-8700T | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ZenBook | Laptop | UX550GDX | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ZenBook | Laptop | UX550GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| VivoBook | Laptop | X580GD | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX504GD | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX504GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX504GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX505GD | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX705GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX705GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | G703GI | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | G703GS | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL503GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL504GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL504GS | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL703GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL703GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL703GS | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GL704GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GM501GS | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GX501GI | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GX531GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| ROG | Laptop | GX531GS | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| Zen AiO | AIO | ZN242GD | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| TUF | Laptop | FX505GE | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I8 |
| TUF | Laptop | FX705GD | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I9 |
| ROG | Laptop | G703GX | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I10 |
| ROG | Laptop | GL504GV | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I11 |
| ROG | Laptop | GL504GW | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I12 |
| ROG | Laptop | GL704GV | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I13 |
| ROG | Laptop | GL704GW | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I14 |
| ROG | Laptop | GM501GM-GM501GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I15 |
| ROG | Laptop | GM501GM-GU501GM | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I16 |
| ROG | Laptop | GX531GW | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I17 |
| ROG | Laptop | GX531GX | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I18 |

| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ROG | Laptop | GX701GX | i7-8750H | 14 nm | COFFEE LAKE | INTEL(R) CORE (TM) I19 |
| ROG | Desktop | GL12CX | I7-9700K | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| ProArt Series | Mini PC | PA90 | i7-9700K | 14 nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX550GEX | i9-8950HK | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| ROG | Laptop | G703GI | i9-8950HK | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| ROG | Laptop | G703GX | i9-8950HK | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| ROG | Desktop | GL12CX | I9-9900K | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| ProArt Series | Mini PC | PA90 | i9-9900K | 14 nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| VivoMini | Mini PC | VC66-C | Pentium G5400 | 14 nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD |
| PB Series | Mini PC | PB60 | Pentium G5400T | 14 nm | COFFEE LAKE | INTEL(R) PENTIUM(R) GOLD |
| PN Series | Mini PC | PN40 | Celeron J4005 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| PN Series | Mini PC | PN40 | Celeron J5005 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| PN Series | Mini PC | PN40 | Celeron N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| PN Series | Mini PC | PN40 | Celeron N4100 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| PN Series | Mini PC | PN40 | Celeron N5000 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| PRIME J4005I-C | Motherboard | PRIME J4005I-C | J4005 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | E203MA | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| | Laptop | E406MA | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | TP401MA | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| X Series | Laptop | X540MA | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| V161 | AIO | V161GA | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| PRIME N4000T | Motherboard | PRIME N4000T | N4000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| | Laptop | C204MA | N4000/N4100/N5000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON®, PENTIUM ® SILVER |
| | Laptop | C214MA | N4000/N4100/N5000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON®, PENTIUM ® SILVER |
| | Laptop | C424MA | N4000/N4100/N5000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON®, PENTIUM ® SILVER |
| | Laptop | P2540MB | N4000/N4100/N5000 | 14 nm | GEMINI LAKE | INTEL(R) CELERON®, PENTIUM ® SILVER |
| | Laptop | E406MA | N5000 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| VivoBook | Laptop | TP401MA | N5000 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| X Series | Laptop | X540MA | N5000 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| VivoBook | Laptop | X705MA | N5000 | 14 nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| | Motherboard | MINING I | 3865U | 14 nm | KABY LAKE | INTEL(R) CELERON(R) |
| Chromebox | Chrome Device | CN65 | Celeron 3865U | 14 nm | KABY LAKE | INTEL(R) CELERON(R) |
| ASUSPRO | Desktop | E420 | Celeron 3865U | 14 nm | KABY LAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | X540UA | i3-7020U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoMini | Mini PC | VC66 | i3-7100 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| ASUSPRO | Desktop | E520 | i3-7100T | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | TP510UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| ZenBook | Laptop | UX430UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| VivoBook | Laptop | X510UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X541UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X556UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| X Series | Laptop | X756UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| ASUSPRO | Laptop | P2540UA | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| Chromebox | Chrome Device | CN65 | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoMini | Mini PC | UN65U | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoMini | Mini PC | VM65N | i3-7100U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | TP412UA | i3-8130U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| ZenBook | Laptop | UX331UA | i3-8130U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X540UA | i3-8130U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X705UA | i3-8130U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| PN Series | Mini PC | PN60-B | i3-8130U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| Transformer Book | Laptop | TP301UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP410UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP501UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP501UQ | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX310UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX330UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX360UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX390UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX430UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX430UQ | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX560UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X441UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X510UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X540UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X541UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X556UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X556UQ | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X556UR | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X756UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ASUSPRO | Laptop | B9440UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ASUSPRO | Laptop | P2440UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ASUSPRO | Laptop | P2540UA | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V221IC | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V241IC | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Zen AiO | AIO | ZN241IC | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| VivoMini | Mini PC | UN65U | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VM65N | i5-7200U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL553VD | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL702VI | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL753VD | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X580VD | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Laptop | FX503VD | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| TUF | Laptop | FX503VM | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL503VS | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoPC | Desktop | M80CJ | i5-7300HQ | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| | Desktop | G11CD | I5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoPC | Desktop | K31CD | I5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoPC | Desktop | M32CD | I5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| | Desktop | D520SF | I5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Mini PC | GR8II | i5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ROG | Mini PC | GR8II6G | i5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC66 | i5-7400 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Zen AiO | AIO | ZN270IE | I5-7400T | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ASUSPRO | Desktop | E520 | i5-7400T | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC66 | i5-7500 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC68V | i5-7500 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX360CA | i5-7Y54 | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP410UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP412UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP510UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | TP510UF | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX330UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX331UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX331UN | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX430UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX430UN | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX460UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX461UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX461UN | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX561UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X411UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X510UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X510UN | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| VivoBook | Laptop | X530UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X540UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X570UD | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| ASUSPRO | Laptop | P2540UB | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V241IC | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V272UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X420UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X540UB | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | X705UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V222UA | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Chromebox | Chrome Device | CN65 | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| PN Series | Mini PC | PN60-B | i5-8250U | 14 nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| Transformer Book | Laptop | T304UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP410UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP501UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP501UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX330UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX360UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX370UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX390UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX410UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX430UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX430UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX490UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX510UX | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX560UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX560UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX560UX | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X541UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X541UJ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X541UV | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X542UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X556UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X556UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X705UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Laptop | B9440UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ASUSPRO | Laptop | P2440UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Laptop | P2440UQ | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Laptop | P2540UA | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoMini | Mini PC | UN65U | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoMini | Mini PC | VM65N | i7-7500U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| | Desktop | G11CD | I7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Desktop | G20CI | I7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Desktop | GD30CI | I7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoPC | Desktop | K31CD | I7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoPC | Desktop | M32CD | I7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Mini PC | GR8II | i7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Mini PC | GR8II6G | i7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoMini | Mini PC | VC66 | i7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoMini | Mini PC | VC68V | i7-7700 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| FX/ZX Series | Laptop | FX502VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VS | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VM | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VS | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL503VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL503VM | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL553VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL553VE | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL702VI | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL702VM | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL702VS | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL703VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL703VM | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL753VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL753VE | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GX501VIK | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GX501VSK | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX550VE | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X550VX | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X580VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| TUF | Laptop | FX503VD | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| TUF | Laptop | FX503VM | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL503VS | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| Zen AiO | AIO | ZN242IF | i7-7700HQ | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ROG | Desktop | GT51CH | I7-7700K | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| Zen AiO | AIO | Z240IE | I7-7700T | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Desktop | E520 | i7-7700T | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G701VI | i7-7820HK | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VS | i7-7820HK | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GX800VH | i7-7820HK | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G703VI | i7-7820HK | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP401CA | i7-7Y75 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP410UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP412UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP510UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | TP510UQ | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX331UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX370UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX391UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX410UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX430UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX430UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX461UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX461UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX490UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX561UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X542UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | UX561UD | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X411UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X411UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X411UQ | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UF | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X510UQ | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X530UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X540UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X542UA | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X570UD | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X705UD | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | X705UN | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| ASUSPRO | Laptop | P2540UB | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ASUSPRO | Laptop | P5440UF | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| PN Series | Mini PC | PN60-B | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| Chromebox | Chrome Device | CN65 | i7-8550U | 14 nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| | Laptop | X406UA | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X407UA/UB/UF | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X409UA/UB/UJ | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X411UA/UF/UN | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X412UA/UB/UF | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X420UA | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | TP412UA | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X507UA/UB/UF | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X509UA/UB/UJ | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X510UA/UF | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X512UA/UB/UF | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X540UA/UB | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| | Laptop | X705UA/UB | i7-8550U/i5-8250U/i3-8130U/4417U | 14 nm | KABY LAKE | EL (R) CORE (TM) I3, I5, I7, INTEL(R) PENTIUN |
| VivoBook | Laptop | TP401CA | m3-7Y30 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) M |
| ZenBook | Laptop | UX330CA | m3-7Y30 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) M |
| ZenBook | Laptop | UX360CA | m3-7Y30 | 14 nm | KABY LAKE | INTEL (R) CORE (TM) M |
| | Laptop | MJ401TA | M3-8100Y | 14 nm | KABY LAKE | INTEL (R) CORE (TM) M |
| | Laptop | C434TA | M3-8100Y/4415Y/i5-8200Y/i7-8500Y | 14 nm | KABY LAKE | TEL(R) PENTIUM®, INTEL ® CORE ™ M, I5, |
| Chromebook | Laptop | C302CA | 4405Y | 14 nm | SKYLAKE | INTEL(R) PENTIUM(R) |
| | Motherboard | H110I-CM-AA | G3900TE | 14 nm | SKYLAKE | INTEL(R) CELERON(R) |
| VivoBook | Laptop | X540UA | i3-6006U | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | X541UA | i3-6006U | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| ASUSPRO | Laptop | P553UA | i3-6006U | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoPC | Desktop | K31CD | I3-6098P | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoPC | Desktop | M32CD | I3-6100 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| | Motherboard | H110I-CM-AA | i3-6100 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoMini | Mini PC | VC66 | i3-6100 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoMini | Mini PC | VC65R | i3-6100T | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| VivoBook | Laptop | TP501UA | i3-6100U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X541UA | i3-6100U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UA | i3-6100U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X756UA | i3-6100U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoMini | Mini PC | VM65N | i3-6100U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X541UA | i5-6198DU | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X555UA | i5-6198DU | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| X Series | Laptop | X556UQ | i5-6198DU | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X556UR | i5-6198DU | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| K Series | Laptop | K501UX | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Laptop | N543UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Transformer Book | Laptop | T303UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Transformer Book | Laptop | TP300UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Transformer Book | Laptop | TP301UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | TP501UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX303UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX305UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX310UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX360UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX560UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X541UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X555UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X555UB | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UB | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UQ | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X756UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Laptop | X756UX | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ASUSPRO | Laptop | P453UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ASUSPRO | Laptop | P553UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Zen AiO | AIO | ZN240IC | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X456UA | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X555UF | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UF | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoMini | Mini PC | VM65N | i5-6200U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ROG | Laptop | GL502VM | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL552VW | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| ROG | Laptop | GL553VW | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | N551VW | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| VivoBook | Laptop | N552VX | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| X Series | Laptop | X550VQ | i5-6300HQ | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| | Desktop | G11CD | I5-6400 | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| ROG | Desktop | G20CB | I5-6400 | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| VivoPC | Desktop | K31CD | I5-6400 | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| VivoPC | Desktop | M32CD | I5-6400 | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ROG | Mini PC | GR8II | i5-6400 | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V230IC | I5-6400T | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| Zen AiO | AIO | Z240IC | I5-6400T | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| VivoMini | Mini PC | VC65R | i5-6400T | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| | Motherboard | H110I-CM-AA | i5-6500TE | 14 nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| K Series | Laptop | K501UW | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| K Series | Laptop | K501UX | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Transformer Book | Laptop | T303UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Transformer Book | Laptop | TP301UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | TP501UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | TP501UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | TP501UQ | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX303UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX303UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX305UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX310UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX390UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX510UW | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX510UX | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX560UQ | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX560UX | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X541UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X541UV | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X555UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X555UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UQ | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X556UR | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Laptop | X756UX | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ASUSPRO | Laptop | P453UA | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| K Series | Laptop | K501UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Laptop | N592UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Laptop | N593UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X456UJ | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoBook | Laptop | X456UV | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| X Series | Laptop | X756UB | i7-6500U | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| | Desktop | G11CB | I7-6700 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| | Desktop | G11CD | I7-6700 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| ROG | Desktop | G20CB | I7-6700 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| VivoPC | Desktop | M32CD | I7-6700 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Mini PC | GR8II | i7-6700 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VL | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VM | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VS | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VT | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VY | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VM | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VS | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VT | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL502VY | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL552VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL552VX | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL553VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL702VM | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GL752VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ZenBook | Laptop | N501VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | N551VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | N552VW | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| VivoBook | Laptop | N552VX | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| X Series | Laptop | X550VX | i7-6700HQ | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Desktop | GT51CA | I7-6700K | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| Zen AiO | AIO | Z240IC | I7-6700T | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| VivoMini | Mini PC | VC65R | i7-6700T | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G701VI | i7-6820HK | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G701VO | i7-6820HK | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VS | i7-6820HK | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | G752VY | i7-6820HK | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| ROG | Laptop | GX700VO | i7-6820HK | 14 nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| Chromebook | Laptop | C302CA | m3-6Y30 | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX305CA | m3-6Y30 | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX360CA | m3-6Y30 | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| Chromebook | Laptop | C302CA | m5-6Y54 | 14 nm | SKYLAKE | INTEL (R) CORE (TM) M |
| Chromebook | Laptop | C302CA | m7-6Y75 | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| ZenBook | Laptop | UX305CA | m7-6Y75 | 14 nm | SKYLAKE | INTEL (R) PROCESSOR |
| VivoMini | Mini PC | VC66 | Pentium G4400 | 14 nm | SKYLAKE | INTEL(R) PENTIUM(R) |
| ASUSPRO | Desktop | E520 | Pentium G4400T | 14 nm | SKYLAKE | INTEL(R) PENTIUM(R) |

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| ASUS | | | | | | |
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| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| VivoMini | Mini PC | VC65R | Pentium G4400T | 14 nm | SKYLAKE | INTEL(R) PENTIUM(R) |
| PE200U | Motherboard | PE200U | i3-8145U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I3 |
| ZenBook | Laptop | UX331FN | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX333FA | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX433FA | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX431FA | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX533FN | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | X530FA | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| Vivo AiO | AIO | V241FA | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| PE200U | Motherboard | PE200U | i5-8265U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| ZenBook | Laptop | UX331FAL | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX362FA | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX433FA | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX433FN | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX461FA | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX461FN | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX533FD | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX562FD | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX391FA | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| ZenBook | Laptop | UX431FA | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| VivoBook | Laptop | X530FN | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| | Laptop | X705FD | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| | Laptop | X705FN | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| PE200U | Motherboard | PE200U | i7-8565U | 14 nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| | Laptop | X330FA/FN | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X330FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X403FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X409FA/FB/FJ/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X412FA/FJ | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X412FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X420FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X430FA/FN | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X432FA/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | TP412FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX431FA/FN | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X509FA/FB/FJ/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X512FA/FB | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X530FN/FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |

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| ASUS | | | | | | |
|---|---|---|---|---|---|---|
| ASUS PRODUCT NAME | PRODUCT TYPE | ASUS MODEL NAME | CPU | PROCESS NODE | ARCHITECTURE | BRAND |
| | Laptop | X531FA/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X532FA/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X705FD/FN | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | X712FA/FB | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX391FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX392FA/FN | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX362FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX562FA | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX562FDX | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX334FA/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX434FA/FL | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | UX534FA/FT | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | AIO | V241FA/FF | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | B9440FAV | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | L524FA/FB | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | P3540FA/FB | i7-8565U/i5-8265U/i3-8145U/5405U | 14 nm | WHISKEY LAKE | Multiple |
| | Laptop | GL12CX | i9-9900K/i7-9700K/i5-9400/i5-9400F | 14 nm | COFFEE LAKE | Multiple |
| | Laptop | GL10CS | i9-9900K/i7-9700K/i5-9400/i5-9400F | 14 nm | COFFEE LAKE | Multiple |
| | Laptop | G21CN | i9-9900K/i7-9700K/i5-9400/i5-9400F | 14 nm | COFFEE LAKE | Multiple |
| | Laptop | G21CX | i9-9900K/i7-9700K/i5-9400/i5-9400F | 14 nm | COFFEE LAKE | Multiple |

| LENOVO | | | | | | | |
|---|---|---|---|---|---|---|---|
| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 80V4000GUS | Notebook YG 710-14IKB I5 8G 256 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80V40023US | Notebook YG 710-14IKB I7 8G 256 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80V4008FUS | Notebook YG 710-14IKB I7 8G 256 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WKCTO1WW | ASSEMBLY Lenovo Y520-15IKBN | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK0165US | Notebook LN Y520-15IKBN I7 8G 2T 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00F9US | Notebook LN Y520-15IKBN I7 16 2T 256 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK001KUS | Notebook LN Y520-15IKBN I7 16 2T 256 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00FHUS | Notebook LN Y520-15IKBN I5 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00HTUS | Notebook LN Y520-15IKBN I5 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00CCUS | Notebook LN Y520-15IKBN I7 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK01HEUS | Notebook LN Y520-15IKBN I7 16G 1T128G10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK001LUS | Notebook LN Y520-15IKBN I5 8G 1T 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WK01F2US | Notebook LN Y520-15IKBN I5 8G 256G 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WK001JUS | Notebook LN Y520-15IKBN I7 8G 1T 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WK001MUS | Notebook LN Y520-15IKBN I7 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00G5US | Notebook LN Y520-15IKBN I7 16 1T 256 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00T2US | Notebook LN Y520-15IKBN I7 8G 1T 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00T3US | Notebook LN Y520-15IKBN I7 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00HSUS | Notebook LN Y520-15IKBN I7 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WKX005US | 80WK00F9US S&D MTM | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WK00MRCF | Notebook LN Y520-15IKBN I5 8G 1T 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WK00MTCF | Notebook LN Y520-15IKBN I7 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WKX003US | 80WK00F9US REFURB MTM | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WK00FCUS | Notebook LN Y520-15IKBN I7 8G 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WY0000US | Notebook LN Y520-15IKBA I5 8G 1T 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80WY000NUS | Notebook LN Y520-15IKBA I7 8G 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WYCTO1WW | ASSEMBLY Lenovo Y520-15IKBA | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WY001TCF | Notebook LN Y520-15IKBA I7 8G 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80WY001SCF | Notebook LN Y520-15IKBA I5 8G 1T 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X4000WUS | Notebook IP 320S-14IKB I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X400EJUS | Notebook IP 320S-14IKB I3 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80X400EHUS | Notebook IP 320S-14IKB I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X40094US | Notebook IP 320S-14IKB I3 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80X40072US | Notebook IP 320S-14IKB I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X40093US | Notebook IP 320S-14IKB I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X5005DUS | Notebook IP 320S-15IKB I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X5005EUS | Notebook IP 320S-15IKB I7 8G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X50002US | Notebook IP 320S-15IKB I7 8G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X50003US | Notebook IP 320S-15IKB I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X50001US | Notebook IP 320S-15IKB I7 8G 512G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X50041US | Notebook IP 320S-15IKB I7 8G 256G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7008JUS | Notebook YG 720-15IKB I7 8G 8G 1TB 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7001WUS | Notebook YG 720-15IKB I7 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7003VUS | Notebook YG 720-15IKB I7 8G 8G 1TB 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7008HUS | Notebook YG 720-15IKB I5 8G 256G 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80X7006KUS | Notebook YG 720-15IKB I7 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7006NUS | Notebook YG 720-15IKB I7 8G 8G 512G 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7001TUS | Notebook YG 720-15IKB I7 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7001SUS | Notebook YG 720-15IKB I7 8G 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X700CAUS | Notebook YG 720-15IKB I7 8G 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7001UUS | Notebook YG 720-15IKB I7 8G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X700C0US | Notebook YG 720-15IKB I7 8G 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7008YCF | Notebook YG 720-15IKB I7 8G 8G 1TB 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7001VUS | Notebook YG 720-15IKB I7 8G 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80X7005PCF | Notebook YG 720-15IKB I7 8G 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| LENOVO | | | | | | | |
|---|---|---|---|---|---|---|---|
| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 80X7009XCF | Notebook YG 720-15IKB I7 8G 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA000YUS | Notebook IP FLEX 5-1470 I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA0015US | Notebook IP FLEX 5-1470 4415U 4G 1T 10H | Notebook | 4415U | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| 80XA0002US | Notebook IP FLEX 5-1470 I3 4G 500 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XA0011US | Notebook IP FLEX 5-1470 I7 16G1T128G10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA0009US | Notebook IP FLEX 5-1470 I7 16G 1T 128G 1 | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA000EUS | Notebook IP FLEX 5-1470 I5 16G 1T 256G 1 | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000UUS | Notebook IP FLEX 5-1470 I7 8G 256G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA000AUS | Notebook IP FLEX 5-1470 I7 8G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA0007US | Notebook IP FLEX 5-1470 I5 8G 128G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000TUS | Notebook IP FLEX 5-1470 I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA0000US | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000VUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA0006US | Notebook IP FLEX 5-1470 I7 8G 256G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA000DUS | Notebook IP FLEX 5-1470 I7 16G 1T 512G 1 | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA0001US | Notebook IP FLEX 5-1470 I5 8G 128G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000PUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000KUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000CUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000QCF | Notebook IP FLEX 5-1470 I7 16G1T128G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA000LCF | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA000SCF | Notebook IP FLEX 5-1470 I7 8G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XA0010CF | Notebook IP FLEX 5-1470 I5 8G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XA0014US | Notebook IP FLEX 5-1470 4415U 4G 1T 10H | Notebook | 4415U | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| 80XL03RKUS | Notebook IP 320-15IKB I7 16G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL035SUS | Notebook IP 320-15IKB I3 4G 500 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL035WUS | Notebook IP 320-15IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL035UUS | Notebook IP 320-15IKB I5 8G 4G 256G 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XL003HUS | Notebook IP 320-15IKB I3 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL0006US | Notebook IP 320-15IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XL000FUS | Notebook IP 320-15IKB I7 16G 2T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL03HYUS | Notebook IP 320-15IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL03CCUS | Notebook IP 320-15IKB I3 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL03CBUS | Notebook IP 320-15IKB I5 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XL03JBUS | Notebook IP 320-15IKB I7 16G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL03J1US | Notebook IP 320-15IKB I7 16G 2T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL03BQUS | Notebook IP 320-15IKB I7 8G 4G 256G 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL0005US | Notebook IP 320-15IKB I3 2G 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL02MRCF | Notebook IP 320-15IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XL039KCF | Notebook IP 320-15IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XL039JCF | Notebook IP 320-15IKB I3 4G 500 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL03J0US | Notebook IP 320-15IKB I3 4G 500 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XL03MEUS | Notebook IP 320-15IKB I7 16G 2T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XM00E6US | Notebook IP 320-17IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XM00JJUS | Notebook IP 320-17IKB I3 4G 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XM00CAUS | Notebook IP 320-17IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XM00JLUS | Notebook IP 320-17IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XM0000US | Notebook IP 320-17IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XM0002US | Notebook IP 320-17IKB I7 16G 2T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XM0006US | Notebook IP 320-17IKB I7 16G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XM00F0US | Notebook IP 320-17IKB I3 4G 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XM00GRUS | Notebook IP 320-17IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XM0001US | Notebook IP 320-17IKB I3 2G 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XM0008US | Notebook IP 320-17IKB I5 4G 4G 1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XM00CECF | Notebook IP 320-17IKB I7 4G 4G 1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| LENOVO | | | | | | | |
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| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 80XM0098CF | Notebook IP 320-17IKB I3 2G 4G 1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XN000AUS | Notebook IP 320-15IKB TOUCH I32G4G1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XN0002US | Notebook IP 320-15IKB TOUCH I7 16G2T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XN0009US | Notebook IP 320-15IKB TOUCH I58G4G1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XN000MUS | Notebook IP 320-15IKB TOUCH I7 4G 4G 1T | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XN0008US | Notebook IP 320-15IKB TOUCH I78G4G1T 10H | Notebook | i7-7500U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80XN0003US | Notebook IP 320-15IKB TOUCH I54G4G1T 10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XN0004US | Notebook IP 320-15IKB TOUCH I32G4G1T 10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XN000CCF | Notebook IP 320-15IKB TOUCH I5 4G4G1T10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XN000BCF | Notebook IP 320-15IKB TOUCH I3 2G4G1T10H | Notebook | i3-7100U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 80XN000DCF | Notebook IP 320-15IKB TOUCH I5 8G4G1T10H | Notebook | i5-7200U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80XR017EUS | Notebook IP 320-15IAP N3450 4G 500 10H | Notebook | N3450 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON® |
| 80XR00A7US | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR017DUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR00AGUS | Notebook IP 320-15IAP N3350 4G 1T 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 80XR017FUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR00AKUS | Notebook IP 320-15IAP N3350 4G 1T 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 80XR00AJUS | Notebook IP 320-15IAP N3350 4G 1T 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 80XR00AMUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR00AHUS | Notebook IP 320-15IAP N3350 4G 1T 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 80XR00WHUS | Notebook IP 320-15IAP N3350 4G 1T 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 80XR00WGUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR00ALUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80XR00ANUS | Notebook IP 320-15IAP N4200 4G 1T 10H | Notebook | N4200 | 1273 | 14nm | APOLLO LAKE | INTEL(R) PENTIUM(R) |
| 80Y7CTO1WW | ASSEMBLY Lenovo YOGA 920-13IKB | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70063US | Notebook YG 920-13IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 80Y70062US | Notebook YG 920-13IKB I7 16G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70064US | Notebook YG 920-13IKB I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70066US | Notebook YG 920-13IKB I7 16G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70010US | Notebook YG 920-13IKB I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y7000WUS | Notebook YG 920-13IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70074US | Notebook YG 920-13IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y7002SUS | Notebook YG 920-13IKB I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y70012US | Notebook YG 920-13IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y700FNUS | Notebook YG 920-13IKB I7 16G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y7006JCF | Notebook YG 920-13IKB I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y8CTO1WW | ASSEMBLY Lenovo YOGA 920-13IKB Glass | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y8000UUS | Notebook YG 920 Glass I7 16G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80Y8S00000 | Yoga 920 SW Glass-BBY | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YYCTO1WW | ASSEMBLY Lenovo Y520-15IKBM | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY0060US | Notebook LN Y520-15IKBM I7 16 2T 256 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY003PUS | Notebook LN Y520-15IKBM I7 8G 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY009PUS | Notebook LN Y520-15IKBM I7 16G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY009NUS | Notebook LN Y520-15IKBM I7 8G 1T 128G10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY0074US | Notebook LN Y520-15IKBM I7 16G 256G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY0009US | Notebook LN Y520-15IKBM I7 16 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY0090US | Notebook LN Y520-15IKBM I7 8G 1T 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YY003TCF | Notebook LN Y520-15IKBM I7 8G 1T 128 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YYX005US | 80YY0074US REFURB MTM | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 80YYX006US | 80YY0074US S&D MTM | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81A400BFUS | Notebook IP 120S-11IAP N3350 2G 64 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 81A400BGUS | Notebook IP 120S-11IAP N3350 2G 64 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 81A40025US | Notebook IP 120S-11IAP N3350 2G 32 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 81A5006SUS | Notebook IP 120S-14IAP N3350 4G 64 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |
| 81A5001UUS | Notebook IP 120S-14IAP N3350 2G 32 10H | Notebook | N3350 | 1273 | 14nm | APOLLO LAKE | INTEL(R) CELERON(R) |

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| LENOVO | | | | | | | |
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| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 81A70001US | Notebook IP FLEX 6-11IGM N5000 4G128 10H | Notebook | N5000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| 81A70006US | Notebook IP FLEX 6-11IGM N5000 4G 64 10S | Notebook | N5000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| 81A70002US | Notebook IP FLEX 6-11IGM N4000 2G 64 10H | Notebook | N4000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| 81A70005US | NB IP FLEX 6-11IGM N4000 4G 64 10S | Notebook | N4000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| 81A7000AUS | Notebook IP FLEX 6-11IGM N5000 4G 64 10S | Notebook | N5000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| 81A7000BUS | NB IP FLEX 6-11IGM N5000 4G 64 10S | Notebook | N5000 | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| 81AC0006US | Notebook IP 720S-15IKB I7 8G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81AC0008US | Notebook IP 720S-15IKB I5 8G 256G 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81AC003EUS | Notebook IP 720S-15IKB I5 8G 256G 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81AC002KUS | Notebook IP 720S-15IKB I7 8G 512G 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81AC0003US | Notebook IP 720S-15IKB I5 8G 256G 10H | Notebook | i5-7300HQ | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BD001NUS | Notebook IP 720S-14IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BD001QUS | Notebook IP 720S-14IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BD001PUS | Notebook IP 720S-14IKB I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BD000TUS | Notebook IP 720S-14IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BD000SUS | Notebook IP 720S-14IKB I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BF001JUS | Notebook IP 520-15IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BF001KUS | Notebook IP 520-15IKB I7 16G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BF00A1US | Notebook IP 520-15IKB I5 8G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BG008AUS | Notebook IP 320-15IKB I5 4G 4G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BG001AUS | Notebook IP 320-15IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BH0001US | Notebook IP 320-15IKB Touch I58G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BH0000US | Notebook IP 320-15IKB Touch I7 8G4G1T10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BH0003US | Notebook IP 320-15IKB TouchI54G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BHX001US | 81BH0000US REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BHX003US | 81BH0000US S&D MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BHX002US | 81BH0001US REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BJ0006US | Notebook IP 320-17IKB I7 16G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BL009GUS | Notebook IP 520S-14IKB I5 8G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BL009EUS | Notebook IP 520S-14IKB I7 8G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BL009FUS | Notebook IP 520S-14IKB I7 8G 1T 128G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BL00CUUS | Notebook IP 520S-14IKB I5 8G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BN000AUS | Notebook IP 320S-14IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BQ000EUS | Notebook IP 320S-15IKB I5 8G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BQ000DUS | Notebook IP 320S-15IKB I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BV002FUS | Notebook IP 720S-13IKB I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BV002GUS | Notebook IP 720S-13IKB I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BV002HUS | Notebook IP 720S-13IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BV002EUS | Notebook IP 720S-13IKB I7 8G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BV008KUS | Notebook IP 720S-13IKB I7 8G 1TB 10P | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81BV008FUS | Notebook IP 720S-13IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81BV002CUS | Notebook IP 720S-13IKB I7 8G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C3005RUS | Notebook YG 720-13IKB I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C3005QUS | Notebook YG 720-13IKB I7 16G 1TB 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C3005PUS | Notebook YG 720-13IKB I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C3005SUS | Notebook YG 720-13IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C3000LUS | Notebook YG 720-13IKB I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C300C6US | Notebook YG 720-13IKB I7 16G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C9000EUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C90004US | Notebook IP FLEX 5-1470 I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C90009US | Notebook IP FLEX 5-1470 I5 8G 128G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C9000CUS | Notebook IP FLEX 5-1470 I5 8G 128G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C9000FUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C9000JUS | Notebook IP FLEX 5-1470 I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C9000HUS | Notebook IP FLEX 5-1470 I7 16G1T512G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| LENOVO | | | | | | | |
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| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 81C9000GUS | Notebook IP FLEX 5-1470 I7 16G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C9000DUS | Notebook IP FLEX 5-1470 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C9000KUS | Notebook IP FLEX 5-1470 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81C9X002US | 81C9000EUS S&D MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81C9X001US | 81C9000EUS REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000GUS | Notebook IP FLEX 5-1570 I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000JUS | Notebook IP FLEX 5-1570 I5 8G 500 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000HUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA001QUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000KUS | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000CUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000PUS | Notebook IP FLEX 5-1570 I58G1T256G10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA0008US | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000UUS | Notebook IP FLEX 5-1570 I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000BUS | Notebook IP FLEX 5-1570 I7 16G1T256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA001RUS | Notebook IP FLEX 5-1570 I3 8G 128G 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81CA001SUS | Notebook IP FLEX 5-1570 I7 8G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0013US | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000RUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0017US | Notebook IP FLEX 5-1570 I7 16G1T512G10P | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000XUS | Notebook IP FLEX 5-1570 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA001KUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA001TUS | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000DUS | Notebook IP FLEX 5-1570 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0009US | Notebook IP FLEX 5-1570 I5 8G 1T128G10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000TUS | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA000AUS | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000VUS | Notebook IP FLEX 5-1570 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0007US | Notebook IP FLEX 5-1570 I5 8G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA0001US | Notebook IP FLEX 5-1570 I7 16G 1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000YUS | Notebook IP FLEX 5-1570 I7 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA0010US | Notebook IP FLEX 5-1570 I5 8G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA0000US | Notebook IP FLEX 5-1570 I5 8G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CAX018US | 81CA000RUS REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0018US | Notebook IP FLEX 5-1570 I7 16G 512G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX022US | 81CA000RUS S&D MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA0016US | Notebook IP FLEX 5-1570 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX006US | 81CA000JUS REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CAX037US | 81CA001KUS REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX039US | 81CA001KUS S&D MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX032US | 81CA000XUS REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX028US | 81CA0017US REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX034US | 81CA000XUS S&D MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CAX038US | 81CA001TUS REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CAX040US | 81CA001TUS S&D MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81CA0011US | Notebook IP FLEX 5-1570 I7 16G1T256G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CA000FUS | Notebook IP FLEX 5-1570 I7 8G 256G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0005US | Notebook IP 720S T-15IKB I7 16G 1TB 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0006US | Notebook IP 720S T-15IKB I7 16G 512G 10P | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0002US | Notebook IP 720S T-15IKB I7 16G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0007US | Notebook IP 720S T-15IKB I7 16G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0003US | Notebook IP 720S T-15IKB I7 16G 1TB 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81CR0004US | Notebook IP 720S T-15IKB I7 16G 512G 10H | Notebook | i7-7700HQ | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DE01M2US | Notebook IP 330-15IKB I5 4G 4G 1T 16G10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DE01KRUS | Notebook IP 330-15IKB I3 4G 1T 16G 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |

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|---|---|---|---|---|---|---|---|
| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 81DE0085US | Notebook IP 330-15IKB I3 4G 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE017BUS | Notebook IP 330-15IKB I3 4G 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE0044US | Notebook IP 330-15IKB I3 2G 4G 1T 10H | Notebook | i3-7020U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE0045US | Notebook IP 330-15IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DE01P3US | Notebook IP 330-15IKB I3 2G 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE0026US | Notebook IP 330-15IKB I3 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE0025US | Notebook IP 330-15IKB I7 16G 1T 16G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DE00L8US | Notebook IP 330-15IKB I3 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE00LAUS | Notebook IP 330-15IKB I3 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE00T1US | Notebook IP 330-15IKB I3 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE00LBUS | Notebook IP 330-15IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DE00T0US | Notebook IP 330-15IKB I3 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE00L0US | Notebook IP 330-15IKB I5 4G 4G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DE00LCUS | Notebook IP 330-15IKB I3 4G 4G 128G 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DE0043US | Notebook IP 330-15IKB I7 8G 4G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DE01THUS | Notebook IP 330-15IKB I5 4G 4G 256G 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DE0029US | Notebook IP 330-15IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJ0007US | Notebook IP 330-15IKB Touch I3 2G4G1T10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DJ0006US | Notebook IP 330-15IKB Touch I5 8G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJ0002US | Notebook IP 330-15IKB Touch I5 8G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJ0004US | Notebook IP 330-15IKB Touch I7 8G4G1T10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJ0000US | Notebook IP 330-15IKB Touch I7 16G 1T10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJ0003US | Notebook IP 330-15IKB Touch I5 4G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJ000AUS | Notebook IP 330-15IKB Touch I3 4G4G2T10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DJ0009CF | Notebook IP 330-15IKB Touch I5 8G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJ0008US | Notebook IP 330-15IKB TouchI716G1T16G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJX003US | 81DJ0002US S&D MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJX009US | 81DJ0004US REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJX001US | 81DJ0002US REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DJX010US | 81DJ0004US S&D MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJ000CUS | Notebook IP 330-15IKB TouchI716G1T16G10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DJ000DUS | Notebook IP 330-15IKB Touch I5 4G4G1T10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DK003UUS | Notebook IP 330-17IKB I3 2G 4G 2T 10H | Notebook | I3-7020U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DM0002US | Notebook IP 330-17IKB I3 2G 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DM001UUS | Notebook IP 330-17IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DM000LUS | Notebook IP 330-17IKB I5 8G 4G 2T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DM000MUS | Notebook IP 330-17IKB I3 2G 4G 2T 10H | Notebook | I3-7020U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DM000PUS | Notebook IP 330-17IKB I7 8G 4G 2T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DM008MUS | Notebook IP 330-17IKB I3 2G 4G 2T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DM0004US | Notebook IP 330-17IKB I5 8G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81DM0005US | Notebook IP 330-17IKB I7 16G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DM0007US | Notebook IP 330-17IKB I7 8G 4G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DM004VCF | Notebook IP 330-17IKB I3 2G 4G 1T 10H | Notebook | i3-8130U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81DM0001US | Notebook IP 330-17IKB I7 16G 1T 16G 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DMX009US | 81DM0005US REFURB MTM | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81DMX007US | 81DM0004US REFURB MTM | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81FK009UUS | Notebook IP 330-15ICH I7 8G 4G 1T 16G10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FK0002US | Notebook IP 330-15ICH I5 4G 4G 1T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FK0008US | Notebook IP 330-15ICH I7 16G 1T 128G 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FK0007US | Notebook IP 330-15ICH I7 8G 4G 1T 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FK0000US | Notebook IP 330-15ICH I5 4G 4G 1T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FK0001US | Notebook IP 330-15ICH I7 16G 1T 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FK009VUS | Notebook IP 330-15ICH I5 4G 4G 1T 16G10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FK009TUS | Notebook IP 330-15ICH I7 16G 1T 16G 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FK00ECUS | Notebook IP 330-15ICH I5 4G 4G 1T128G10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |

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|---|---|---|---|---|---|---|---|
| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 81FK00DBUS | Notebook IP 330-15ICH I5 4G 4G 2T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FL006FUS | Notebook IP 330-17ICH I7 8G 4G 1T 16G10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0003US | Notebook IP 330-17ICH I5 4G 4G 1T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FL0004US | Notebook IP 330-17ICH I7 16G 1T 128G 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0005US | Notebook IP 330-17ICH I7 8G 4G 1T 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0066US | Notebook IP 330-17ICH I7 8G 4G 1T 16G10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0095US | Notebook IP 330-17ICH I7 8G 4G 1T 16G10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0000US | Notebook IP 330-17ICH I7 16G 1T 10H | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81FL0002US | Notebook IP 330-17ICH I5 4G 4G 1T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FL0001US | Notebook IP 330-17ICH I5 4G 4G 1T 10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81FLX007US | 81FL0066US REFURB MTM | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81G20086US | Notebook IP 330-14IKB I3 4G 4G 1T 10H | Notebook | i3-7020U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| 81G20085US | Notebook IP 330-14IKB I5 4G 4G 1T 10H | Notebook | i5-8250U | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| 81G20084US | Notebook IP 330-14IKB I7 8G 4G 1T 10H | Notebook | i7-8550U | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| 81HD0003US | Notebook LN LegionY730-15ICHI716G1T12810 | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HD000NUS | Notebook LN LegionY730-15ICHI58G1T16G10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81HD000PUS | Notebook LN LegionY730-15ICHI716G2T25610 | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HDCTO1WW | ASSEMBLY Lenovo Legion Y730-15ICH | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HD001SUS | Notebook LN LegionY730-15ICHI58G1T16G10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81HD001TUS | Notebook LN LegionY730-15ICHI516G1T25610 | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81HG0004US | Notebook LN LegionY730-17ICHI716G1T12810 | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HGCTO1WW | ASSEMBLY Lenovo Legion Y730-17ICH | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HG001PUS | Notebook LN LegionY730-17ICHI716G1T25610 | Notebook | i7-8750H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| 81HG000TUS | Notebook LN LegionY730-17ICHI58G1T16G10H | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81HG001HUS | Notebook LN LegionY730-17ICHI516G1T12810 | Notebook | i5-8300H | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| 81SQ000BUS | NB IP FLEX-14IWL I5 4G 4G 512G 10H | Notebook | i5-8265U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| 81SQ0001US | NB IP FLEX-14IWL I5 4G 4G 512G 10H | Notebook | i5-8265U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| 81SQ0003US | Notebook IP FLEX-14IWL I7 4G 4G 512G 10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 81SQ0008US | Notebook IP FLEX-14IWL I7 16G 512G 10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 81SQ0000US | NB IP FLEX-14IWL I5 4G 4G 256G 10H | Notebook | i5-8265U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I5 |
| 81SQ000MUS | Notebook IP FLEX-14IWL I7 4G 4G 256G 10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 81SR000BUS | Notebook IP FLEX-15IWL I7 4G 4G 512G 10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 81SR000FUS | Notebook IP FLEX-15IWL I7 16G1TB512G10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 81SR000DUS | Notebook IP FLEX-15IWL I7 16G 512G 10H | Notebook | i7-8565U | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| 4XG0G89074 | CPU_BO LTS RD350 XEON E5-2630 V4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89078 | CPU_BO LTS TD350 XEON E5-2620 V4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89079 | CPU_BO LTS RD350 XEON E5-2620 V4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89080 | CPU_BO LTS RD450 XEON E5-2620 V4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89090 | CPU_BO LTS RD450 XEON E5-2603 V4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89093 | CPU_BO LTS TD350 Xeon E5-2623 v4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 4XG0G89094 | CPU_BO LTS RD350 Xeon E5-2623 v4 | SERVER Option | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 70TT0025UX | SERVER TS TS460 E31240V6 RAID520I | Enterprise Product Group | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 70TE0011UX | Server TS RS160 E31240V6 121i | SRV | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 70TG001SUX | Server TS RS160 E31230V6 121i | SRV | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 70TT0020UX | Server TS TS460 E31230V6 121i | Enterprise Product Group | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 70UB000AUX | Server TS TS150 E31225V6 121i | Enterprise Product Group | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 7X02CTO1WW | ThinkSystem SR630 - 3yr Warranty | SRV | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) PLATINUM |
| 9532EOU | Flex System x240 M5 Compute Node | SRV | | 1272 | 14nm | BROADWELL | INTEL(R)XEON(R) |
| 3633KTU | LENOVO SYSTEM X3250 M6 E3-1270 M1215 | SRV | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 3633KSU | LENOVO SYSTEM X3250 M6 E3-1240 M1215 | SRV | | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| 7Y46CTO1WW | ThinkSystem ST250 - 1yr Warranty | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7X83XV1T00 | Lenovo ThinkAgile HX3320 6148x2.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06TD3800 | ThinkSystem SR650 6140x2 32GBx24 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7Y94S0MR00 | ThinkAgile VX 2U Node 6130x2 64GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X02S4C400 | ThinkSystem SR630 6130x2 32GBx24 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |

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| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 7X83S0R800 | Lenovo ThinkAgile HX3320 5120x2 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X02S6F200 | ThinkSystem SR630 5120x2 32GBx8 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7XG7A05536 | SR630 Xeon 5118 12C/105W/2.3GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06A05XNA | ThinkSystem SR650 5118 32G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X10100QNA | ThinkSystem ST550 4110 32GB | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7Y37S06K00 | ThinkSystem SR670 5118x2 32GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X84S0WW00 | Lenovo ThinkAgile HX7520 6150x2 64GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7Y37S29S00 | ThinkSystem SR670 6142x2.0 32GBx12.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06XT7G00 | ThinkSystem SR650 6136x2 16GBx24 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X83S1G000 | Lenovo ThinkAgile HX3320 6136x2 32GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7XG7A05590 | SR650 Xeon 6126 12C/125W/2.6GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X84S0CV00 | Lenovo ThinkAgile HX5520 6126x2 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06U1EB00 | ThinkSystem SR650 6126x2 16GBx8 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06A040NA | ThinkSystem SR650 6134 32GB | SRV | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X06TX5100 | ThinkSystem SR650 6134x2 32GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7XG7A05605 | SR650 Xeon 6134 8C/130W/3.2GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X02A01LNA | ThinkSystem SR630 5115x1 16Gx1 | SRV | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7XG7A05551 | SR630 Xeon 5115 10C/85W/2.4GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) GOLD |
| 7X02A04JNA | ThinkSystem SR630 4116x1 32Gx1 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7XG7A05532 | SR630 Xeon 4116 12C/85W/2.1GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X10A02PNA | ThinkSystem ST550 4116 32GB | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 4XG7A07212 | ST550 Xeon Silver 4116 12C/85W/2.1GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 4XG7A07227 | SR570 Xeon 4116 12C/85W/2.1GHz | DCG SERVER OPTIONS HIGH VOLUME | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X09CTO1WW | Server SP: ThinkSystem ST550 - 1yr Warra | Enterprise Product Group | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y89S0TM00 | ThinkAgile HX1321 Node 4114 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X83S1GH00 | Lenovo ThinkAgile HX3320 4114x2 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y89S0UN00 | ThinkAgile HX1321 Node 4114 32GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X06UT8900 | ThinkSystem SR650 4114x2 32GBx24 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X06TH0A00 | ThinkSystem SR650 4114x2 16GBx4 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7XG7A05575 | SR650 Xeon 4110 8C/85W/2.1GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X10A028NA | ThinkSystem ST550 4110 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y03A02BNA | THINKSYSTEM SR570 SERVER 4110 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X02A03UNA | ThinkSystem SR630 4110x1 16Gx1 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 4XG7A07215 | ST550 Xeon Silver 4110 8C/85W/2.1GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X10100NNA | ThinkSystem ST550 4110 16GB | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X99A03DNA | ThinkSystem SR590 Server 4110 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X04W9TE00 | ThinkSystem SR550 4110x1.0 16GBx1.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X02T6BT00 | ThinkSystem SR630 4110x2.0 16Gx4.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 4XG7A07263 | SR590 Xeon 4110 8C/85W/2.1GHz | DCG SERVER OPTIONS HIGH VOLUME | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 4XG7A07195 | SR550 Xeon 4110 8C/85W/2.1GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X04A04YNA | ThinkSystem SR550 4110 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y89S0RT00 | HX2321 Node 3YR 4110x2 32GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X83S0D200 | Lenovo ThinkAgile HX1320 4110 8GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X04A057NA | ThinkSystem SR550 4110 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y03S0CT00 | ThinkSystem SR570 4110x2.0 16GBx2.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X08SGTE00 | ThinkSystem SR530 4110 16GBx4 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X83S24T00 | Lenovo ThinkAgile HX3320 4110x2 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X99T99U00 | ThinkSystem SR590 4110 16GB | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X06TM7R00 | ThinkSystem SR650 4110 16GBx12 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7X02S32N00 | ThinkSystem SR630 4110x2 16GBx6 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) SILVER |
| 7Y03A02JNA | ThinkSystem SR570 Server 3106 16G | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE |
| 4XG7A07218 | ST550 Xeon Bronze 3106 8C/85W/1.7GHz | SERVER Option | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE |
| 7X08S3VG00 | ThinkSystem SR530 3104x1.0 16Gx4.0 | ThinkSystem | | 1272 | 14nm | SKYLAKE | INTEL(R) XEON(R) BRONZE |
| 7Y46A002NA | ThinkSystem ST250 E-2174G 8GB | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7Y49A01CNA | ThinkSystem ST50 Server E-2144G 8GB | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |

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| MATERIAL NUMBER | PRODUCT DESCRIPTION | PRODUCT TYPE | PROCESSOR # | PROCESS CODE | PROCESS NODE | Architecture | Processor |
| 7Y46A019NA | THINKSYSTEM ST250 E-2136 8GB | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7Y51S0HB00 | ThinkSystem SR250 E-2136 16GBx4 | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7Y51S0PJ00 | ThinkSystem SR250 E-2136 16GBx2 | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7Y51S05E00 | ThinkSystem SR250 E-2136 16GB | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| 7Y49A013NA | ThinkSystem ST50 Server E-2124G 8GB | ThinkSystem | | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |

| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0E-N305015-I06 | 942602 | DUAL CORE N3050 | 911-7890-001 | MB | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) |
| A0F-N315015-I06 | 942600 | QUAD CORE N3150 | 911-7890-103 | MB | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) |
| A0F-N316015-I06 | 947023 | QUAD CORE N3160 | 911-7890-104 | MB | 1273 | 14nm | BRASWELL | INTEL(R) CELERON® |
| A0E-N370015-I06 | 942599 | QUAD CORE N3700 | 9S6-AC1611-025 | AIO | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) |
| A0E-N371015-I06 | 947020 | QUAD CORE N3710 | 9S6-AC1611-029 | AIO | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) |
| A0E-N371015-I06 | 947020 | QUAD CORE N3710 | 9S6-B12011-056 | DT | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) |
| A0E-N371015-I06 | 947020 | QUAD CORE N3710 | 9S6-AE9211-018 | AIO | 1273 | 14nm | BRASWELL | INTEL(R) PENTIUM(R) |
| A0F-N316015-I06 | 947023 | QUAD CORE N3160 | 9S6-AC1611-024 | AIO | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) |
| A0F-N316015-I06 | 947023 | QUAD CORE N3160 | 9S6-AA8B11-048 | AIO | 1273 | 14nm | BRASWELL | INTEL(R) CELERON(R) |
| A0B-5010U15-I06 | 939363 | DUAL CORE I3-5010U | 939-9A69-002 | Server BB | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I3 |
| A0E-G456000-I06 | 952994 | DUAL CORE G4560 | 9S6-AAC111-021 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0B-5005U35-I06 | 940707 | DUAL CORE i3-5005U | 936-B09611-062 | DT BB | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I3 |
| A0B-5005U35-I06 | 940707 | DUAL CORE i3-5005U | 936-B09612-004 | DT BB | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I3 |
| A0D-5950H15-I06 | 943431 | QUAD CORE i7-5950HQ | 9S7-181212-263 | NB | 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| A0D-5500U15-I06 | 939360 | DUAL CORE i7-5500U | 9S6-B09611-251 | DT | 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| A13-2220125-I06 | 939362 | DUAL CORE i5-5200U | 9S6-B09611-225 | DT | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 |
| A13-2220125-I06 | 939362 | DUAL CORE i5-5200U | 9S9-9A75-004 | Server | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 |
| A13-2220125-I06 | 939362 | DUAL CORE i5-5200U | 939-9A75-003 | Server BB | 1272 | 14nm | BROADWELL | INTEL(R) CORE(TM) I5 |
| A0D-5700H15-I06 | 943450 | QUAD CORE i7-5700HQ | 9S7-16J212-453 | NB | 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| A0D-5700H15-I06 | 943450 | QUAD CORE i7-5700HQ | 9S7-16H512-606 | NB | 1272 | 14nm | BROADWELL | INTEL (R) CORE (TM) I7 |
| A0H-2176G00-I06 | 963450 | 6 CORE E-2176G | 9S7-17A512-018 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| A0H-2176M05-I06 | 963717 | 6 CORE E-2176M | 9S7-17C532-293 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| A0H-2176M05-I06 | 963717 | 6 CORE E-2176M | 9S7-17C532-294 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| A0H-2176M05-I06 | 963717 | 6 CORE E-2176M | 9S7-17C632-200 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| A0H-2176M05-I06 | 963717 | 6 CORE E-2176M | 9S7-16P632-280 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R)XEON(R) |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B92621-002 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B91641-270 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B92631-054 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B92631-251 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B92631-253 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-9900K00-I06 | 983354 | 8 CORE i9-9900K | 9S6-B92631-062 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S7-1T3111-023 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S6-B91531-459 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S6-B92011-005 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S6-B92011-225 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S6-B92011-236 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8600K00-I06 | 960620 | 6 CORE i5-8600K | 9S6-B91314-067 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8600K00-I06 | 960620 | 6 CORE i5-8600K | 9S6-B91314-234 | DT | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3111-022 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3131-060 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3131-061 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3131-059 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3131-080 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3111-215 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-1T3131-208 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B90721-230 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-003 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-208 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-204 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91531-242 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 936-B92011-012 | DT BB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 936-B92011-009 | DT BB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-238 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-201 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B90721-223 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92012-002 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91531-457 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-004 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-040 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B90721-224 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-097 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B90721-232 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-202 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-237 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91531-458 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-17A512-005 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-17A512-008 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-17A512-007 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-17A512-006 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-030 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-091 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91621-095 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91611-007 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91621-093 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-027 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-069 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-084 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-086 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91621-094 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-074 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-068 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91611-006 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-085 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-028 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-065 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-233 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-062 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-036 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-073 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-001 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91314-204 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 936-B92011-010 | DT BB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91621-039 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B90721-233 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16Q211-278 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16Q211-287 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92621-021 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92621-003 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91611-008 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91711-029 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-13S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-12S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-09S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-14S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-17A311-267 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-17A311-269 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16Q211-276 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16Q211-274 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JF42-200 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16R112-409 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16R112-249 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-17C612-239 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-16Q211-279 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-16Q211-286 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-08S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-17C612-201 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-07S | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-446 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-664 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-077 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JE32-016 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JE32-057 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JE32-061 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-499 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-444 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-069 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-627 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-657 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16R112-223 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-221 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P732-209 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-17C722-028 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JF42-042 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JF42-260 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16JF42-275 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16R112-065 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16P612-071 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8300H05-I06 | 963720 | QUAD CORE i5-8300H | 9S7-16R312-030 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400H05-I06 | 963721 | QUAD CORE i5-8400H | 9S7-16Q211-275 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400H05-I06 | 963721 | QUAD CORE i5-8400H | 9S7-17A311-268 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400H05-I06 | 963721 | QUAD CORE i5-8400H | 9S7-17A311-266 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8400H05-I06 | 963721 | QUAD CORE i5-8400H | 9S7-16Q211-273 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E112-055 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-418 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-412 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-282 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-031 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-421 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-012 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-676 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-456 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-641 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-803 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-077 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-439 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-602 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-609 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-017 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-024 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-030 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-056 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-055 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K622-018 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-448 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-456 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-663 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-012 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-011 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-605 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-013 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-438 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L411-047 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L411-048 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q312-020 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-067 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-809 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-447 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-066 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-210 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-448 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-805 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-413 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-032 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-425 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L411-046 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L411-052 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K622-019 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K622-046 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K622-045 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-179E33-007 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B512-045 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B512-012 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-626 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-033 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-485 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-041 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-807 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-053 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-405 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-068 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-054 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-037 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-406 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-283 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-268 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-245 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-259 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q213-450 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q213-441 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q312-073 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q312-021 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JE32-015 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JE32-056 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-603 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-493 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-672 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-447 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-025 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-010 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-626 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-609 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-014 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-179F43-011 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q213-442 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16L411-061 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-181612-014 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-181612-027 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-181612-016 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-17A311-057 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-17A311-056 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-17A311-275 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-17A311-273 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16K731-040 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16K631-034 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-16K731-039 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-428 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-035 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-077 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-281 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-078 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-243 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-291 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-045 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-244 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-051 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-270 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C532-606 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C532-258 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C532-292 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C532-605 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-034 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF31-037 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-205 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-076 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-273 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-277 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-047 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-050 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-007 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-222 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-088 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-066 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-248 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-264 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-410 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-001 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-403 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-445 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-076 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-625 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-238 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-239 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-624 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-052 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-064 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-051 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-010 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-040 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-046 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-047 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-009 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-235 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-621 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-623 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-233 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-234 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-620 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q221-431 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P532-639 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P532-673 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P532-629 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-064 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-063 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-059 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-672 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-013 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-016 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-014 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-055 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-058 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-274 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-276 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JE22-058 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-615 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-209 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-636 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-443 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-806 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-015 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-016 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-442 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-065 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P612-068 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-16Q221-615 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-16Q221-476 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-071 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-272 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-277 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-093 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A311-094 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P722-052 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q411-004 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q411-007 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P732-054 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-049 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q411-005 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P722-053 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-050 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A611-015 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A611-013 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q411-006 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P722-051 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C722-010 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-091 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-089 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-436 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L511-032 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16L511-033 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A611-011 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-204 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-042 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-203 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91641-273 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91641-272 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-040 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-202 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-201 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K722-021 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P522-202 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C612-408 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K622-022 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-048 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-073 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-074 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q213-449 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-060 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-291 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-290 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P632-292 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P722-012 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-021 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-824 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P732-013 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-064 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-048 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-17A611-012 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-251 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-248 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-181612-035 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-249 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700K00-I06 | 960617 | 6 CORE i7-8700K | 9S6-B91314-243 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-434 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91641-271 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-267 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91641-274 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A611-014 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-276 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-041 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-805 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-252 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-093 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q412-253 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-022 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-250 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91911-051 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-080 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JE32-018 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |

| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-041 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P732-014 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16K512-033 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91314-252 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17E212-023 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S7-17A522-069 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-411 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R112-252 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17B712-026 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-077 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B92631-055 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16R312-029 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P512-226 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B92011-406 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q411-002 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91318-278 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-9700K00-I06 | 983355 | 8 CORE i7-9700K | 9S6-B91318-279 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16P622-823 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-437 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C512-078 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-079 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8850H05-I06 | 963719 | 6 CORE i7-8850H | 9S7-17A311-039 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-059 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-041 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0K-8950H05-I06 | 975241 | 6 CORE i9-8950HK | 9S7-16Q221-622 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I9 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C522-081 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17A311-040 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 607-17B71-02S | NB-MB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0C-8400000-I06 | 960619 | 6 CORE i5-8400 | 9S7-1T3111-216 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE(TM) I5 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C622-040 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16JF42-259 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17G111-205 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-17C632-209 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8750H05-I06 | 963718 | 6 CORE i7-8750H | 9S7-16Q211-271 | NB | 1272 | 14nm | COFFEE LAKE | INTEL(R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S7-17A512-026 | NB | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8700000-I06 | 960618 | 6 CORE i7-8700 | 9S6-B91314-230 | DT | 1272 | 14nm | COFFEE LAKE | INTEL (R) CORE (TM) I7 |
| A0F-N400005-I06 | 961640 | DUAL CORE N4000 | 9S6-AAC211-005 | AIO | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| A0F-N400005-I06 | 961640 | DUAL CORE N4000 | 9S6-AAC211-007 | AIO | 1273 | 14nm | GEMINI LAKE | INTEL(R) CELERON(R) |
| A0E-N500005-I06 | 961638 | QUAD CORE N5000 | 9S6-AAC211-025 | AIO | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| A0E-N500005-I06 | 961638 | QUAD CORE N5000 | 9S6-AAC211-008 | AIO | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| A0E-N500005-I06 | 961638 | QUAD CORE N5000 | 9S6-AAC211-006 | AIO | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| A0E-N500005-I06 | 961638 | QUAD CORE N5000 | 9S6-B17111-010 | DT | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |
| A0E-N500005-I06 | 961638 | QUAD CORE N5000 | 9S6-B17111-011 | DT | 1273 | 14nm | GEMINI LAKE | INTEL(R) PENTIUM(R) SILVER |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AC1711-212 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AAC111-028 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AAC111-029 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AAC111-002 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AC1711-087 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AAC111-053 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AAC111-052 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0B-7100000-I06 | 954033 | DUAL CORE i3-7100 | 9S6-AC1711-083 | AIO | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0C-7200U25-I06 | 953353 | DUAL CORE i5-7200U | 9S6-AEC113-009 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U25-I06 | 953353 | DUAL CORE i5-7200U | 936-B15921-020 | DT BB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U25-I06 | 953353 | DUAL CORE i5-7200U | 936-B15921-033 | DT BB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U05-I06 | 951957 | DUAL CORE i5-7200U | 9S7-16J712-058 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U05-I06 | 951957 | DUAL CORE i5-7200U | 9S7-179773-026 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U05-I06 | 951957 | DUAL CORE i5-7200U | 936-B14211-006 | DT BB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7200U25-I06 | 953353 | DUAL CORE i5-7200U | 939-9A95-005 | IPS-BB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0H-E315025-I06 | 952951 | QUAD CORE E3-1505MV6 | 9S7-16H812-675 | NB | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| A0H-E315025-I06 | 952951 | QUAD CORE E3-1505MV6 | 9S7-17A131-687 | NB | 1272 | 14nm | KABY LAKE | INTEL(R)XEON(R) |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J962-265 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J962-1407 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J962-2011 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16P112-228 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J962-407 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J962-624 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16M312-010 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16J942-285 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16JD21-093 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7300H05-I06 | 952959 | QUAD CORE i5-7300HQ | 9S7-16JD21-280 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-020 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-258 | DT | 1273 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I6 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-242 | DT | 1274 | 10nm | KABY LAKE | INTEL(R) CORE(TM) I7 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-274 | DT | 1275 | 10nm | KABY LAKE | INTEL(R) CORE(TM) I8 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-053 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I9 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-268 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I10 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-091 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I11 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-028 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I12 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B09031-264 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I13 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-AE9311-069 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I14 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-AE9311-054 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I15 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90111-224 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I16 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-047 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I17 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B91011-020 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I18 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-261 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I19 |
| A0C-7400010-I06 | 952986 | QUAD CORE i5-7400 | 9S6-B90611-086 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I20 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0C-8250U05-I06 | 959160 | QUAD CORE i5-8250U | 9S7-14B121-060 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0C-8250U05-I06 | 959160 | QUAD CORE i5-8250U | 9S7-14B141-064 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0E-G456000-I06 | 952994 | DUAL CORE G4560 | 9S6-AAC111-026 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0C-8250U05-I06 | 959160 | QUAD CORE i5-8250U | 9S7-14B141-269 | NB | 1272 | 14nm | KABY LAKE | INTEL(R) CORE(TM) I5 |
| A0F-G393000-I06 | 954043 | DUAL CORE G3930 | 9S6-AAC111-023 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0F-G393000-I06 | 954043 | DUAL CORE G3930 | 9S6-AAC111-027 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0B-7100U05-I06 | 951959 | DUAL CORE i3-7100U | 936-B14211-007 | DT BB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0D-7500U05-I06 | 951958 | DUAL CORE i7-7500U | 936-B14211-005 | DT BB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7500U05-I06 | 951958 | DUAL CORE i7-7500U | 9S7-16JA11-013 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7500U05-I06 | 951958 | DUAL CORE i7-7500U | 9S7-16JA11-002 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7500U05-I06 | 951958 | DUAL CORE i7-7500U | 9S7-16JA21-017 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-077 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90111-217 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-037 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B09031-281 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91511-008 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-073 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91521-071 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91521-088 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B09031-267 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-089 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91511-021 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-271 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-405 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-063 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91511-007 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90111-215 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-062 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90612-096 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-202 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-018 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90111-216 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-058 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91521-252 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-217 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-267 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90612-070 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91521-036 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91521-070 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B91511-006 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-013 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-057 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90611-090 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-078 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90612-272 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B90711-036 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700010-I06 | 953004 | QUAD CORE i7-7700 | 9S6-B09031-246 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-10S | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179993-402 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1067 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-053 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-001 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-062 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-079 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-068 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B412-009 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J911-059 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1083 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1082 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1091 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1032 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1093 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179577-1210 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179C11-080 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1896 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBC2-1029 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBC2-1038 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-1006 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-1226 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-693 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-178541-448 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-178554-638 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-178554-639 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-1097 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-1440 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-1463 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-863 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-1227 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-1218 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799E5-699 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBA1-837 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBA1-1061 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBA1-836 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBB2-1008 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBC2-873 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB92-1264 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBC2-877 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBE2-1044 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JBE2-1048 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J932-264 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179941-030 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB12-466 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B93-281 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16L231-239 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16L231-240 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16L231-238 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BC3-677 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799B3-622 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799B3-615 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-250 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-298 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-402 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-066 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-045 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-249 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-256 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-003 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C312-008 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C312-023 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A211-215 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B93-284 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BCC-651 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BCC-848 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BCC-668 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BCC-650 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-625 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-056 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-223 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-224 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-441 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-466 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-444 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B112-225 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A211-214 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-14A332-069 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-14A332-210 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-620 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-2027 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-2013 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-2631 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1645 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-2089 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1273 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1408 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1427 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1646 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-2070 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1096 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB12-822 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB12-659 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JD21-001 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JD21-279 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16M312-008 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179947-027 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB92-661 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB92-653 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799C9-666 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-001 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-202 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-212 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-096 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-213 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-075 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB82-644 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB12-694 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799B3-621 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799B3-667 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9C2-1045 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799D3-1250 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799D3-1214 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J572-1862 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J572-1861 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799D3-1213 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B11-416 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B11-418 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B11-665 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0F-3865U05-I06 | 953360 | DUAL CORE 3865U | 936-B15921-019 | DT BB | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0F-3865U05-I06 | 953360 | DUAL CORE 3865U | 9S6-AEC113-025 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0F-3865U05-I06 | 953360 | DUAL CORE 3865U | 9S6-AEC113-026 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B11-865 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J572-1833 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J572-1828 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J572-1832 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-021 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-002 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K332-024 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K322-066 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K332-023 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K412-016 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179941-658 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179941-096 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179B11-471 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K232-280 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-610 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-467 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K232-290 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P112-215 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-002 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K412-060 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K412-061 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0E-4415U05-I06 | 953359 | DUAL CORE 4415U | 9S6-B15921-019 | DT | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0E-4415U05-I06 | 953359 | DUAL CORE 4415U | 9S6-AEC113-023 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0E-4415U05-I06 | 953359 | DUAL CORE 4415U | 9S6-AEC113-024 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K412-062 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B312-089 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B312-001 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B312-033 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17B312-060 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9I2-1452 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9I2-2096 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9I2-2025 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9I2-2088 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-067 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17C112-252 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB42-463 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179985-028 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9C2-1046 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9F1-1095 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9B2-2223 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JB42-408 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-228 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-294 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-275 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-674 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-293 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-230 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-252 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K212-229 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K222-401 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-1005 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-1039 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-865 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-17A121-887 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16P312-008 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9B2-2076 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K312-001 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K322-206 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K312-034 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K312-078 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K322-063 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JC12-034 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JC12-003 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-181542-253 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-181542-252 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-181542-213 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-181542-212 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-16K222-407 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16JC12-041 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BB3-473 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J932-055 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-179BC3-670 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7920H05-I06 | 952952 | QUAD CORE i7-7920HQ | 9S7-16K322-040 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-1799A8-444 | NB-BB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K232-297 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K332-067 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J9B2-1428 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16J962-1227 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-178541-450 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-16K412-253 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700H05-I06 | 952957 | QUAD CORE i7-7700HQ | 9S7-14A332-072 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91211-014 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-013 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-016 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91211-052 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-052 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-012 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-015 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91312-028 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91211-022 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S6-B91211-024 | DT | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7700K10-I06 | 953006 | QUAD CORE i7-7700K | 9S7-1T1122-243 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0F-3865U05-I06 | 953360 | DUAL CORE 3865U | 9S6-AEC113-056 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A211-205 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A211-028 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A211-082 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A211-083 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A211-202 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-480 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-423 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0E-4415U05-I06 | 953359 | DUAL CORE 4415U | 9S6-AEC113-055 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) PENTIUM(R) |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-479 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-1T2111-067 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-1T2111-088 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-823 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1038 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1024 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-872 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1095 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0B-7100U25-I06 | 953354 | DUAL CORE i3-7100U | 936-B15921-030 | DT-BB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I3 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1216 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1084 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-858 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-867 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-1097 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-866 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A131-648 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A131-1205 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A131-1211 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-425 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-181542-266 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-17A121-426 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-1T2111-239 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-7820H05-I06 | 952955 | QUAD CORE i7-7820HK | 9S7-1T2111-251 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8550U05-I06 | 959163 | QUAD CORE i7-8550U | 9S7-14B121-270 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8550U05-I06 | 959163 | QUAD CORE i7-8550U | 9S7-14B121-059 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0D-8550U05-I06 | 959163 | QUAD CORE i7-8550U | 9S7-14B212-074 | NB | 1272 | 14nm | KABY LAKE | INTEL (R) CORE (TM) I7 |
| A0F-3865U05-I06 | 953360 | DUAL CORE 3865U | 9S6-A61611-036 | AIO | 1272 | 14nm | KABY LAKE | INTEL(R) CELERON(R) |
| A0B-6100010-I06 | 945208 | DUAL CORE i3-6100 | 9S6-AC1711-035 | AIO | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I3 |
| A0H-E315015-I06 | 944366 | QUAD CORE E3-1505MV5 | 9S7-16H812-258 | NB | 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) |
| A0H-E315015-I06 | 944366 | QUAD CORE E3-1505MV5 | 9S7-178212-400 | NB | 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) |
| A0H-E315015-I06 | 944366 | QUAD CORE E3-1505MV5 | 9S7-178212-423 | NB | 1272 | 14nm | SKYLAKE | INTEL(R)XEON(R) |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0C-6300H15-I06 | 944367 | QUAD CORE i5-6300HQ | 9S7-179675-001 | NB | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6300H15-I06 | 944367 | QUAD CORE i5-6300HQ | 9S6-AEA111-041 | AIO | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6300H15-I06 | 944367 | QUAD CORE i5-6300HQ | 9S6-AEA111-049 | AIO | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6300H15-I06 | 944367 | QUAD CORE i5-6300HQ | 9S7-16J622-047 | NB | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6300H15-I06 | 944367 | QUAD CORE i5-6300HQ | 9S7-179586-696 | NB | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-B90611-009 | DT | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-B90611-008 | DT | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-B90111-070 | DT | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-AF1C11-026 | AIO | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-AE9311-022 | AIO | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0C-6400020-I06 | 947207 | QUAD CORE i5-6400 | 9S6-B90111-050 | DT | 1272 | 14nm | SKYLAKE | INTEL(R) CORE(TM) I5 |
| A0E-G440010-I06 | 943908 | DUAL CORE G4400 | 9S6-AA7811-058 | AIO | 1272 | 14nm | SKYLAKE | INTEL(R) PENTIUM(R) |
| A0D-6700010-I06 | 943465 | QUAD CORE i7-6700 | 9S6-B90111-093 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700010-I06 | 943465 | QUAD CORE i7-6700 | 9S6-B90111-208 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700010-I06 | 943465 | QUAD CORE i7-6700 | 9S6-B90111-209 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700010-I06 | 943465 | QUAD CORE i7-6700 | 9S6-B90111-061 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700020-I06 | 947202 | QUAD CORE i7-6700 | 9S7-1T1111-028 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K10-I06 | 943463 | QUAD CORE i7-6700K | 9S6-B90311-018 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K20-I06 | 947200 | QUAD CORE i7-6700K | 9S7-1T1112-091 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K20-I06 | 947200 | QUAD CORE i7-6700K | 9S7-1T1112-096 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K20-I06 | 947200 | QUAD CORE i7-6700K | 9S7-1T1111-002 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K10-I06 | 943463 | QUAD CORE i7-6700K | 9S6-B90511-032 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K10-I06 | 943463 | QUAD CORE i7-6700K | 9S6-B90511-033 | DT | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700K20-I06 | 947200 | QUAD CORE i7-6700K | 9S7-1T1111-029 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178211-219 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-181412-012 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178312-245 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-177514-202 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-175B12-003 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB42-218 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB42-248 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S6-AEA211-014 | AIO | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16H712-002 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-17B112-016 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-17B112-033 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-17B112-025 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB12-001 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16L221-087 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16L221-078 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16L221-005 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178312-219 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178312-258 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-181512-023 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-181512-055 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-058 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-202 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-226 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-060 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-200 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-017 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-181412-002 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-181412-274 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-1T2111-007 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178344-030 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178211-408 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-1T2111-02S | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-178233-805 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-1T2111-006 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6820H25-I06 | 944356 | QUAD CORE i7-6820HK | 9S7-17A111-201 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6920H15-I06 | 944371 | QUAD CORE i7-6920HQ | 9S7-178311-041 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16J562-1446 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB12-650 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB12-086 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16J512-004 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-179441-070 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-422 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-001 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-034 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-021 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-469 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-179541-003 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-179B11-009 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-179B11-010 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6920H15-I06 | 944371 | QUAD CORE i7-6920HQ | 9S7-178312-218 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6920H15-I06 | 944371 | QUAD CORE i7-6920HQ | 9S7-178312-260 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6920H15-I06 | 944371 | QUAD CORE i7-6920HQ | 9S7-181412-257 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178211-034 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178211-831 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16J412-233 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-14A312-006 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178511-063 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16K212-041 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16J512-203 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178511-033 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16JB12-021 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178511-032 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |

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| COMPONENT NAME | MMID | CPU TYPE | MSI ITEM # | MSI Product Type | PROCESS CODE | PROCESS NODE | ARCHITECTURE | BRAND |
|---|---|---|---|---|---|---|---|---|
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178533-031 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178511-015 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-16H712-053 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178211-1252 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-178511-076 | NB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0D-6700H15-I06 | 944368 | QUAD CORE i7-6700HQ | 9S7-179441-033 | NB-BB | 1272 | 14nm | SKYLAKE | INTEL (R) CORE (TM) I7 |
| A0C-8265U15-I06 | 982921 | QUAD CORE i5-8265U | 9S7-14B321-200 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL (R) CORE (TM) I5 |
| A0C-8265U15-I06 | 982921 | QUAD CORE i5-8265U | 9S7-16S111-099 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL (R) CORE (TM) I5 |
| A0C-8265U15-I06 | 982921 | QUAD CORE i5-8265U | 9S7-16S111-200 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL (R) CORE (TM) I5 |
| A0D-8565U05-I06 | 982918 | QUAD CORE i7-8565U | 9S7-16S111-008 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| A0D-8565U05-I06 | 982918 | QUAD CORE i7-8565U | 9S7-16S111-085 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| A0D-8565U05-I06 | 982918 | QUAD CORE i7-8565U | 9S7-16S111-091 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |
| A0D-8565U05-I06 | 982918 | QUAD CORE i7-8565U | 9S7-16S211-018 | NB | 1272 | 14nm | WHISKEY LAKE | INTEL(R) CORE(TM) I7 |

**CERTAIN INTEGRAGTED CIRCUITS AND PRODUCTS CONTAINING THE SAME** **Inv. No. 337-TA-1148**

## PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **INITIAL DETERMINATION** has been served via EDIS upon the Commission Investigative Attorney, **John Shin, Esq.**, and the following parties as indicated, on 6/16/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

**On Behalf of Complainant Tela Innovations, Inc.:**

William D. Belanger, Esq.
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☐ Via Hand Delivery
☐ Via Express Delivery
☐ Via First Class Mail
☒ Other: Email Notification of Availability to Download

**On Behalf of Respondents Acer, Inc., Acer America Corp., Asustek Computer Inc., Asus Computer International, Intel Corporation, Lenovo Group Ltd., Lenovo (United States) Inc., Micro-Star International Co., Ltd., and MSI Computer Corp.:**

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**UNITED STATES INTERNATIONAL TRADE COMMISSION**

**Washington, D.C.**

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| **In the Matter of**<br><br>**CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME** | **Inv. No. 337-TA-1148** |

**ORDER NO. 34: CONSTRUING TERMS OF THE ASSERTED CLAIMS**

(October 2, 2019)

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## I. INTRODUCTION

This investigation was instituted by the Commission on March 15, 2019 to determine whether certain tri-gate integrated circuits and products which contain such circuits infringe U.S. Patent Nos. 7,943,966 ("the '966 patent"), 7,948,012 ("the '012 patent"), 10,141,334 ("the '334 patent"), 10,141,335 ("the '335 patent"), and 10,186,523 ("the '523 patent") (altogether, "the Asserted Patents"). *See* 84 Fed. Reg. 9558-9 (Mar. 15, 2019). On October 2, 2019, however, the '966 and '012 patents were terminated from the investigation. (Order No. 33.) The complainant is Tela Innovations, Inc. ("Tela" or "Complainant"). The respondents are Acer, Inc., Acer America Corporation, AsusTek Computer Inc., Asus Computer International, Intel Corporation, Lenovo Group Ltd., Lenovo (United States) Inc., Micro-Star International Co., Ltd., and MSI Computer Corp. (together, "Respondents"). The Commission Investigative Staff ("Staff") is also a participant (all collectively, "the Parties").

Pursuant to Ground Rule 8, a *Markman* hearing was held July 17, 2019, regarding the interpretation of certain terms of the patent at issue. Prior to the hearing, the Parties filed a joint claim construction chart setting forth a limited set of terms to be construed, with an updated joint chart after the hearing (EDIS Doc. ID 683388; *see* Order No. 24). Tela and Respondents filed initial and rebuttal claim construction briefs,[1] wherein each party offered its construction for the claim

[1] The briefs and amended chart submitted by the Parties are referred to hereafter as:

| | |
|---|---|
| CIMB | Complainant's Corrected Initial *Markman* Brief |
| CRMB | Complainant's Rebuttal *Markman* Brief |
| RIMB | Respondents' Initial *Markman* Brief |
| RRMB | Respondents' Rebuttal *Markman* Brief |
| SMB | Staff's *Markman* Brief |
| JC | Updated Joint Claim Construction Chart |
| Hr'g Tr. | *Markman* hearing transcript |
| Tutorial | Joint Technology Tutorial |
| Comp. Tutorial | Complainant's Technology Tutorial |
| Resp. Tutorial | Respondents' Technology Tutorial |

terms in dispute, along with support for its proposed interpretation. The Staff filed a single brief. Further, per my request, the Parties prepared and filed a joint tutorial on the technology at issue (EDIS Doc. ID 680838), as well as their own individualized tutorials (EDIS Doc. IDs 682967, 682993).

## II. RELEVANT LAW

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*) (internal citations omitted), *aff'd*, 517 U.S. 370 (1996). Claim construction is a "matter of law exclusively for the court." *Id.* at 970-71. "The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*); *see also Markman*, 52 F.3d at 979. As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the "ordinary and customary meaning of a claim term" as understood by a person of ordinary skill in the art at the time of the invention. 415 F.3d at 1313. "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "Quite apart

from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms." *Id.* at 1314; *see also Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) ("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point [ ] out and distinctly claim [ ] the subject matter which the patentee regards as his invention."). The context in which a term is used in an asserted claim can be "highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.* "Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee." *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999).

The specification "is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316. "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id.* As a general rule, however, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be ... the correct construction." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

In addition to the claims and the specification, the prosecution history should be examined, if in evidence. *Phillips* at 1317; *see Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can "often inform the meaning of the claim language by

demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317; *see Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.").

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* "The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

If, after a review of the intrinsic and extrinsic evidence, a claim term remains ambiguous, the claim should be construed so as to maintain its validity. *Phillips*, 415 F.3d at 1327. Claims, however, cannot be judicially rewritten in order to fulfill the axiom of preserving their validity. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999). Thus, "if the only claim construction that is consistent with the claim's language and the written description renders the claim invalid, then the axiom does not apply and the claim is simply invalid." *Id.*

The construction of a claim term is generally guided by its ordinary meaning. However, courts may deviate from the ordinary meaning when: (1) "the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention"; or

(2) "the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history." *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009); *see also GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("the specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."); *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) ("[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender."); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) ("The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution."). Nevertheless, there is a "heavy presumption that a claim term carries its ordinary and customary meaning." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citations omitted). The standard for deviating from the plain and ordinary meaning is "exacting" and requires "a clear and unmistakable disclaimer." *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012); *see Epistar Corp. v. Int'l Trade Comm'n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (requiring "expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope" to deviate from the ordinary meaning) (citation omitted). As the Federal Circuit has explained, "[w]e do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that." *Thorner*, 669 F.3d at 1366.

A claim must also be definite. Pursuant to 35 U.S.C. § 112, second paragraph: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. In *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014), the Supreme Court held that § 112, ¶ 2 requires "that a patent's claims, viewed in light of the specification and prosecution history

inform those skilled in the art about the scope of the invention with reasonable certainty." A claim is required to "provide objective boundaries for those of skill in the art," and a claim term is indefinite if it "might mean several different things and no informed and confident choice is among the contending definitions." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). A patent claim that is indefinite is invalid. 35 U.S.C. § 282(b)(3)(A).

Courts are not required to construe every claim limitation of an asserted patent. *See O2 Micro Intern. Ltd. v. Beyond Innovation Technology Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (citations omitted); *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1323 (Fed. Cir. 2004) (noting that the administrative law judge need only construe disputed claim terms). Rather, "claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims." *Id.* at 1362 (quoting *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997)); *see also Embrex*, 216 F.3d at 1347 ("The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.") (citation omitted).

In addition, "[a] determination that a claim term 'needs no construction' or has the 'plain and ordinary meaning' may be inadequate when a term has more than one 'ordinary' meaning or when reliance on a term's 'ordinary' meaning does not resolve the parties' dispute." *O2 Micro*, 521 F.3d at 1361. Claim construction, however, is not an "obligatory exercise in redundancy." *U.S. Surgical Corp.*, 103 F.3d at 1568. "[M]erely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction." *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 863 (Fed. Cir. 2004).

## III. LEVEL OF ORDINARY SKILL

Respondents' opening brief offers no description of the person of ordinary skill in this art. (*See generally* RIMB.) An expert declaration attached to the brief, however, offers the following:

> In my opinion, with respect to the Asserted Patents, a person of ordinary skill in the art would have had the equivalent of a bachelor's degree in electrical engineering, physics, or materials science and at least three years of experience in semiconductor integrated circuit design, layout, and/or fabrication. Additional graduate education could substitute for professional experience, while significant experience in the field might substitute for formal education.

(RIMB, Ex. 6 at ¶ 29.)

The Staff offers the following definition:

> The Staff submits that one of ordinary skill in the field of semi-conductor design and manufacturing, as related to the Asserted Patents, would have at least a Bachelor of Science degree in electrical or computer engineering or a related field *and* two to three years of practical experience, such as with semi-conductor design and/or manufacturing, or in lieu of practical experience at least a Master's degree in electrical or computer engineering or a related field. All of the Asserted Patents relate back to the same provisional application, No. 60/781,288, which was filed on March 9, 2006. The time period for the state of the art is, therefore, around 2006.

(SMB at 5.)

These proposed levels of skill are substantially similar. Tela initially proposed a level of skill in the art which was not pertinent, and later submitted a corrected brief with a more helpful proposal, although Tela never moved for leave to file it. In any event, Tela's corrected proposed definition is substantially similar to the other parties'. (CIMB at 13.)

Based on the technology and industry behind semiconductor integrated circuits at the 45-193 nm scale, at least three years of experience, as opposed to two, is an appropriate minimum for a person with only a bachelor's degree. The expected undergraduate majors for one of ordinary skill working in hardware, as opposed to software or more theoretical fields, would be electrical

engineering and computer engineering. Physics and materials science might be appropriate, but those disciplines provide less practical experience in design, layout work, and fabrication. And although experience can substitute for education, and education for experience, at least some practical experience would normally be required in a field focused on design and fabrication, even for a person with a master's degree.

On balance, a person having ordinary skill in the art at the time of invention would have: (1) a bachelor's degree in electrical engineering or computer engineering with at least three years of experience in the field of semiconductor layout technology and integrated circuit design; (2) a master's degree in electrical engineering or computer engineering with at least two years of experience in the same field; (3) a bachelor's degree in physics or materials science with at least five years of experience in the same field; or (4) a comparable combination of education and experience.

## IV. THE ASSERTED PATENTS

The '334 patent, entitled "Semiconductor Chip Including Region Having Rectangular-Shaped Gate Structures and First-Metal Structures," was issued on November 27, 2018 to Scott T. Becker and Michael C. Smayling. The '334 patent reports an assignment on its face to Tela Innovations, Inc.

The '335 patent, entitled "Semiconductor Cip [sic] Including Region Having Rectangular-Shaped Gate Structures and First Metal Structures," was issued on November 27, 2018 to Scott T. Becker and Michael C. Smayling. The '335 patent reports an assignment on its face to Tela Innovations, Inc.

The '523 patent, entitled "Semiconductor Chip Having Region Including Gate Electrode Features Formed in Part from Rectangular Layout Shapes on Gate Horizontal Grid and First-Metal Structures Formed in part from Rectangular Layout Shapes on at least Eight First-Metal Gridlines

of First-Metal Vertical Grid," was issued on January 22, 2019 to Scott T. Becker and Michael C. Smayling. The '523 patent reports an assignment on its face to Tela Innovations, Inc.

All three of the Asserted Patents issued from continuation applications, which claim priority to a series of previous continuation applications, with an ultimate claim of priority to Provisional Application No. 60/781,288, filed on March 9, 2006. All Asserted Patents therefore essentially share a common specification. (CIMB at 10 n.1; RIMB at 4 n.2.)

A. **Technical Background**

A semiconductor is a material that has electrical conductivity properties falling between that of a conductor and an insulator. (Tutorial at 2.) These conductive properties may be changed with the addition of impurities. (*Id.* at 6.) The addition of different types of impurities results in two different types of semiconductor, known as p-type and n-type. (*Id.*)

P-type and n-type semiconductors can be used with other materials to construct transistors. (Tutorial at 10-13.) The relevant transistor here is a complementary metal oxide semiconductor, or CMOS. (*Id.* at 11, 14.) A CMOS transistor is made of four basic components: (1) a body made of one type of semiconductor; (2) a source region made of the other type of semiconductor; (3) a drain region also made of the other type of semiconductor; (4) a gate made of metal and an oxide, where the gate oxide functions as an insulator by separating the gate metal from the other components. (*Id.* at 10-14.) The source region and the drain region together constitute the diffusion region.[2] ('523 patent at 9:35-42 ("diffusion regions 203 represent selected regions of the base substrate 201 within which impurities are introduced" and "diffusion contacts 205 are defined to enable connection between source and drain diffusion regions 203").)

[2] Although this term is construed below with regard to positioning and the nature of the substrate, the Parties do not dispute that the source and drain regions together form the diffusion region. (SMB at 36.)

When a voltage is applied to the gate an electric field is formed under it, causing a conductive channel connecting the source and drain to either appear or disappear, depending on the voltage and the type of semiconductor used to form the source and drain. (Tutorial at 10-16.) As a result, current can be made to either flow or not flow from source to drain, and the transistor in effect acts as an on/off switch. (*Id.* at 10, 13.) Logic circuits using this switching effect may be formed by connecting many transistors together. (Tutorial at 10; Resp. Tutorial at 3-6.) A set of such circuits disposed on a semiconductor substrate is called an integrated circuit, or chip. (Tutorial at 2.) A silicon wafer is the substrate material for a CMOS chip. (*Id.* at 17.)

The circuitry on a CMOS chip is formed through a multi-stage process, including layout, in which the size, shape, and spacing of the chip's features are specified, followed by photolithography. (Tutorial at 17, 19; *see* RIMB, Ex. 6 at 6 ("A layout represents the size, shape, and spacing guidelines for a given layer in a transistor"); Comp. Tutorial at 2 (describing "Layout & Simulation" as occurring before "Fabrication & Verification").) In photolithography, a material called photoresist is deposited on the wafer. (*Id.* at 17.) Photoresist undergoes chemical changes when exposed to light. (*Id.* at 19.) In one embodiment of the photolithography process, a pattern of opaque chrome material is placed on transparent quartz glass to form a photomask corresponding to at least a portion of the layout. (*Id.* at 18.) The photomask is placed over the wafer, ultraviolet light is shined through it, and the underlying photoresist chemically changes to match the photomask's pattern. (*Id.*) Application of a solvent then removes some of the photoresist, leaving the remaining photoresist in either a positive or negative pattern (depending on the photoresist) matching that of the photomask. (*Id.* at 18-19.)

Further processing can then be used to build features on the wafer; for example, in areas where photoresist has been removed, material may be added by deposition or removed by etching. (Tutorial at 19; Comp. Tutorial at 15-28.) Repeated application of photolithography and additional

processing results in a "stack of layers" on the wafer. ('523 patent at 9:14-15; *see generally* '523 patent at Fig. 2.) Within these layers, the various features forming the integrated circuit include gates, gate electrodes, source and drain contacts, and other elements, all of which "enable . . . the desired circuit connectivity." (*Id.* at 9:56-57; *see generally id.* at 9:30-49.)

The density of circuitry can be increased by reducing feature size. (Tutorial at 20.) Historically, feature size has been shrinking, and in many cases features are smaller than the wavelength of the light used for photolithography. (*Id.*) Because of the small feature size, interference patterns are generated during fabrication as shapes on the photomask interact with the light. ('523 patent at 4:16-17.) These interference patterns cause the fabricated feature shape to deviate from the designed feature shape, so much so that failure may result. (*Id.* at 4:22-24.)

In particular, when "two-dimensionally varying features are located in neighboring proximity to each other, the light used to expose the features will interact in a complex and generally unpredictable manner," and may result in, for instance, "layout feature shape distortion." ('523 patent at 7:41-44, 8:25.) Although "[c]orrection methodologies" exist to solve this problem, "semiconductor product yield is reduced as a result of . . . two-dimensionally varying features disposed in proximity to each other." (*Id.* at 4:24, 8:17-21.) The patents in suit claim a new such methodology focused on "topology," or feature shape. (*Id.* at 7:36-37.) Specifically, the patents in suit assert that "layout feature shape enhancement can be realized if the layout feature shapes are rectangular, near the same size, and are oriented in the same direction." (*Id.* at 9:8-9.)

B. **The Asserted Claims**

The '334 patent has 30 claims. As of the date of this order, claims 1, 2, 5, 6, 9, 11, 15, 20, 24, 29, and 30 are asserted in this investigation, either as infringed or under the domestic industry

technical prong.[3] The asserted claims read as follows (with the first instance of the agreed-upon terms in italics and the first instance of the disputed terms highlighted in bold):

1. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures positioned in accordance with a **gate horizontal grid** that includes at least seven **gate gridlines**, wherein adjacent gate gridlines are separated from each other by a **gate pitch** of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon, wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers, wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

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[3] Claims 7, 10, 22, and 23 are not listed as asserted in the Notice of Investigation, 84 Fed. Reg. 9559, but they are implicated by dependent claims 9, 11, and 24, which are asserted.

a first-metal layer formed above top surfaces of the gate structures within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate structures, the first-metal layer separated from the top surfaces of the gate structures by at least one insulator material, adjacent metal layers in the stack of metal layers separated by at least one insulator material, wherein the first-metal layer includes first-metal structures positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, each first-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline, **each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers**, wherein each pair of first-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers; and

at least six **contact structures** formed within the region of the semiconductor chip, wherein at least six gate structures within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six contact structures, each of the at least six contact structures having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in the x-direction, each of the at least six contact structures positioned and sized to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein the logic circuit includes electrical connections that collectively include first-metal structures positioned on at least five of the at least eight first-metal gridlines.

2. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures positioned in accordance with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, each second-metal structure in the region having at least one adjacent second-metal structure positioned next to each of its sides in accordance with an x-coordinate spacing of less than or equal to 193 nanometers, each second-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure positioned thereon, wherein each pair of second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the **gate structures**.

5. The semiconductor chip as recited in claim 2, wherein the at least six **contact structures** are positioned in accordance with a **contact vertical grid**, the contact vertical grid including **contact gridlines** extending in the x-direction, each of the at least six contact structures positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six contact

structures positioned to also extend lengthwise in the x-direction in a substantially centered manner along a corresponding first-metal gridline.

6. The semiconductor chip as recited in claim 2, **wherein each second-metal structure in the region is positioned next to at least one other second-metal structure on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure on a second side in accordance with the second-metal pitch**, wherein the second-metal pitch is measured in the x-direction and is equal to the **gate pitch**.

7. The semiconductor chip as recited in claim 6, wherein each second-metal structure in the region has a substantially equal width as measured in the x-direction.

9. The semiconductor chip as recited in claim 7, wherein the region has a size of 1930 nanometers as measured in the x-direction and a size of 1930 nanometers as measured in the y-direction.

10. The semiconductor chip as recited in claim 7, wherein the region includes a third-metal layer including third-metal structures positioned in accordance with a **third-metal vertical grid**, the third-metal vertical grid including at least eight **third-metal gridlines**, **each third-metal structure in the region having at least one adjacent third-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers**, each third-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure positioned thereon, wherein each pair of third-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the third-metal layer is

positioned third in the stack of metal layers counting upward from the top surfaces of the **gate structures**.

11. The semiconductor chip as recited in claim 10, **wherein each second-metal structure in the region is positioned next to at least one other second-metal structure on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure on a second side in accordance with the second-metal pitch**, wherein the second-metal pitch is measured in the x-direction and is equal to the **gate pitch**.

15. The semiconductor chip as recited in claim 1, wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein each diffusion region that forms part of at least one transistor within the region of the semiconductor chip has a substantially rectangular shape.

20. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures positioned in accordance with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, each second-metal structure in the region having at least one adjacent second-metal structure positioned next to each of its sides in accordance with an x-coordinate spacing of less than or equal to 193 nanometers, each second-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure positioned thereon, wherein each pair of second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the

second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the **gate structures**,

wherein the region includes a third-metal layer including third-metal structures positioned in accordance with a third-metal vertical grid, the third-metal vertical grid including at least eight third-metal gridlines, **each third-metal structure in the region having at least one adjacent third-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers**, each third-metal structure in the third-metal layer having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure positioned thereon, wherein each pair of third-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the third-metal layer is positioned third in the stack of metal layers upward from the top surfaces of the gate structures.

22. The semiconductor chip as recited in claim 20, wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a **gate structure** forming a **gate electrode** of the first transistor of the first transistor type is positioned on a given **gate gridline**, wherein a gate structure forming a gate electrode of the first transistor of the second transistor type is also positioned on the given gate gridline, wherein no other transistor is positioned on the given gate gridline between the gate structures that form the gate electrodes of the first transistor of the first transistor type and the first transistor of the second transistor type,

wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein a diffusion region of the first transistor of the first transistor type is electrically connected to a diffusion region of the first transistor of the second transistor type,

wherein the at least six **contact structures** include a contact structure substantially centered in the x-direction on the given gate gridline at a location between the diffusion regions of the first transistor of the first transistor type and the first transistor of the second transistor type.

23. The semiconductor chip as recited in claim 22, wherein an electrical connection between the **diffusion region** of the first transistor of the first transistor type and the diffusion region of the first transistor of the second transistor type includes at least one first-metal structure and at least one second-metal structure.

24. The semiconductor chip as recited in claim 23, wherein the **gate electrode** of the first transistor of the first transistor type is electrically connected to the gate electrode of the first transistor of the second transistor type.

29. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures positioned in accordance with a **gate horizontal grid** that includes at least seven **gate gridlines**, wherein adjacent gate gridlines are separated from each other by a **gate pitch** of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon, wherein each pair of gate

structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers, wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

a number of **contact structures** formed within the region of the semiconductor chip, wherein each gate structure that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding contact structure having a substantially rectangular shape, wherein each contact structure that contacts a given gate structure that forms any transistor gate electrode does not contact another gate structure, wherein each contact structure having a corresponding length greater than or equal to a corresponding width is oriented to have its corresponding length extend in an x-direction, wherein each contact structure that contacts a corresponding gate structure is positioned to overlap at least one edge of the corresponding gate structure,

wherein each transistor within the region is formed in part by a corresponding **diffusion region**, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a first gate structure forms both a gate electrode of the first transistor of the first transistor type and a gate electrode of the first transistor of the second transistor type.

30. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures positioned in accordance with a **gate horizontal grid** that includes a number of **gate gridlines**, wherein adjacent gate gridlines are separated from each other by a **gate pitch** of less than or equal to about 193 nanometers, each gate structure in the region having a substantially rectangular shape with a width of less than or equal to about 45 nanometers and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate structure positioned thereon, wherein each pair of gate structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers, wherein at least one gate structure within the region is a first-transistor-type-only gate

structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region;

a number of **contact structures** formed within the region of the semiconductor chip, wherein each of at least six gate structures within the region has a respective top surface in physical and electrical contact with a corresponding contact structure having a substantially rectangular shape, wherein each contact structure is centered in an x-direction on the gate structure with which it physical contacts, wherein each contact structure that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in an x-direction, wherein each corresponding contact structure is in physical contact with only one gate structure, wherein each corresponding contact structure is positioned to overlap at least one edge of the gate structure contacted by the corresponding contact structure,

wherein each transistor within the region is formed in part by a corresponding **diffusion region**, wherein each diffusion region that forms part of any transistor within the region has a substantially rectangular shape,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a

portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch,

wherein both a gate electrode of a transistor of a first transistor type and a gate electrode of a transistor of a second transistor type are formed by a same gate structure within the region.

The '335 patent has 30 claims. As of the date of this order, claims 1, 2, 5, 6, 9, 11, 15, 20, 24, 29, and 30 are asserted in this investigation, either as infringed or under the domestic industry technical prong.[4] The asserted claims read as follows (with the first instance of the agreed-upon terms in italics and the first instance of the disputed terms highlighted in bold):

1. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures formed in part based on corresponding gate structure layout shapes used as an input to a *lithography process*, the gate structure layout shapes positioned in accordance with a **gate horizontal grid**, the gate horizontal grid including at least seven **gate gridlines**, each gate structure layout shape having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, each gate gridline having at least one gate structure layout shape positioned thereon, wherein adjacently positioned ones of the gate structures are separated from each other by a **gate pitch**

[4] Claims 7, 10, 22, and 23 are not listed as asserted in the Notice of Investigation, 84 Fed. Reg. 9559, but they are implicated by dependent claims 9, 11, and 24, which are asserted.

of less than or equal to about 193 nanometers, each of the gate structures having a width of less than or equal to about 45 nanometers, wherein each pair of the gate structures that are positioned in and end-to-end manner are separated from each other by a line end-to-line end gap of less than or equal to about 193 nanometers;

a first-metal layer formed above top surfaces of the gate structures within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate structures, the first-metal layer separated from the top surfaces of the gate structures by at least one insulator material, adjacent metal layers in the stack of metal layers separated by at least one insulator material, wherein the first-metal layer includes first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process, the first-metal structure layout shapes positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, each first-metal structure layout shape having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline, each of the first-metal structures having at least one adjacent first-metal structure positioned next to each of its sides at a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of the first-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers;

at least six **contact structures** formed within the region of the semiconductor chip, the at least six contact structures formed in part utilizing corresponding at least six contact structure layout shapes as an input to a lithography process, the at least

six contact structures formed in physical and electrical contact with corresponding ones of at least six of the gate structures, each of the at least six contact structure layout shapes having a substantially rectangular shape and a corresponding length greater than a corresponding width and with the corresponding length oriented in the x-direction, each of the at least six contact structure layout shapes positioned and sized to form its corresponding contact structure to overlap both edges of the top surface of the gate structure to which it is in physical and electrical contact,

wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region, wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit.

2. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to *a lithography process*, the second-metal structure layout shapes positioned in accordance with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, each second-metal structure layout shape in the region having a substantially rectangular shape

and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, wherein each of the second-metal structures has at least one adjacent second-metal structure positioned next to each of its sides at an x-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of the second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the **gate structures**.

5. The semiconductor chip as recited in claim 2, wherein the at least six **contact structure** layout shapes are positioned in accordance with a **contact vertical grid**, the contact vertical grid including **contact gridlines** extending in the x-direction, each of the at least six contact structure layout shapes positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six contact structure layout shapes positioned to also extend lengthwise in the x-direction in a substantially centered manner along an associated first-metal gridline.

6. The semiconductor chip as recited in claim 2, wherein each second-metal structure layout shape in the region is positioned next to at least one other second-metal structure layout shape on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure layout shape on a second side in accordance with the second-metal pitch, wherein the second-metal pitch is measured in the x-direction and is equal to the **gate pitch**.

7. The semiconductor chip as recited in claim 6, wherein each second-metal structure layout shape in the region has a substantially equal width as measured in the x-direction.

9. The semiconductor chip as recited in claim 7, wherein the region has a size of 1930 nanometers as measured in the x-direction and a size of 1930 nanometers as measured in the y-direction.

10. The semiconductor chip as recited in claim 7, wherein the region includes a third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to *a lithography process*, the third-metal structure layout shapes positioned in accordance with a **third-metal vertical grid**, the third-metal vertical grid including at least eight **third-metal gridlines**, each third-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, wherein each third-metal structure in the region has at least one adjacent third-metal structure positioned next to each of its sides at a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of the third-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the third-metal layer is positioned third in the stack of metal layers counting upward from the top surfaces of the **gate structures**.

11. The semiconductor chip as recited in claim 10, wherein each second-metal structure layout shape in the region is positioned next to at least one other second-metal structure layout shape on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure layout shape on a second side in accordance with the second-metal pitch, wherein the second-metal pitch is measured in the x-direction and is equal to the **gate pitch**.

15. The semiconductor chip as recited in claim 1, wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein each diffusion region that forms part of at least one transistor within the region of the semiconductor chip has a substantially rectangular shape.

20. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to *a lithography process*, the second-metal structure layout shapes positioned in accordance with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, each second-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, wherein each second-metal structure in the region has at least one adjacent second-metal structure positioned next to each of its sides at an x-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of the second-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the second-metal layer is positioned second in the stack of metal layers counting upward from the top surfaces of the **gate structures**,

wherein the region includes a third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to a lithography process, the third-metal structure layout shapes positioned in accordance with a third-metal vertical grid, the third-metal vertical grid including at least eight third-metal gridlines, each third-metal structure layout shape

in the third-metal layer having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, wherein each third-metal structure in the region has at least one adjacent third-metal structure positioned next to each of its sides at a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of the third-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap, wherein the third-metal layer is positioned third in the stack of metal layers counting upward from the top surfaces of the gate structures.

22. The semiconductor chip as recited in claim 20, wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a **gate structure** that forms a **gate electrode** of the first transistor of the first transistor type and a gate structure that forms a gate electrode of the first transistor of the second transistor type are formed to extend lengthwise along a same line, wherein no other transistor is positioned on the same line between the gate structures that form the gate electrodes of the first transistor of the first transistor type and the first transistor of the second transistor type,

wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein a diffusion region of the first transistor of the first transistor type is electrically connected to a diffusion region of the first transistor of the second transistor type,

wherein the at least six **contact structures** include a contact structure substantially centered in the x-direction on the same line at a location between the diffusion regions of the first transistor of the first transistor type and the first transistor of the second transistor type.

23. The semiconductor chip as recited in claim 22, wherein an electrical connection between the **diffusion region** of the first transistor of the first transistor type and the diffusion region of the first transistor of the second transistor type includes at least one first-metal structure and at least one second-metal structure.

24. The semiconductor chip as recited in claim 23, wherein the **gate electrode** of the first transistor of the first transistor type is electrically connected to the gate electrode of the first transistor of the second transistor type.

29. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures formed in part based on corresponding gate structure layout shapes used as an input to *a lithography process*, the gate structure layout shapes positioned in accordance with a **gate horizontal grid** that includes at least seven **gate gridlines**, each gate structure layout shape having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, each gate gridline having at least one gate structure layout shape positioned thereon, wherein adjacently positioned ones of the gate structures are separated from each other by a **gate pitch** of less than or equal to about 193 nanometers, each of the gate structures having a width of less than or equal to about 45 nanometers, wherein each pair of the gate structures that are positioned in an end-to-end manner are separated from each other by a line end-to-line end gap of less than or equal to about 193 nanometers, wherein at least one gate structure within

the region is a first-transistor-type-only gate structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region,

wherein each gate structure that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding **contact structure** formed in part based on a corresponding contact structure layout shape having a substantially rectangular shape, wherein each contact structure that contacts a given gate structure that forms any transistor gate electrode does not contact another gate structure, wherein each contact structure layout shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in an x-direction, wherein each contact structure that contacts a corresponding gate structure has its corresponding contact structure layout shape positioned to overlap at least one edge of the gate structure layout shape of the corresponding gate structure,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-

only gate structure within the region is included within the portion of the multiplexer or the portion of the latch.

30. A semiconductor chip, comprising:

**gate structures** formed within a region of the semiconductor chip, the gate structures formed in part based on corresponding gate structure layout shapes used as an input to *a lithography process*, the gate structure layout shapes positioned in accordance with a **gate horizontal grid** that includes a number of **gate gridlines**, each gate structure layout shape having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, each gate gridline having at least one gate structure layout shape positioned thereon, wherein adjacently positioned ones of the gate structures are separated from each other by a **gate pitch** of less than or equal to about 193 nanometers, each of the gate structures having a width of less than or equal to about 45 nanometers, wherein each pair of the gate structures that are positioned in an end-to-end manner are separated from each other by a line end-to-line end gap of less than or equal to about 193 nanometers, wherein at least one gate structure within the region is a first-transistor-type-only gate structure that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate structure within the region is a second-transistor-type-only gate structure that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type, wherein a total number of first-transistor-type-only gate structures within the region is equal to a total number of second-transistor-type-only gate structures within the region,

wherein each of at least six gate structures within the region has a respective top surface in physical and electrical contact with a corresponding at least six **contact structures** that are formed in part based on corresponding contact structure layout shapes having a substantially rectangular shape, wherein each of the at least six contact structures is in physical contact with only one corresponding gate structure, wherein each contact structure layout shape of the at least six contact structures is centered in an x-direction on the gate structure layout shape of the gate structure with which it physical contacts, wherein each contact structure layout shape of the at least six contact structures has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in an x-direction, wherein each contact structure of the at least six contact structures has its contact structure layout shape positioned to overlap at least one edge of the gate structure layout shape of the gate structure that is contacted by the contact structure,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least one first-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch, wherein at least one second-transistor-type-only gate structure within the region is included within the portion of the multiplexer or the portion of the latch.

The '523 patent has 28 claims. As of the date of this order, claims 1-12, 14-20, 22-24, and 26-28 are asserted in this investigation, either as infringed or under the domestic industry technical

prong.[5] The asserted claims read as follows (with the first instance of the agreed-upon terms in italics and the first instance of the disputed terms highlighted in bold):

1. A semiconductor chip, comprising:

**gate electrode features** formed within a region of the semiconductor chip, the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to *a lithography process*, the gate electrode feature layout shapes positioned in accordance with a **gate horizontal grid** that includes at least seven **gate gridlines**, wherein all gate gridlines extend in a y-direction, wherein adjacent gate gridlines are separated from each other by a **gate pitch**, each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

at least six gate **contact structures** formed within the region of the semiconductor chip, the at least six gate contact structures formed in part utilizing

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[5] Claim 25 is not listed as asserted in the Notice of Investigation, 84 Fed. Reg. 9559, but it is implicated by dependent claim 26, which is asserted.

corresponding at least six gate contact structure layout shapes as an input to a lithography process, wherein at least six gate electrode features within the region have a respective top surface in physical and electrical contact with a corresponding one of the at least six gate contact structures, each of the at least six gate contact structure layout shapes having a substantially rectangular shape with a corresponding length greater than a corresponding width and with the corresponding length oriented in an x-direction, each of the at least six gate contact structure layout shapes positioned and sized to overlap both edges of the gate electrode feature layout shape corresponding to the gate electrode feature to which it is in physical and electrical contact; and

a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material, wherein the first-metal layer includes first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process, wherein the first-metal structure layout shapes are positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, wherein all first-metal gridlines extend in the x-direction, wherein at least eight of the at least eight first-metal gridlines have at least one first-metal structure layout shape positioned thereon, each first-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner on an associated first-metal gridline,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form part of a logic circuit, wherein electrical connections within the logic circuit collectively include at least five first-metal structures corresponding to at least five first-metal structure layout shapes respectively positioned on at least five different first-metal gridlines,

wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein some diffusion regions within the region of the semiconductor chip are physically and electrically contacted by at least one diffusion contact structure, the at least one diffusion contact structure formed in part utilizing corresponding at least one diffusion contact structure layout shape as an input to a lithography process, each diffusion contact structure layout shape within the region positioned in a substantially centered manner along an associated diffusion contact gridline of a diffusion contact grid, the diffusion contact grid having a diffusion contact gridline-to-diffusion contact gridline spacing measured in the x-direction equal to the gate pitch.

2. The semiconductor chip as recited in claim 1, further comprising:

a second-metal layer formed above the first-metal layer within the region of the semiconductor chip, the second-metal layer positioned second in the stack of metal layers counting upward from top surfaces of the **gate electrode features**, the second-metal layer separated from the first-metal layer by at least one insulator material, the second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to *a lithography process*, the second-metal layer layout shapes positioned in accordance

with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, wherein all second-metal gridlines extend in the y-direction, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, each second-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline,

wherein some second-metal structures within the region are electrically connected to at least one first-metal structure within the region through at least one first-metal-to-second-metal via structure, each first-metal-to-second-metal via structure within the region formed in part based on corresponding first-metal-to-second-metal via structure layout shape used as an input to a lithography process, each first-metal-to-second-metal via structure layout shape within the region positioned in a substantially centered manner along an associated second-metal gridline.

3. The semiconductor chip as recited in claim 2, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is either a first width or a second width, the second width different than the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal layout shape that has the second width.

4. The semiconductor chip as recited in claim 3, wherein at least one **gate electrode feature** within the region that forms at least one gate electrode of at least one transistor of the first transistor type and does not form a gate electrode of a transistor of the second

transistor type is electrically connected to at least one gate electrode feature within the region that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type through an electrical connection that includes at least one first-metal structure and at least one second-metal structure.

5. The semiconductor chip as recited in claim 2, wherein the at least six **gate contact structure** layout shapes are positioned in accordance with a **contact vertical grid**, the contact vertical grid including **contact gridlines** extending in the x-direction, each of the at least six gate contact structure layout shapes positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated contact gridline, and at least two of the at least six gate contact structure layout shapes positioned to also extend lengthwise in the x-direction in a substantially centered manner along a corresponding first-metal gridline.

6. The semiconductor chip as recited in claim 2, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is one of a plurality of widths, the plurality of widths including a first width and a second width, the first width smaller than the second width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the second width, wherein each first-metal-to-second-metal via structure that contacts a first-metal structure formed in part by a first-metal structure layout shape having the first width is formed at least in part by a first-metal-to-second-metal via structure layout shape that is intersected by a corresponding **first-metal gridline**.

7. The semiconductor chip as recited in claim 6, wherein each first-metal-to-second-metal via structure layout shape is intersected by a corresponding **first-metal gridline**.

8. The semiconductor chip as recited in claim 2, wherein adjacent **second-metal gridlines** are separated from each other by a second-metal pitch, the second-metal pitch equal to the **gate pitch**, the **second-metal horizontal grid** aligned with the diffusion contact grid.

9. The semiconductor chip as recited in claim 8, wherein all second-metal structure layout shapes in the region of the semiconductor chip have a same width as measured in the x-direction.

10. The semiconductor chip as recited in claim 9, further comprising:

a third-metal layer formed above the second-metal layer within the region of the semiconductor chip, the third-metal layer positioned third in the stack of metal layers counting upward from top surfaces of the **gate electrode features**, the third-metal layer separated from the second-metal layer by at least one insulator material, the third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to *a lithography process*, the third-metal layer layout shapes positioned in accordance with a **third-metal vertical grid**, the third-metal vertical grid including at least eight **third-metal gridlines**, wherein all third-metal gridlines extend in the x-direction, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, each third-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline,

wherein some third-metal structures within the region are electrically connected to at least one second-metal structure within the region through at least one second-metal-to-third-metal via structure, each second-metal-to-third-metal via structure within the region formed in part based on corresponding second-metal-to-third-metal via structure layout shape used as an input to a lithography process, wherein at least one second-metal-to-third-metal via structure layout shape within the region is positioned in a substantially centered manner along an associated third-metal gridline.

11. The semiconductor chip as recited in claim 10, wherein each second-metal-to-third-metal via structure layout shape is intersected by a corresponding **second-metal gridline**.

12. The semiconductor chip as recited in claim 10, wherein each second-metal structure layout shape in the region is positioned next to at least one other second-metal structure layout shape on a first side at a second-metal pitch and is positioned next to at least one other second-metal structure layout shape on a second side at the second-metal pitch, wherein the second-metal pitch is measured in the x-direction and is equal to the **gate pitch**.

14. The semiconductor chip as recited in claim 1, wherein at least one of the at least six **gate contact structures** is in physical and electrical contact with, and is substantially centered in the x-direction on, a **gate electrode feature** within the region that forms at least one gate electrode of at least one transistor of the first transistor type and that does not form a gate electrode of a transistor of the second transistor type.

15. The semiconductor chip as recited in claim 1, wherein each of the at least six **gate contact structure** layout shapes is intersected by a corresponding **gate gridline**.

16. The semiconductor chip as recited in claim 1, wherein the first-metal layer includes at least eight first-metal structure layout shapes positioned on four **first-metal layer**

**gridlines** such that a different two of the at least eight first-metal structure layout shapes is positioned on each of the four first-metal layer gridlines, wherein each of the at least eight first-metal structure layout shapes is positioned next to and spaced apart from at least one other first-metal structure layout shape at a first-metal pitch.

17. The semiconductor chip as recited in claim 1, wherein the at least eight of the at least eight **first-metal gridlines** that have at least one first-metal structure layout shape positioned thereon are spaced at a first-metal pitch.

18. The semiconductor chip as recited in claim 1, further comprising:

a second-metal layer formed above the first-metal layer within the region of the semiconductor chip, the second-metal layer positioned second in the stack of metal layers counting upward from top surfaces of the **gate electrode features**, the second-metal layer separated from the first-metal layer by at least one insulator material, the second-metal layer including second-metal structures formed in part based on corresponding second-metal structure layout shapes used as an input to *a lithography process*, the second-metal structure layout shapes positioned in accordance with a **second-metal horizontal grid**, the second-metal horizontal grid including at least eight **second-metal gridlines**, wherein all second-metal gridlines extend in the y-direction, wherein at least eight of the at least eight second-metal gridlines have at least one second-metal structure layout shape positioned thereon, each second-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the y-direction in a substantially centered manner along an associated second-metal gridline; and

a third-metal layer formed above the second-metal layer within the region of the semiconductor chip, the third-metal layer positioned third in the stack of metal

layers counting upward from top surfaces of the gate electrode features, the third-metal layer separated from the second-metal layer by at least one insulator material, the third-metal layer including third-metal structures formed in part based on corresponding third-metal structure layout shapes used as an input to a lithography process, the third-metal structure layout shapes positioned in accordance with a third-metal vertical grid, the third-metal vertical grid including at least eight third-metal gridlines, wherein all third-metal gridlines extend in the x-direction, wherein at least eight of the at least eight third-metal gridlines have at least one third-metal structure layout shape positioned thereon, each third-metal structure layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in the x-direction in a substantially centered manner along an associated third-metal gridline.

19. The semiconductor chip as recited in claim 18, wherein each first-metal structure layout shape in the region has a width measured in the y-direction that is one of a plurality of widths, the plurality of widths including a first width and a second width, the first width smaller than the second width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the first width, the first-metal layer including at least one first-metal structure formed in part by a first-metal structure layout shape that has the second width, wherein each first-metal-to-second-metal via structure that contacts a first-metal structure formed in part by a first-metal structure layout shape having the first width is formed at least in part by a first-metal-to-second-metal via structure layout shape that is intersected by a corresponding **first-metal gridline**.

20. The semiconductor chip as recited in claim 18, wherein some third-metal structures within the region are electrically connected to at least one second-metal structure within the

region through at least one second-metal-to-third-metal via structure, each second-metal-to-third-metal via structure formed at least in part by a second-metal-to-third-metal via structure layout shape that is intersected by a corresponding **second-metal gridline**.

22. The semiconductor chip as recited in claim 18, wherein the at least four transistors of the first transistor type include a first transistor of the first transistor type, wherein the at least four transistors of the second transistor type include a first transistor of the second transistor type, wherein a **gate electrode feature** layout shape used to form a gate electrode feature that forms a gate electrode of the first transistor of the first transistor type and a gate electrode feature layout shape used to form a gate electrode feature that forms a gate electrode of the first transistor of the second transistor type are positioned to extend lengthwise along a same **gate gridline**, wherein no other transistor is positioned on the same gate gridline between the gate electrode feature layout shapes used to form the gate electrode features that form the gate electrodes of the first transistor of the first transistor type and the first transistor of the second transistor type,

wherein each transistor within the region of the semiconductor chip is formed in part by a corresponding **diffusion region**, wherein a diffusion region of the first transistor of the first transistor type is electrically connected to a diffusion region of the first transistor of the second transistor type,

wherein the at least six **gate contact structure** layout shapes include a gate contact structure layout shape substantially centered in the x-direction on the same gate gridline at a location between the diffusion regions of the first transistor of the first transistor type and the first transistor of the second transistor type,

wherein an electrical connection between the diffusion region of the first transistor of the first transistor type and the diffusion region of the first transistor of

the second transistor type includes at least one first-metal structure and at least one second-metal structure,

wherein the at least four transistors of the first transistor type and the at least four transistors of the second transistor type within the region collectively form part of an inverting two-to-one multiplexer.

23. The semiconductor chip as recited in claim 22, wherein adjacent **second-metal gridlines** are separated from each other by a second-metal pitch, the second-metal pitch equal to the **gate pitch**, the **second-metal horizontal grid** aligned with the diffusion contact grid.

24. The semiconductor chip as recited in claim 23, wherein all second-metal structure layout shapes in the region of the semiconductor chip have a same width as measured in the x-direction.

25. The semiconductor chip as recited in claim 1, wherein the at least four transistors of the first transistor type are collectively separated from the at least four transistors of the second transistor type by an inner region that does not include another transistor.

26. The semiconductor chip as recited in claim 25, wherein at least one of the at least six **gate contact structure** layout shapes is positioned over the inner region and forms a gate contact structure that is in physical and electrical contact with, and is substantially centered in the x-direction on, a **gate electrode feature** within the region that forms at least one gate electrode of at least one transistor.

27. A semiconductor chip, comprising:

**gate electrode features** formed within a region of the semiconductor chip, the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to *a lithography process*, the gate electrode

feature layout shapes positioned in accordance with a **gate horizontal grid** that includes at least seven **gate gridlines**, wherein adjacent gate gridlines are separated from each other by a **gate pitch**, each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

a number of **gate contact structures** formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each gate electrode feature that forms any transistor gate electrode within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape, wherein each gate contact structure that contacts a given gate electrode feature that forms any transistor gate electrode does not contact another gate electrode feature, wherein any gate contact structure layout shape that has a corresponding length greater than or equal

to a corresponding width is oriented to have its corresponding length extend in an x-direction; and

a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material, the first-metal layer including first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process,

wherein each transistor within the region is formed in part by a corresponding **diffusion region**, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape,

wherein the region includes at least four transistors of the first transistor type and at least four transistors of the second transistor type that collectively form a portion of a multiplexer or a portion of a latch, wherein at least two first-metal structures form portions of one or more electrical connections within the multiplexer or the latch.

28. A semiconductor chip, comprising:

**gate electrode features** formed within a region of the semiconductor chip, the gate electrode features formed in part based on corresponding gate electrode feature layout shapes used as an input to *a lithography process*, the gate electrode

feature layout shapes positioned in accordance with a **gate horizontal grid** that includes a number of **gate gridlines**, wherein adjacent gate gridlines are separated from each other by a **gate pitch**, each gate electrode feature layout shape in the region having a substantially rectangular shape and positioned to extend lengthwise in a y-direction in a substantially centered manner along an associated gate gridline, wherein each gate gridline has at least one gate electrode feature layout shape positioned thereon, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one **gate electrode** of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type, wherein at least one gate electrode feature layout shape within the region corresponds to a gate electrode feature that forms at least one gate electrode of at least one transistor of the second transistor type and does not form a gate electrode of a transistor of the first transistor type;

a number of **gate contact structures** formed within the region of the semiconductor chip, the gate contact structures formed in part utilizing corresponding gate contact structure layout shapes as an input to a lithography process, wherein each of at least six gate electrode features within the region has a respective top surface in physical and electrical contact with a corresponding gate contact structure formed at least in part from a gate contact structure layout shape having a substantially rectangular shape, wherein each gate contact structure is centered in an x-direction on the gate electrode feature with which it physical contacts, wherein each gate contact structure layout shape that has the substantially rectangular shape has a corresponding length greater than or equal to a corresponding width and is oriented to have its corresponding length extend in the x-direction,

wherein each of the number of gate contact structures is in physical contact with only one of any of the gate electrode features; and

a first-metal layer formed above top surfaces of the gate electrode features within the region of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate electrode features, the first-metal layer separated from the top surfaces of the gate electrode features by at least one insulator material, the first-metal layer including at least two first-metal structures formed in part based on corresponding first-metal structure layout shapes used as an input to a lithography process, the at least two first-metal structures forming portions of one or more electrical connections within the region of the semiconductor chip,

wherein each transistor within the region is formed in part by a corresponding **diffusion region**, each diffusion region formed in part utilizing a corresponding diffusion region layout shape as an input to a lithography process, wherein each diffusion region that forms part of any transistor within the region is formed at least in part by a corresponding diffusion region layout shape that has a substantially rectangular shape.

## V. CLAIM CONSTRUCTION

### A. Construction of the Agreed-Upon Claim Term

Prior to the *Markman* hearing, the Parties reached agreement regarding the construction of one term in the asserted claims:

| Claim Term | Present in Asserted Claims | Agreed Construction |
|---|---|---|
| "a lithography process" | '335 Patent at claims 1, 2, 10, 20, 29, 30 | Plain and ordinary meaning; *i.e.*, "a process by which a pattern is imprinted on a resist |

| | | |
|---|---|---|
| | '523 Patent at claims 1, 2, 10, 18, 27, 28 | or semiconductor wafer using light as a mask" |

(JC, App'x A at 1.)

B. **Construction of the Disputed Claim Terms**

**1. "linear [conductive segment(s) / conductive structure(s)]"**

As shown in the chart below, this term is found in the claim language of the now terminated '966 and '012 patents; however, it is not found in the claim language of the remaining Asserted Patents. In its motion to terminate, Tela contends that this term no longer needs to be construed. (EDIS Doc. ID 688619.) Respondents and the Staff, however, contend that the claim language still needs to be construed because the term applies even to the claims of the remaining Asserted Patents. (EDIS Doc. IDs 689665, 689247; *see* RRMB at 14-15; SMB at 19-22.) The Parties proposed the following constructions:

| Relevant Claims | '966 patent at claims 2, 3, 6, 7, 9-12, 21-23, 25-27, 29-30, 32-33<br><br>'012 patent at claims 2-4, 6-8, 11-16, 18-21, 23-28, 31-35 | |
|---|---|---|
| Tela | Respondents | Staff |
| <u>linear:</u> "a 3D conductive structure having a rectangular shape of a given width defined in a plane parallel to a top surface of the substrate and defined to have a length that extends in one direction"<br><br><u>linear conductive segment / linear conductive structure:</u> No further construction required beyond the construction of "linear." Plain and ordinary meaning. | <u>linear:</u> "having a consistent vertical cross-section shape and extending in a single direction over the substrate"<br><br><u>linear conductive segment(s) / linear conductive structures:</u> no additional construction needed beyond "linear" | "linear-shaped feature(s), in a given layer, that is a 3-D conductive structure characterized as having a consistent vertical cross-section shape and extending straight without bends in a single lengthwise direction over the substrate, and having a 2-D rectangular shape of a given width defined in a plane parallel to a top surface of the substrate" |

(JC, App'x A at 2-4.)

Respondents and the Staff advance five basic arguments for why this term should be read into claims that do not explicitly contain it. First, Respondents and the Staff point out that Tela initially proposed a construction of another claim term ("gate pitch") which seemingly incorporated this term, but later "reneged from its own construction." (RIMB at 23; *see* SMB at 20.) This point would be more persuasive had Tela changed its position after the completion of, or in the midst of, briefing on claim construction. Instead, Tela changed its position before it had to commit to a position, and the argument is essentially beside the point.

Second, the Staff correctly observes that the specification emphasizes the importance of all chip features above the diffusion region possessing "linear" shapes. (SMB at 19 (quoting '523 patent at 10:4-5 ("in each layer other than the diffusion region layer 203, only linear-shaped features are allowed") (emphasis omitted)).) But there is generally no language in the claims corresponding to "linear," so it is improper to import that limitation from the specification. Even a large number of references to the importance of linearity—the Staff counts over 50 such references—are not alone enough to justify limiting the claims as the Staff proposes. (SMB at 19-20.) And even assuming that the patentees acted as their own lexicographers, as the Staff contends, that lexicography at most defines the term "linear," which, again, is not found in the remaining claims in suit. (SMB at 14.)

Third, Respondents argue for the term's general applicability based on the prosecution history of the '523 patent, which includes the following statement: "[t]he gate structures are defined as rectangular-shaped, *i.e.*, linear shaped, features extending in a parallel relationship across the dynamic array in the second reference direction (y)." (RIMB at 22 (quoting RIMB, Ex. 18 at 17 (emphasis omitted)).) This argument has two defects. First, even though the '523 patent shares a specification with the '334 and '335 patents, that the patentee's representation applies to the former patent does not necessarily mean that it also applies to the latter two patents, which both issued

before the '523 patent. Second, the representation appears to be gratuitous; nothing in the prosecution history suggests that it was necessary for allowance, or intended as a disclaimer.

Fourth, Respondents contend that where the remaining claims in suit use the term "rectangular," that term should be read as "linear." (RRMB at 14.) Certainly the term "rectangular" is found throughout the claims of the '334, '335, and '523 patents, and applies to various claimed features. (*E.g.*, '523 patent at 24:61 ("gate electrode feature"), 31:15 ("gate contact structure"), 32:56 ("diffusion region layout shape").) But there is no evidence the patentees acted as their own lexicographers in connection with the term "rectangular," and as explained above, the prosecution history does not mandate any deviation from the term's plain and ordinary meaning. Most importantly, even assuming that the term "linear" is defined by the specification—namely, "having a consistent vertical cross-section shape and extending in a single direction over the substrate"—the plain and ordinary meaning of "rectangular" is unquestionably different and simpler. ('523 patent at 10:7-8.)

Fifth, Respondents argue that in a parallel litigation before the United States District Court for the Northern District of California, the court's tentative claim construction "illustrate[s] that construing 'linear' is required to define the scope" of other claim terms. (EDIS Doc. ID 689665 at 2.) But again, there is generally no language in the claims of the remaining Asserted Patents corresponding to "linear," and in any event the District Court's claim construction is not binding in this investigation.

Accordingly, "linear [conductive segment(s) / conductive structure(s)]" is not an element of any claim of the remaining Asserted Patents, and is therefore not construed.

**2. "gate electrode"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 1, 22, 24, 29, 30<br><br>'335 patent at claims 1, 22, 24, 29, 30<br><br>'523 patent at claims 1, 2, 4, 10, 14, 18-22, 26-28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "portion of linear conductive segment ('966 and '012 Patents) /gate structure ('334 and '335 Patents) / gate electrode feature ('523 Patent) used to control the flow of electrical current between the source and drain regions of a transistor" | "a portion of a conductive shape in the gate layer that extends over and parallel with a diffusion region to form a transistor gate" | "portion of a linear-shaped feature in the gate electrode layer that is used to control the flow of electrical current between the source and drain diffusion regions of a transistor" |

(JC, App'x A at 5-6.)

References to gates, components of gates, and the structure of gates varies between the Asserted Patents. In the '334 and '335 patents, the claims use the term "gate structure" in reference to an element that, in some instances, forms a "gate electrode." (*E.g.*, '334 patent at 30:18-19; '335 patent at 31:4.) In the '523 patent, by contrast, the claims use the term "gate electrode feature," seemingly in reference to the same element, because it "forms at least one gate electrode." (*E.g.*, '523 patent at 24:67-25:1.) The specification uses the terms "gate electrode" and "gate electrode feature," as well as "gate electrode track," but not "gate structure." (*E.g.*, '523 patent at 9:43-45 ("gate electrode features 207 are defined above the diffusion regions 203 to form transistor gates"); 15:9-12 ("the gate electrode tracks extend over the substrate . . . the gate electrodes may extend through the boundaries at the top and bottom of the cells").)

The Parties apparently agree, at least implicitly, that "gate structure" and "gate electrode feature" are synonymous, and this is supported by the intrinsic evidence. (CIMB at 24; RIMB at 21; SMB at 22 & n.11.) Although a gate is made of two parts, a metal and an oxide, and the oxide necessarily is not itself an electrode (because it does not conduct electricity), both the metal part of

the gate alone and the metal/oxide combination could be considered electrodes. (*See* Tutorial at 11-13.) So I find that the terms "gate electrode feature," "gate structure," and "gate electrode track" all refer to the same structure, which for present purposes I call the "gate electrode feature."

So understood, the parties further agree that for a "gate electrode feature" to carry out its principal function, that is, to form a transistor gate, at least a portion of it must extend over a diffusion region and control the current flowing between the source and drain. (CIMB at 28-29; RIMB at 26; SMB at 27.) This is supported by the specification. ('523 patent at 9:43-45 ("gate electrode features 207 are defined above the diffusion regions 203 to form transistor gates).) So a "gate electrode" is simply that portion of a "gate electrode feature" which actually forms a transistor gate; it is redundant to add limitations concerning source, drain, and diffusion region.

Respondents and the Staff urge a construction limiting the "gate electrode" to a particular shape—for Respondents, a conductive shape, and for the Staff, a linear shape. Respondents also argue for a construction limiting the "gate electrode" to a "gate layer" parallel with the diffusion region. And the Staff advances a construction limiting the "gate electrode" to a gate electrode layer.

These requirements are inappropriate because they are not even arguably within the plain and ordinary meaning of a "gate electrode." Although the specification refers to a "gate electrode layer," nothing in the claim language suggests that the "gate electrode" is limited to such a layer. ('523 patent at 14:20.) The term "gate layer" is mentioned nowhere in the intrinsic evidence, and the term is therefore ambiguous. And the term "linear" does not apply to "gate electrode," nor does the claim language suggest that a "gate electrode" must be some other shape.

Accordingly, "gate electrode" is construed as "that portion of a gate electrode feature that forms a transistor gate."

### 3. "gate electrode feature(s) / gate structure(s)"

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 1, 2, 4, 10, 20, 22, 29, 30<br>'335 patent at claims 1, 2, 4, 10, 20, 22, 29, 30<br>'523 patent at claims 1, 2, 4, 10, 14, 18, 22, 26-28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "feature that can form a gate(s) of a transistor(s) defined below the gate contact" | "linear-shaped feature comprising a gate(s) of a transistor(s) or a dummy gate" | "linear-shaped feature that can form a gate(s) of a transistor(s) defined below the gate contact layer" |

(JC, App'x A at 4-5.)

As reflected in the table above, and as stated by Tela, the principal interpretive dispute "appears to be whether the claimed 'gate electrode feature' and 'gate structure' require a 'linear-shaped feature' as interpreted by Respondents and Staff." (CIMB at 24.) As explained above, the term is inapplicable.

Tela and the Staff further contend that the "gate electrode features" and "gate structures" must be below the "gate contact" or "gate contact layer." Tela justifies this limitation in light of claim language requiring it. (*See* CIMB at 25-26 (citing '523 patent at cl. 1; '334 patent at cl.1; '335 patent at cl. 1)) and Figure 2 of the '334, '335, and '523 patents (*see id.* at 26 (citing '334 patent at Fig. 2).) The Staff justifies the limitation by reference to Figure 2 of the specification. (SMB at 23.) I disagree that these details should be part of the construction primarily because, as Tela acknowledges, the presence of electrode contacts positioned above the "gate electrode features" or "gate structures" is already recited in the claims. (*See* CIMB at 25-26.) To place it within the construction of "gate electrode features" or "gate structures" is therefore redundant. Moreover, it is improper to import a limitation from the specification (such as that shown in Figure 2) into the

claims without better support for that importation. *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) ("The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.").

Lastly, the Parties dispute the proper method for capturing the fact that a "gate electrode feature" or "gate structure" does not necessarily have to act as a transistor gate at every, or even any, point along its length. For example, "Respondents' construction recites that the claimed feature comprises a gate or a dummy gate; Tela and Staff appear to attempt to capture the same concept using the language 'can form a gate.'" (RIMB at 21.) The construction of "gate electrode" is helpful here. As noted, a "gate electrode" is "that portion of a gate electrode feature that forms a transistor gate." It follows that a "gate electrode feature" that does not form a transistor gate at any point along its length is a dummy gate, that is, one that is designed to form a gate but does not.

It further follows that a feature or structure that forms a transistor gate over some but not all of its length is a feature that "can form" a transistor gate, and does, as Tela and the Staff contend. Respondents' proposed construction, by using the term of art "comprising," succinctly characterizes this aspect of the element. (RIMB at 24.) Specifically, a feature that "comprises a transistor gate" is a feature that forms a transistor gate over at least some of its length.

However, in light of the withdrawal of the '966 and '012 patents, the definition of a dummy gate is otherwise moot. The '966 and '012 patents include claims covering dummy gates, that is, gate electrode features that do not form a transistor gate any point along their lengths. ('966 patent at 27:66-67; '012 patent at 33:19-20.) The '334, '335, and '523 patents do not, however; every claim of these patents reciting the limitation "gate electrode feature that . . . does not form a gate electrode" is accompanied by the limitation "forms at least one gate electrode" of the other transistor type. For instance, claim 1 of the '523 patent recites: "a gate electrode feature that forms at least

one gate electrode of at least one transistor of a first transistor type and does not form a gate electrode of a transistor of a second transistor type." ('523 patent at 24:67-25:3.) Therefore, every claimed "gate electrode feature" in suit that can form a transistor gate actually does, and the dispute over how to precisely define a "gate electrode feature" that does not form a transistor gate at all need not be resolved.

Accordingly, a "gate electrode feature" or "gate structure" is construed as a "feature comprising a transistor gate."

**4. "diffusion region(s)"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 15, 22, 23, 29, 30<br>'335 patent at claims 15, 22, 23<br>'523 patent at claims 1, 22, 27, 28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor" | "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor" | "selected portion(s) defined in the base substrate located below the gate electrode layer within which impurities are introduced in order to form the source and/or drain of a transistor" |

(JC, App'x A at 10-12.)

As shown in the above table, Tela and the Respondents agree on this term, with the Staff offering a modified construction that adds two requirements: (1) the referenced substrate is the "base" substrate; and (2) such substrate is below the gate electrode layer. The Staff supports adding these details because the specification states that "[d]iffusion regions 203 are defined in the base substrate 201," and "gate electrode features 207 are defined above the diffusion regions 203 to form

transistor gates." ('523 patent at 9:33-45.) But calling the substrate "base" is redundant; there is only one substrate, so it is necessarily the "base substrate." And the term "diffusion region" by itself is not accompanied in the claims by any particular layer requirement, so there is no reason to import such a requirement from the specification into the claims. The remaining proposed construction is otherwise supported by the specification and sufficiently tied to the plain and ordinary meanings of "diffusion" and "region." ('523 patent at 9:35-42 ("diffusion regions 203 represent selected regions of the base substrate 201 within which impurities are introduced" and "diffusion contacts 205 are defined to enable connection between source and drain diffusion regions 203").)

Accordingly, "diffusion region(s)" is construed as "selected portions of the substrate within which impurities have been introduced to form the source or drain of a transistor."

**5. "[gate horizontal / first-metal vertical grid]; [second-metal horizontal] grid; [contact vertical] grid; [third-metal vertical] grid; [diffusion contact] grid"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 1, 2, 5, 10, 20, 22, 29, 30<br>'335 patent at claims 1, 2, 5, 10, 20, 29, 30<br>'523 patent at claims 1, 2, 5-8, 10, 11, 15-20, 22, 23, 27, 28 | |
|---|---|---|
| Tela | Respondents | Staff |
| *grid*: "virtual projected gridlines along which [gate /metal / contact] features are defined" | "projected grid used during fabrication of a given layer along which [gate / metal / contact] linear-shaped features are formed" | "projected grid used during fabrication of a given layer along which [gate / metal / contact] linear-shaped features are formed" |

(JC, App'x A at 12-13.)

As reflected in the table above, one of the Parties' disputes over the term "grid," with its various modifiers, again concerns the requirement of "linear-shaped features." And again, the limitation is inapplicable.

A second dispute is over how the grid must be "projected," although the Parties agree that such a projection is required. The Staff argues that the grid is "an actual projection of a grid," while Tela argues that the grid projection is virtual. (SMB at 37 (emphasis omitted); CIMB at 40; CRMB at 20.) The Staff cites one passage of the specification: "the base grid is projected in a substantially consistent manner with respect to position on each layer of the dynamic array, thus facilitating accurate feature stacking and alignment." (*Id.* at 37-38 (citing '334 patent at 13:9-13).) But in the preceding sentence the specification makes clear that the grid is "not physically defined as part of the dynamic array," and instead "can be considered as a projection on each layer of the dynamic array." ('334 patent at 13:7-9.) It may be true that, just as a "movie projected on a screen is not physically a part of the screen," an actual projection of a grid during fabrication is also not physically part of the dynamic array, but this observation from Respondents sheds no light on whether the specification requires an actual projection. (RRMB at 23.)

More to the point, it is what the claims require that controls here, but the claims do not even require a projection, actual or virtual. And in the '335 and '523 patents, where "grid" is used, the claims typically refer to "layout," and in many instances to "layout shapes used as an input to a lithography process." (*E.g.*, '335 patent at 30:5-6; '523 patent at 24:54-56.) The term "layout" by itself, and especially combined with "input to a lithography process," suggests that if the grid is "projected" if at all, it is not actually projected onto a wafer. (*See* '523 patent at 8:8-9 ("addition of margin in the set of design rules assists with the layout portions").) The claims of the '334 patent are even less specific, because they typically refer to "gate structures positioned in accordance with a . . . grid," with no limitation on how that is achieved. (*E.g.*, '334 patent at 30:4-5.)

In short, the claims (as opposed to the specification) do not require projection of a "grid" and do not require such projection to be either virtual or actual. Nonetheless, because the Parties agree that the "grid" is projected, and this requirement is supported by the specification, it will be incorporated into the term's construction. ('523 patent at 11:18-19 ("the base grid can be considered as a projection on each layer of the dynamic array").)

The third dispute between the Parties pertains to when the grid is used, specifically, whether during design or fabrication; this dispute overlaps with the Parties' dispute over the construction of "gridline(s)." (RIMB at 41 ("[t]he first dispute (formed vs. defined) is addressed below in the context of the 'gridlines' term"); CRMB at 22.) Nothing in the claim language explicitly addresses this issue, but again, in the '335 and '523 patents, where "grid" is used the claims typically refer to "layout," and in many instances to "layout shapes used as an input to a lithography process," where the "layout shapes are positioned in accordance with a . . . grid." (*E.g.*, '335 patent at 30:5-8; '523 patent at 24:54-56.) The various features are then "formed in part based on [the] layout shapes." (*E.g.*, '335 patent at 30:4-5; '523 patent at 24:52-54.) That the claims require positioning the shapes, as opposed to the features, and then forming the features based on the shapes, implies that the "grid" is used during the layout process, that is, before fabrication. This is consistent with the layout stage of integrated circuit manufacturing described by Respondents' expert. (*See* RIMB, Ex. 6 at 6 ("A layout represents the size, shape, and spacing guidelines for a given layer in a transistor"); *see also* Comp. Tutorial at 2 (describing "Layout & Simulation" as occurring before "Fabrication & Verification").) Nothing in the claim language, however, bars the grid from also being used during fabrication or any other stage in the manufacturing process.

In the '334 patent, by contrast, the claims do not include the word "layout" at all. Instead, the various claimed "structures" must be "positioned," either "in accordance with a . . . grid," or "on . . . gridlines," or "along a . . . gridline." (*E.g.*, '334 patent at 30:4-5, 31:4-5, 31:43-48.) As

Respondents point out, the prosecution history is to similar effect. (RIMB at 43-44 (quoting RIMB, Ex. 20 at 24).) In response, Tela argues that formation of a structure is not the same as placement, or positioning of shapes. (CRMB at 21-22.) I disagree. "Positioning" a "structure," as opposed to a shape, is most naturally understood as building or forming a structure in a particular location. Therefore, in the '334 patent the "grid" is used, that is, projected, during fabrication. Nothing in the claim language bars the grid from also being used during layout or any other stage of the manufacturing process, however.

Lastly, the parties do not dispute the meaning of "grid" beyond these three disagreements, so the term will not otherwise be construed.

Accordingly, for the '335 and '523 patents, "grid" is construed as "projected gridlines used at least during the layout stage of integrated circuit manufacturing," and for the '334 patent, "grid" is construed as "projected gridlines used at least during the fabrication stage of integrated circuit manufacturing."

**6. "[gate / metal / contact] gridline(s)"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 1, 2, 5, 10, 20, 22, 29, 30<br>'335 patent at claims 1, 2, 5, 10, 20, 29, 30<br>'523 patent at claims 1, 2, 5-8, 10, 11, 15-20, 22, 23, 27, 28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "virtual projected lines along which [gate/metal/contact] features are defined" | "gridline(s) along which [gate / metal / contact] structures are formed", | "projected lines on a corresponding grid used during fabrication along which [gate / metal / contact] linear-shaped features are formed" |

(JC, App'x A at 13-14.)

All of the Parties' disputes over this term are addressed above, in construing the term "grid." The plain and ordinary meaning of "gridline" is otherwise simply one of the lines making up a "grid."

Accordingly, "gridline" is construed as "one of the lines making up a grid."

**7. "contact structure(s) / gate contact structure(s)"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 1, 5, 22, 29, 30<br>'335 patent at claims 1, 5, 22, 29, 30<br>'523 patent at claims 1, 5, 14, 15, 22, 26-28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "a structure that passes through an insulator to enable connection of the gate electrode feature to the overlying metal conduction lines" | "linear conductive structure(s) in a gate contact layer above and separate from the gate layer and below and separate from interconnect layers" | "linear-shaped feature, separate from a gate electrode feature, that enables connection of the gate electrode feature to the overlying metal conduction lines, where the linear-shaped feature is oversized in the direction perpendicular to the gate electrode feature and is located above the gate electrode layer" |

(JC, App'x A at 7-9.)

As with the other disputed claim terms, to the extent a "contact structure" or "gate contact structure" must be linear, the limitation is inapplicable. In any event, these features are less likely to possess the "linear-shaped" limitation because the claim language defines their shapes.

(*E.g.*, '334 patent at 30:59-64 ("a substantially rectangular shape . . . positioned and sized to overlap both edges" of the associated gate structure); '532 patent at 25:19-24 (same).)

Indeed, the claim language is generally inconsistent with all three proposed constructions. For example, nothing in the claim language requires passage through an insulator, as Tela proposes. The only insulator-related limitation in the claims relevant to these claim terms is that the first-metal layer must be "separated from the top surfaces of the gate electrode features by at least one insulator material." ('523 patent at 25:31-33; *see* '335 patent at 30:27-29.) And the function of a "contact structure" is to connect a gate and the overlying metal conduction lines, as both Tela and the Staff indicate in their proposed constructions, but neither that function nor a structure that would perform that function is recited in the claim language. The Staff's proposed limitation that the "contact structure" be "oversized" is already captured by the "overlap both edges" language, and therefore redundant. ('335 patent at 30:61; '532 patent at 25:23-24.) The limitation proposed by Respondents and the Staff, that the "contact structure" be "in a gate contact layer" or "located above the gate electrode layer" is already captured by the requirement that the "top surface" of the "gate electrode features" be "in physical and electrical contact" with the "contact structures," and is also redundant. ('532 patent at 25:14-18; *see* '335 patent at 30:60-63 (the "contact structure" must "overlap both edges of the top surface").)

Accordingly, because none of the Parties' proposed constructions are supported by the claim language, I decline to construe the term "contact structure" or "gate contact structure" at present.

**8. "gate pitch"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| | |
|---|---|
| Relevant Claims | '334 patent at claims 1, 6, 11, 29, 30<br><br>'335 patent at claims 1, 6, 11, 29, 30 |

| | '523 patent at claims 1, 8, 12, 23, 27, 28 | |
|---|---|---|
| Tela | Respondents | Staff |
| "center-to-center separation distance between adjacent gate features" | "center-to-center separation distance between adjacent linear-shaped gate features" | "center-to-center separation distance between adjacent linear-shaped gate features" |

(JC, App'x A at 15-16.)

The Parties' proposed constructions are identical, except that Respondents and the Staff add the requirement that the "adjacent . . . gate features" be "linear-shaped." As noted, this limitation is inapplicable. The proposed construction is otherwise supported by the specification and sufficiently reflects the term's plain and ordinary meaning. ('523 patent at 8:61 ("pitch" refers to "layout feature spacing"); 17:52 ("pitch (center-to-center spacing)").)

Accordingly, "gate pitch" is construed as "center-to-center separation distance between adjacent gate features."

**9. "each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers"**

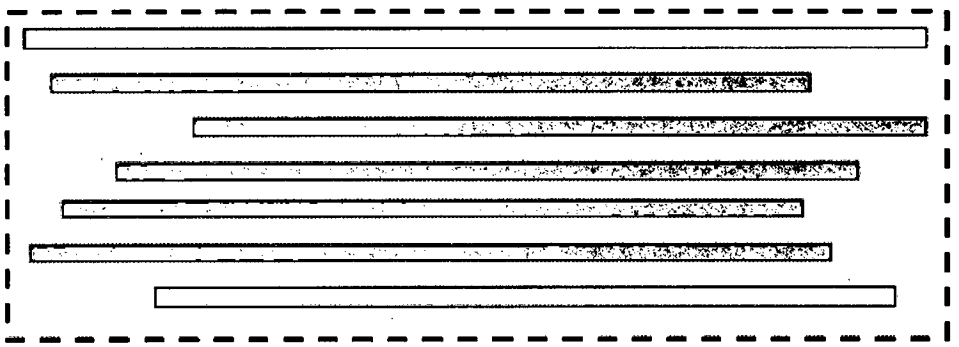
The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claim 1<br>'335 patent at claim 1 | |
|---|---|---|
| Tela | Respondents | Staff |
| Plain and ordinary meaning. | Indefinite. | Indefinite. |

(JC, App'x A at 16-17.)

Unlike the previous terms, here, Respondents and the Staff contend the limitation "each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers" is

indefinite because one of ordinary skill in the art would not be able to ascertain its scope with reasonable certainty. (RIMB at 49 (citing *Nautilus*, 572 U.S. at 910); SIMB at 42-43.) Central to this claim are two premises: (1) that "*all* of the first-metal structures in the region have adjacent first-metal structures on *both* of their sides"; but (2) "there are necessarily two first-metal structures—at the edges of the region—that only have another first-metal structure adjacent to *one* of their sides." (RIMB at 49 (emphasis in original); *see* SMB at 44-45.) Respondents reason, "'each first-metal structure in the region has at least one adjacent first-metal structure positioned next to each of its sides' is thus seemingly impossible to satisfy." (Id. at 49-50; *see* SMB at 44-45.) Respondents use the following demonstrative to show this point, explaining "blue shapes have shapes next to both of their sides; but the yellow highlighted shapes at the edge of the region cannot":



(RIMB at 49-50.)

Respondents' logic actually require a third, unspoken premise—that the "adjacent first-metal structure(s)" recited in the limitation (shown in yellow above) must also be in the "region." Importantly, this premise distinguishes claim 1 of the '335 patent from claim 1 of the '334 patent.

The introduction of the "region" claim term, and "first-metal layer" term, along with the full limitation at issue here reads:

> 1. A semiconductor chip, comprising:
>
> gate structures formed within *a region* of the semiconductor chip

. . . .

> *a first-metal layer formed above top surfaces of the gate structures within the region* of the semiconductor chip, the first-metal layer positioned first in a stack of metal layers counting upward from top surfaces of the gate structures, the first-metal layer separated from the top surfaces of the gate structures by at least one insulator material, adjacent metal layers in the stack of metal layers separated by at least one insulator material, wherein *the first-metal layer includes first-metal structures* positioned in accordance with a first-metal vertical grid, the first-metal vertical grid including at least eight first-metal gridlines, each first-metal structure in the region having a substantially rectangular shape and positioned to extend lengthwise in an x-direction in a substantially centered manner on an associated first-metal gridline, *each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides* in accordance with a y-coordinate spacing of less than or equal to 193 nanometers, wherein each pair of first-metal structures that are positioned in an end-to-end manner are separated by a line end-to-line end gap of less than or equal to about 193 nanometers; and

('334 patent at cl. 1 (emphasis added); *see* '335 patent at cl. 1.) As recited in this excerpt, the term "region" is not itself specified as beginning or ending at any point. It merely denotes some subsection or portion of the overall "semiconductor chip." As additionally recited, there are "gate structures" within this region, but the "first-metal layer" is not recited as existing entirely within the region—all that is stated is that the layer is "formed above the top surfaces" of those gate structures (which happen to exist within the unspecified "region").

Thus, when claim 1 of the '334 patent and claim 1 of the '335 patent later introduce "wherein the first-metal layer includes first-metal structures," there is no reason to understand these first-metal structures as necessarily being within the "region." They are simply part of the "first-metal layer" which itself is so far only defined as existing "above the top surfaces" of the gate electrodes within the region. Therefore, at this point in the claim language, the recited "first metal structures" may be inside or outside the "region." Contrary to the contentions of Respondents and the Staff, there is no further language requiring all "first-metal structures" to be within the "region." Rather,

the claim only recites "*each* first-metal structure in the region." ('334 patent at cl. 1 (emphasis added).) I understand this language to simply mean that at least one first-metal structure must be in the region.

The challenged limitation—"each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides"—actually only exists in claim 1 of the '334 patent. The similar phrasing in claim 1 of the '335 patent importantly leaves out "in the region":

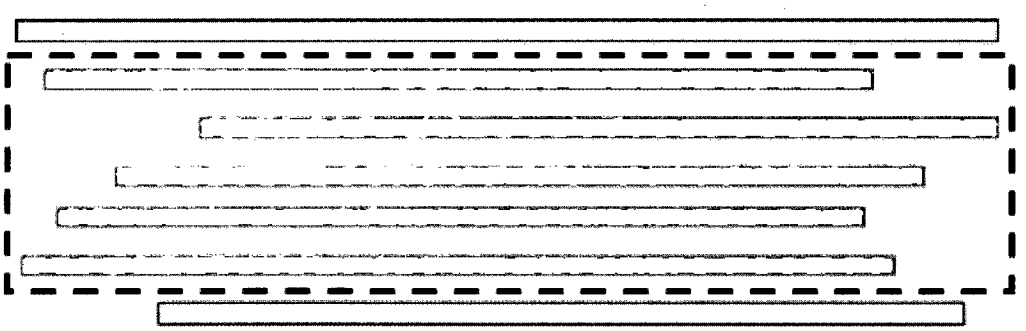
> each first-metal structure *in the region* having at least one adjacent first-metal structure positioned next to each of its sides . . . .

('334 patent at cl. 1);

> each of the first-metal structures having at least one adjacent first-metal structure positioned next to each of its sides . . . .

('335 patent at cl. 1). Thus, these limitations must be evaluated separately.

The most natural reading of "in the region" is that only those first-metal structures "in the region" must have additional first-metal structures on either side. Additional structures may themselves be outside of the region, and need not have adjacent structures next to both sides. This point can be illustrated with a modified version of Respondents' demonstrative, again using blue for first-metal structures in the "region" and yellow for first-metal structures which are not in the "region":



There is nothing incompatible with this reading and the intrinsic evidence, nor with *Apple Inc. v. Samsung Elecs. Co.*, 695 F.3d 1370, 1378 (Fed. Cir. 2012) cited by Respondents and the Staff (*see* RIMB at 49; SMB at 44), as the "each" in "each first-metal structure in the region having at least one adjacent . . ." is fully honored. Respondents and the Staff have pointed to no intrinsic evidence to show otherwise. (*See* RIMB at 49-50; RRMB at 25-26; SMB at 42-47.)

Accordingly, for the limitation as found in claim 1 of the '334 patent, I find "each first-metal structure in the region having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers" is not indefinite. And because there is otherwise no dispute over the limitation, I further find that it possesses its plain and ordinary meaning.

However, the challenged limitation as it appears in the '335 patent does not use the "in the region" modifier. All first-metal structures, regardless of their location as inside or outside the "region," must necessarily have additional first-metal structures on either side. For the exact reasons explained by Respondents and the Staff, I find this requirement cannot possibly be met, that is, the outermost first-metal structures cannot have an additional first-metal structure on both sides.

Tela's argument to the contrary is not persuasive. That argument is rooted in the idea that "the person [of] ordinary skill in the art would understand that this spacing requirement ends at the bounds of the region as illustrated, for example, in Figure 8A." (CIMB at 48-49 (citing CIMB, Ex. 7 at ¶¶ 92-93).) But Tela's cited support is limited to its expert's declaration, which is wholly conclusory on this point:

> 92. [Reciting challenged limitations]
>
> 93. I disagree that a person of ordinary skill in the art would not be able to understand with reasonable certainty, the bounds of these claim elements. It is well understood in the art that any region of an integrated circuit is finite in size, and as such it will have a boundary. A person of ordinary skill in the art, reading the specification would

> understand that the claim elements are directed to placing a metal structures on each metal gridline in the region. As described in the Asserted Patents, placing the features on each metal gridline in the region helps with manufacturability of the features.

(CIMB, Ex. 7 at ¶¶ 92-93.) Certainly "any region . . . will have a boundary," but there is no reason to think a person of ordinary skill would have understood this limitation to be limited in the way Tela contends, because the "in the region" language is omitted from the '335 patent. *In re Skvorec*, 580 F.3d 1262, 1267 (Fed. Cir. 2009) ("The Board erred in holding that some wire legs ... need not have an offset, when the claims state that each wire leg has an offset."); *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379 (Fed. Cir. 2000) ("[W]hat the patentee subjectively intended his claims to mean is largely irrelevant to the claim's objective meaning and scope.").

Accordingly, for the limitation as found in claim 1 of the '335 patent, I find "each first-metal structure having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers" is clearly, convincingly, and necessarily indefinite.

**10. "wherein each second-metal structure in the region is positioned next to at least one other second-metal structure on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure on a second side in accordance with the second-metal pitch"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 6, 11<br>'335 patent at claims 6, 11<br>'523 patent at claim 12 | |
|---|---|---|
| Tela | Respondents | Staff |
| Plain and ordinary meaning. | Indefinite. | Indefinite. |

(JC, App'x A at 17-18.)

The Parties brief the indefiniteness of this term along with, and on the same grounds as, "each first-metal structure [in the region] having at least one adjacent first-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers" discussed above. Unlike those limitations, all three of the '334 patent, '335 patent, and '523 patent are the same in that they all use the "in the region" language to describe which "second-metal structure(s)" must have additional second-metal structures on either side. ('334 patent at cls. 6, 11; '335 patent at cls. 6, 11; '523 patent at cl. 12.)[6]

Despite this "in the region" language, however, I find the limitation indefinite for the same logical reason as claim 1 of the '335 patent. As noted above, each of the '334 patent, '335 patent, and '523 patent introduce the "second-metal layer" which the "second-metal structure(s)" are a part of, as being included "within" the "region":

> 2. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures . . . .

('334 patent at cl. 2);

> 2. The semiconductor chip as recited in claim 1, wherein the region includes a second-metal layer including second-metal structures . . . .

('335 patent at cl. 2);

> 2. The semiconductor chip as recited in claim 1, further comprising: a second-metal layer formed above the first-metal layer within the region of the semiconductor chip . . . .

('523 patent at cl. 2).

Given that the "second-metal layer" is defined as being within the "region," it logically follows that all of the "second-metal structure(s)" are also within the "region." Thus, although these

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[6] The '335 patent and '523 patent's use of "second-metal structure layout shape" ('335 patent at cls. 6, 11; '523 patent at cl. 12) instead of "second-metal structure" as in the '334 patent ('334 patent at cls. 6, 11) does not affect the indefiniteness analysis.

challenged limitations include "in the region," as in claim 1 of the '334 patent, the language is to the same effect as claim 1 of the '335 patent: all "second-metal structure(s)" must be within the "region" and have additional second-metal structures on either side, and those additional second-metal structures must be within the "region" and have additional second-metal structures on either side, ad infinitum. This is, of course, an impossibility.

Accordingly, I find "wherein each second-metal structure in the region is positioned next to at least one other second-metal structure on a first side in accordance with a second-metal pitch and is positioned next to at least one other second-metal structure on a second side in accordance with the second-metal pitch" is clearly, convincingly, and necessarily indefinite.

**11. "each third-metal structure in the region having at least one adjacent third-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers"**

The Parties disagree on the proper claim construction and have proposed the following constructions:

| Relevant Claims | '334 patent at claims 10, 20<br><br>'335 patent at claims 10, 20 | |
|---|---|---|
| Tela | Respondents | Staff |
| Plain and ordinary meaning. | Indefinite. | Indefinite. |

(JC, App'x A at 18-19.)

The Parties brief the indefiniteness of this term along with, and on the same grounds as, the previous two limitations.[7] As with the limitation concerning "second-metal structure(s)" within a "second-metal layer," the '334 and '335 patents introduce "third-metal structure(s)" as within a "third-metal layer" which is itself introduced as included "within" the "region":

[7] The '335 patent's use of "third-metal structure layout shape" ('335 patent at cls. 10, 20) instead of "third-metal structure" as in the '334 patent ('334 patent at cls. 10, 20) does not affect the indefiniteness analysis.

> 10. The semiconductor chip as recited in claim 7, wherein the region includes a third-metal layer including third-metal structures . . . .

('334 patent at cl. 10);

> 20. The semiconductor chip as recited in claim 1 . . . . wherein the region includes a third-metal layer including third-metal structures . . . .

('334 patent at cl. 20);

> 10. The semiconductor chip as recited in claim 7, wherein the region includes a third-metal layer including third-metal structures . . . .

('335 patent at cl. 10);

> 20. The semiconductor chip as recited in claim 1 . . . . wherein the region includes a third-metal layer including third-metal structures . . . .

('335 patent at cl. 20).

Like the "second-metal structure(s)" limitation, the '334 patent and '335 patent each use the "in the region" language to describe which "third-metal structure(s)" must have additional second-metal structures on either side. ('334 patent at cls. 10, 20; '335 patent at cls. 10, 20.) Despite this "in the region" language, the limitation is indefinite for the same reasons as above: given that the "third-metal layer" is defined as being within the "region," it follows that all of the "third-metal structure(s)" are also within the "region." Thus, the same impossible effect is required—all "third-metal structure(s)" must have additional third-metal structures on either side and within the "region."

Accordingly, I find "each third-metal structure in the region having at least one adjacent third-metal structure positioned next to each of its sides in accordance with a y-coordinate spacing of less than or equal to 193 nanometers" is clearly, convincingly, and necessarily indefinite.

**SO ORDERED.**

Cameron Elliot
Administrative Law Judge

**CERTAIN INTEGRATED CIRCUITS AND PRODUCTS CONTAINING THE SAME**

**INV. NO. 337-TA-1148**

## PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **Order No. 34** has been served by hand upon the Commission Investigative Attorney John Shin, Esq., and the following parties as indicated, on OCT 0 2 2019.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street SW, Room 112A
Washington, DC 20436

| **FOR COMPLAINANT TELA INNOVATIONS, INC.** | |
|---|---|
| William Belanger, Esq.<br>**PEPPER HAMILTON, LLP**<br>**Hamilton Square**<br>19th Floor, High Street Tower<br>Boston, MA 02110 | ( ) Via Hand Delivery<br>(✓) Express Delivery<br>( ) Via First Class Mail<br>( ) Other: _____ |
| **FOR RESPONDENT ACER, INC., ACER AMERICA CORPORATION, ASUSTEK COMPUTER INC., ASUS COMPUTER INTERNATIONAL, INTEL CORPORATION, LENOVO GROUP LTD., LENOVO (UNITED STATES) INC., MICRO-STAR INTERNATIONAL CO., LTD. & MSI COMPUTER CORP.** | |
| Todd M. Friedman, P.C.<br>**KIRKLAND & ELLIS LLP**<br>601 Lexington Avenue<br>New York, NY 10022 | ( ) Via Hand Delivery<br>(✓) Express Delivery<br>( ) Via First Class Mail<br>( ) Other: _____ |