ADVANCED MICRO DEVICES INC
Form 10-K
February 08, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)
ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.
For the fiscal year ended December 29, 2018
OR
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.
For the transition period from to
Commission File Number 001-07882

ADVANCED MICRO DEVICES, INC.
(Exact name of registrant as specified in its charter)

Delaware	94-1692300
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
2485 Augustine Drive, Santa Clara, California	95054
(Address of principal executive offices)	(Zip Code)

(408) 749-4000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

(Title of each class)	(Name of each exchange on which registered)
Common Stock $0.01 par value per share	The NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ¨ No ý
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ý No ¨
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files): Yes ý No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ý

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definition of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act (check one):

Large accelerated filer ý Accelerated filer ¨

Non-accelerated filer ¨ Smaller reporting company ¨

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ¨

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Exchange Act). Yes ¨ No ý

As of June 30, 2018, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $14.5 billion based on the reported closing sale price of $14.99 per share as reported on The NASDAQ Global Select Market (NASDAQ) on June 29, 2018, which was the last business day of the registrant's most recently completed second fiscal quarter.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date: 1,005,298,882 shares of common stock, $0.01 par value per share, as of February 1, 2019.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's proxy statement for the 2019 Annual Meeting of Stockholders (2019 Proxy Statement) are incorporated into Part III hereof. The 2019 Proxy Statement will be filed with the U.S. Securities and Exchange Commission within 120 days after the registrant's fiscal year ended December 29, 2018.

Advanced Micro Devices, Inc.
FORM 10-K
For The Fiscal Year Ended December 29, 2018
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PART I

ITEM 1. BUSINESS

Cautionary Statement Regarding Forward-Looking Statements

The statements in this report include forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements are based on current expectations and beliefs and involve numerous risks and uncertainties that could cause actual results to differ materially from expectations. These forward-looking statements speak only as of the date hereof or as of the dates indicated in the statements and should not be relied upon as predictions of future events, as we cannot assure you that the events or circumstances reflected in these statements will be achieved or will occur. You can identify forward-looking statements by the use of forward-looking terminology including "believes," "expects," "may," "will," "should," "seeks," "intends," "plans," "pro forma "estimates," "anticipates," or the negative of these words and phrases, other variations of these words and phrases or comparable terminology. The forward-looking statements relate to, among other things: possible impact of future accounting rules on AMD's consolidated financial statements; demand for AMD's products; the growth, change and competitive landscape of the markets in which AMD participates; the nature and extent of AMD's future payments to GLOBALFOUNDRIES Inc. (GF) and the materiality of these payments; the materiality of AMD's future purchases from GF; AMD's ability to meet its wafer purchase target; the expected amounts to be received by AMD under the IP licensing agreement and AMD's expected royalty payments from future product sales of China JVs' products to be developed on the basis of such licensed IP; sales patterns of AMD's PC products and semi-custom System-on-Chip (SoC) products for game consoles; the level of international sales as compared to total sales; international sales will continue to be a significant portion of total sales in the foreseeable future; that other unrecognized tax benefits will not materially change in the next 12 months; that AMD's cash and cash equivalents balances together with the availability under that certain secured revolving line of credit (Secured Revolving Line of Credit) made available to AMD and certain of its subsidiaries under the Amended and Restated Loan Agreement, will be sufficient to fund AMD's operations including capital expenditures over the next 12 months; AMD's ability to obtain sufficient external financing on favorable terms, or at all; AMD's expectation that based on the information presently known to management, the potential liability related to AMD's current litigation will not have a material adverse effect on its financial condition, cash flows or results of operations; any amounts in addition to what has been already accrued by AMD for future remediation costs under clean-up orders will not be material; we expect to file future patent applications in both the United States and abroad on significant inventions, as we deem appropriate; anticipated increase in costs related to enhancing, implementing and monitoring information security controls, remediating any data security breaches and addressing related litigation, mitigating reputational harm and compliance with external regulations related to our IT assets; we expect to receive $448.5 million upon the exercise of a warrant by West Coast Hitech L.P. (WCH) and issue 75 million shares of our common stock to WCH; revenue allocated to remaining performance obligations that are unsatisfied which will be recognized over the next 12 months; and a small number of customers will continue to account for a substantial part of AMD's revenue in the future. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation's dominance of the microprocessor market and its aggressive business practices may limit AMD's ability to compete effectively; AMD has a wafer supply agreement with GF with obligations to purchase all of its microprocessor and APU product requirements, and a certain portion of its GPU product requirements, manufactured at process nodes larger than 7 nanometer (nm) from GF with limited exceptions. If GF is not able to satisfy AMD's manufacturing requirements, AMD's business could be adversely impacted; AMD relies on third parties to manufacture its products, and if they are unable to do so on a timely basis in sufficient quantities and using competitive technologies, AMD's business could be materially adversely affected; failure to achieve expected manufacturing yields for AMD's products could negatively impact its financial results; the success of AMD's business is dependent upon its ability to introduce products on a timely basis with features and performance levels that provide value to its customers while supporting and coinciding with significant industry transitions; if AMD cannot generate sufficient revenue and operating cash flow or obtain external financing, it may face a cash shortfall and be unable to

make all of its planned investments in research and development or other strategic investments; the loss of a significant customer may have a material adverse effect on AMD; AMD's receipt of revenue from its semi-custom SoC products is dependent upon its technology being designed into third-party products and the success of those products; global economic and market uncertainty may adversely impact AMD's business and operating results; AMD's products may be subject to security vulnerabilities that could have a material adverse effect on AMD; IT outages, data loss, data breaches and cyber-attacks could compromise AMD's intellectual property or other sensitive information, be costly to remediate and cause significant damage to its business, reputation and operations; AMD's operating results are subject to quarterly and seasonal sales patterns; AMD may not be able to generate sufficient cash to service its debt obligations or meet its working capital requirements; AMD has a large amount of indebtedness which could adversely affect its financial position and prevent it from implementing its strategy or fulfilling its contractual obligations; the agreements governing AMD's notes and the Secured Revolving Line of Credit impose restrictions on AMD that may adversely affect AMD's ability

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to operate its business; the markets in which AMD's products are sold are highly competitive; AMD's worldwide operations are subject to political, legal and economic risks and natural disasters, which could have a material adverse effect on it; AMD's issuance to West Coast Hitech L.P. (WCH) of warrants to purchase 75 million shares of its common stock, if and when exercised, will dilute the ownership interests of AMD's existing stockholders, and the conversion of the 2.125% Convertible Senior Notes due 2026 (2.125% Notes) may dilute the ownership interest of AMD's existing stockholders, or may otherwise depress the price of its common stock; uncertainties involving the ordering and shipment of AMD's products could materially adversely affect it; the demand for AMD's products depends in part on the market conditions in the industries into which they are sold. Fluctuations in demand for AMD's products or a market decline in any of these industries could have a material adverse effect on its results of operations; AMD's ability to design and introduce new products in a timely manner is dependent upon third-party intellectual property; AMD depends on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components to support its business; if AMD loses Microsoft Corporation's support for its products or other software vendors do not design and develop software to run on AMD's products, its ability to sell its products could be materially adversely affected; AMD's reliance on third-party distributors and add-in-board (AIB) partners subjects it to certain risks; AMD may incur future impairments of goodwill and technology license purchases; AMD's inability to continue to attract and retain qualified personnel may hinder its business; in the event of a change of control, AMD may not be able to repurchase its outstanding debt as required by the applicable indentures and its Secured Revolving Line of Credit, which would result in a default under the indentures and its Secured Revolving Line of Credit; the semiconductor industry is highly cyclical and has experienced severe downturns that have materially adversely affected, and may continue to materially adversely affect its business in the future; acquisitions, divestitures and/or joint ventures could disrupt its business, harm its financial condition and operating results or dilute, or adversely affect the price of, its common stock; AMD's business is dependent upon the proper functioning of its internal business processes and information systems and modification or interruption of such systems may disrupt its business, processes and internal controls; if essential equipment, materials or manufacturing processes are not available to manufacture its products, AMD could be materially adversely affected; if AMD's products are not compatible with some or all industry-standard software and hardware, it could be materially adversely affected; costs related to defective products could have a material adverse effect on AMD; if AMD fails to maintain the efficiency of its supply chain as it responds to changes in customer demand for its products, its business could be materially adversely affected; AMD outsources to third parties certain supply-chain logistics functions, including portions of its product distribution, transportation management and information technology support services; AMD's stock price is subject to volatility; worldwide political conditions may adversely affect demand for AMD's products; unfavorable currency exchange rate fluctuations could adversely affect AMD; AMD's inability to effectively control the sales of its products on the gray market could have a material adverse effect on it; if AMD cannot adequately protect its technology or other intellectual property in the United States and abroad, through patents, copyrights, trade secrets, trademarks and other measures, it may lose a competitive advantage and incur significant expenses; AMD is a party to litigation and may become a party to other claims or litigation that could cause it to incur substantial costs or pay substantial damages or prohibit it from selling its products; AMD's business is subject to potential tax liabilities; and AMD is subject to environmental laws, conflict minerals-related provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act as well as a variety of other laws or regulations that could result in additional costs and liabilities.

For a discussion of the factors that could cause actual results to differ materially from the forward-looking statements, see "Part I, Item 1A-Risk Factors" and the "Financial Condition" section set forth in "Part II, Item 7-Management's Discussion and Analysis of Financial Condition and Results of Operations," or MD&A, and such other risks and uncertainties as set forth below in this report or detailed in our other Securities and Exchange Commission (SEC) reports and filings. We assume no obligation to update forward-looking statements.

General

We are a global semiconductor company primarily offering:

•x86 microprocessors, as standalone devices or as incorporated into an accelerated processing unit (APU), chipsets; discrete and integrated graphics processing units (GPUs), and professional GPUs; and

•server and embedded processors and semi-custom System-on-Chip (SoC) products and technology for game consoles.

We also license portions of our intellectual property portfolio.
For financial information about geographic areas and for segment information with respect to revenues and operating results, refer to the information set forth in Note 15 of our consolidated financial statements.

We use a 52 or 53 week fiscal year ending on the last Saturday in December. The years ended December 29, 2018, December 30, 2017 and December 31, 2016 included 52 weeks, 52 weeks and 53 weeks, respectively. References in this report to 2018, 2017 and 2016 refer to the fiscal year unless explicitly stated otherwise.

Additional Information

Advanced Micro Devices, Inc. (AMD) was incorporated under the laws of Delaware on May 1, 1969 and became a publicly held company in 1972. Our common stock is currently listed on The NASDAQ Global Select Market (NASDAQ) under the symbol “AMD”. Our mailing address and executive offices are located at 2485 Augustine Drive, Santa Clara, California 95054, and our telephone number is (408) 749-4000. The SEC's website, www.sec.gov, contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

References in this Annual Report on Form 10-K to “AMD,” “we,” “us,” “management,” “our” or the “Company” mean Advan Micro Devices, Inc. and our consolidated subsidiaries.

AMD, the AMD Arrow logo, Athlon, EPYC, FirePro, FreeSync, Geode, LiquidVR, Opteron, Radeon, Ryzen, Threadripper, and combinations thereof are trademarks of Advanced Micro Devices, Inc. Microsoft, Windows, Direct X, Xbox 360 and Xbox One are trademarks or registered trademarks of Microsoft Corporation in the United States and other jurisdictions.

PlayStation is a registered trademark of Sony Interactive Entertainment, Inc.. Wii and Wii U are registered trademarks of Nintendo of America, Inc. ARM is a registered trademark of ARM Limited in the EU and other countries. Vulkan and the Vulkan logo are registered trademarks of Khronos Group Inc.

Other names are for informational purposes only and are used to identify companies and products and may be trademarks of their respective owners.

Website Access to Our SEC Filings and Corporate Governance Documents

On the Investor Relations pages of our Website, http://ir.amd.com, we post links to our filings with the SEC, our Principles of Corporate Governance, our Code of Ethics for our executive officers, all other senior finance executives and certain representatives from legal and internal audit, our Worldwide Standards of Business Conduct, which applies to our Board of Directors and all of our employees, and the charters of the Audit and Finance, Compensation and Leadership Resources, Nominating and Corporate Governance and Innovation and Technology committees of our Board of Directors. Our filings with the SEC are posted as soon as reasonably practical after they are electronically filed with, or furnished to, the SEC. You can also obtain copies of these documents by writing to us at: Corporate Secretary, AMD, 7171 Southwest Parkway, M/S B100.T, Austin, Texas 78735, or emailing us at: Corporate.Secretary@amd.com. All of these documents and filings are available free of charge.

If we make substantive amendments to our Code of Ethics or grant any waiver, including any implicit waiver, to our principal executive officer, principal financial officer, principal accounting officer, controller or persons performing similar functions, we intend to disclose the nature of such amendment or waiver on our Website.

The information contained on our Website is not incorporated by reference in, or considered to be a part of, this report.

Our Industry

We are a global semiconductor company. Semiconductors are components used in a variety of electronic products and systems. An integrated circuit (IC) is a semiconductor device that consists of many interconnected transistors on a single chip. Since the invention of the transistor in 1948, improvements in IC process and design technologies have led to the development of smaller, more complex and more reliable ICs at a lower cost-per-function.

The x86 Microprocessor and Chipset Markets

Central Processing Unit (CPU). A microprocessor is an IC that serves as the CPU of a computer. It generally consists of hundreds of millions or billions of transistors that process data in a serial fashion and control other devices in the system, acting as the “brain” of the computer. The performance of a microprocessor is a critical factor impacting the performance of computing and entertainment platforms, such as desktop PCs, notebooks and workstations. The principal elements used to measure CPU performance are work-per-cycle (or how many instructions are executed per cycle), clock speed (representing the rate at which a CPU’s internal logic operates, measured in units of gigahertz, or billions of cycles per second) and power consumption. Other factors impacting microprocessor performance include

the process technology used in its manufacture, the number and type of cores, the ability of the cores to process multi-thread or process multiple

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instructions simultaneously, the bit size of its instruction set (e.g., 32-bit vs 16-bit), memory size and data access speed.

Developments in IC design and manufacturing process technologies have resulted in significant advances in microprocessor performance. Since businesses and consumers require greater performance from their computer systems due to the growth of digital data and increasingly sophisticated software applications, multi-core microprocessors offer enhanced overall system performance and efficiency because computing tasks can be spread across two or more processing cores, each of which can execute a task at full speed. Multi-core microprocessors can simultaneously increase performance of a computer system without greatly increasing the total amount of power consumed and the total amount of heat emitted. Businesses and consumers also require computer systems with improved power management technology, which helps them to reduce the power consumption of their computer systems, enables smaller and more portable form factors, and can lower the total cost of ownership.

Graphics Processing Unit (GPU). A GPU is a programmable logic chip that helps render images, animations and video and is increasingly being used to handle general computing tasks. GPUs are located in plug-in cards, as a discrete processor or in a chip on the motherboard, or in the same chip as the CPU as part of an accelerated processing unit (APU) or System-on-Chip (SoC). GPUs on stand-alone cards or discrete GPUs on the motherboard typically access their own memory, while GPUs in the chipset or CPU chip share main memory with the CPU.

GPUs perform parallel operations on data to render images for a video display and are essential to presenting computer generated images on that display, decoding and rendering animations and displaying video. The more sophisticated the GPU, the higher the resolution and the faster and smoother moving objects can be displayed on video display or in a virtual environment (virtual reality (VR) and augmented reality (AR)).

In addition to graphics processing, GPUs are used to perform parallel operations on multiple sets of data and are increasingly used to perform vector processing for non-graphics applications that require repetitive computations such as supercomputing, deep learning, artificial and machine intelligence, blockchain and various other applications (e.g., cryptocurrency mining, autonomous driving).

Accelerated Processing Unit (APU). Consumers increasingly demand computing devices with improved end-user experience, system performance and energy efficiency. Consumers also continue to demand thinner and lighter mobile devices, with better performance and longer battery life. We believe that a computing architecture that optimizes the use of its components can provide these improvements.

An APU is a processing unit that integrates a CPU and a GPU onto one chip (or one piece of silicon), along with, in some cases, other special-purpose components. This integration enhances system performance by “offloading” selected tasks to the best-suited component (i.e., the CPU or the GPU) to optimize component use, increasing the speed of data flow between the CPU and GPU through shared memory and allowing the GPU to function as both a graphics engine and an application accelerator. Having the CPU and GPU on the same chip also typically improves energy efficiency by, for example, eliminating connections between discrete chips.

System-on-Chip (SoC). An SoC is a type of IC with a CPU, GPU and other components, such as a memory controller and peripheral management, comprising a complete computing system on a single chip. By combining all of these elements as an SoC, system performance and energy efficiency is improved, similar to an APU.

Chipset. A chipset is a generic term referring to a device or a collection of devices that allow the microprocessor to connect to a wider range of peripheral devices in the system (such as storage, optical drives, and Universal Serial Bus (USB) peripherals). Chipsets can perform essential logic functions, and operate in concert with the microprocessor to manage system control and power management functions of all the devices in the system. Chipsets are most often found in larger form factor systems, typically desktop systems or larger notebook platforms, which require the expanded peripheral selection that is enabled by the chipset. Typical notebook platforms and small form factor desktop platforms typically do not utilize a chipset and instead rely on the capabilities of the APU to connect to all the required devices on the platform.

Our x86 Microprocessor and Chipset Products

Our microprocessors are incorporated into computing platforms, which are a collection of technologies that are designed to work together to provide a more complete computing solution and to enable and advance the computing components. We believe that integrated, balanced computing platforms consisting of microprocessors, chipsets (either

as discrete devices or integrated into an SoC) and GPUs (either as discrete GPUs or integrated into an APU or SoC) that work together at the system level bring end users improved system stability, increased performance and enhanced power efficiency. In addition, we believe our customers also benefit from an all-AMD platform (consisting of an APU or CPU, a discrete GPU, and an AMD Fusion Controller Hub chip when needed), as we are able to optimize interoperability, provide our customers a single

point of contact for the key platform components and enable them to bring the platforms to market quickly in a variety of PC and server system form factors.

We currently base our microprocessors and chipsets on the x86 instruction set architecture and the AMD Infinity Fabric, which connects an on-chip memory controller and input/output (I/O) channels directly to one or more microprocessor cores. We typically integrate two or more processor cores onto a single die, and each core has its own dedicated cache, which is memory that is located on the semiconductor die, permitting quick access to frequently used data and instructions. Some of our microprocessors have additional levels of cache such as L2, or second-level cache, and L3, or third-level cache, to enable fast data access and high performance.

We focus on continually improving the energy efficiency of our products through our design principles and innovations in power management technology. To that end, we offer CPUs, GPUs, APUs, SoCs and chipsets with multiple low power states that are designed to utilize lower clock speeds and voltages to reduce processor power consumption during active and idle times. The use of intelligent, dynamic power management is designed to create lower energy use by allowing compute applications to be completed quickly and efficiently, enabling a return to the ultra-low power idle state.

Desktop. In February 2018, we introduced two AMD Ryzen™ desktop processors with built-in Radeon™ Vega graphics models. AMD Ryzen 5 2400G and AMD Ryzen 3 2200G processors combine four of the latest "Zen" CPU cores with advanced Radeon "Vega" architecture on a single chip. In April 2018, we announced the global availability of our second generation Ryzen desktop processors which include four models: Ryzen 7 2700X, Ryzen 7 2700, Ryzen 5 2600X, and Ryzen 5 2600 processors that are optimized for gamers, creators, and hardware enthusiasts. These four models use 12nm process technology to offer high gaming performance and multiprocessing performance. In August 2018, we announced the availability of our second generation AMD Ryzen™ Threadripper™ 2990WX processor with 32 cores and 64 threads and the Ryzen Threadripper 2950X with 16 cores and 32 threads. In September 2018, we launched a reimagined family of AMD Athlon™ desktop processors with Radeon™ Vega graphics: AMD Athlon 200GE, Athlon 220GE, and Athlon 240GE. These desktop processors combine our x86 "Zen" core and "Vega" graphics architectures on an SOC design. They are designed to offer responsive and reliable computing for web-browsing and video streaming. In October 2018, we launched two additional second generation AMD Ryzen Threadripper processor models, the Ryzen 2970WX with 24 cores and 48 threads and the Ryzen Threadripper 2920X with 12 cores and 24 threads. The Ryzen Threadripper WX series focuses on computational power for heavy workloads and the Ryzen Threadripper X series provides enthusiasts, gamers and streamers high performance and a smooth gaming experience.

Notebooks and 2-in-1s. We continue to invest in designing and developing high performing and low power APUs for notebook PC platforms for the consumer market. In 2018, we introduced the Ryzen 7 2700U Mobile processor with Radeon RX Vega 10 Graphics, the Ryzen 5 2500U Mobile Processor with Radeon Vega 8 Graphics, the Ryzen 3 2300U Mobile Processor with Radeon Vega 6 Graphics, and the Ryzen 3 2200U Mobile Processor with Radeon Vega 3 Graphics. In addition to the Ryzen™ Mobile family, we also continue to offer AMD A-Series APUs based on previous generation CPU and graphics architectures, primarily targeting the value and mainstream segments. In January 2019, we announced our mobility line-up encompassing all notebook segments: second generation AMD Ryzen 3000 Series Mobile Processors, powering ultrathin and gaming notebooks; AMD Athlon 300 Series Mobile Processors, powering mainstream notebooks with the "Zen" core; and optimized seventh generation A-Series processors, elevating performance for mainstream Chromebooks.

Chipsets. We offer a full suite of chipset products, the X470, the B450 and the A320 chipset, that are combined with AMD Ryzen processors for the AM4 desktop platform. The X470 chipset is designed for enthusiast desktop platforms while the B450 is targeted for the performance segment and the A320 is focused on affordable mainstream platforms. We also have the X300 and A300 chipsets designed for small form factors. We offer the X399 chipset, which pairs with our Ryzen Threadripper product line for High-End Desktops (HEDT) using the all-new socket TR4 platform. We also continue to offer AMD 9-Series chipsets for the Socket AM3/3+ platforms serving desktop PCs, and AMD A-Series Control Hubs for the Socket FM2/2+ platforms. We also offer AMD 785E, 780E, 780M, 690E, SR5690, SP5100, SB600, SB710, SB850 and M690E chipsets and AMD A-Series Controller Hubs for our embedded products.

Commercial. We offer enterprise-class desktop and notebook PC solutions sold as AMD PRO Mobile and AMD PRO desktop processors with Radeon Vega Graphics for the commercial client market. These solutions are designed to

provide commercial-grade quality, platform longevity and extended image stability, and also include security and manageability features for enterprise customers. In May 2018, we announced the availability of our commercial-grade Ryzen™ PRO mobile processors with Radeon Vega graphics for high performance and energy efficient notebook platforms, including the Ryzen 7 PRO Mobile 2700U with Radeon Vega 10 Graphics, Ryzen 5 PRO Mobile 2500U with Radeon Vega 8 Graphics, and Ryzen 3 PRO Mobile 2300U with Radeon Vega 6 Graphics. In September 2018, we announced the availability of our commercial-grade Athlon™ PRO 200GE desktop processor, along with three 2nd generation Ryzen™ PRO desktop processor

models for commercial, enterprise and the public sector: the Ryzen 7 PRO 2700X, Ryzen 7 PRO 2700, and Ryzen™ 5 PRO 2600 processors.

Graphics Market

The semiconductor graphics market addresses the need for improved visual and data processing in various computing devices. Many consumers value a rich visual experience to enable a more compelling and immersive experience, and, for these consumers, the PC has evolved from a traditional data processing and communications device to an entertainment platform. As a result, visual realism and graphical display capabilities are key product differentiation elements among computing devices. This has led to increasing creation and use of processing-intensive multimedia content for computing devices, including playing games, capturing media content, viewing online videos, editing photos and managing digital content. In turn, these trends have contributed to higher consumer demand for performance graphics solutions and to manufacturers designing computing devices with these capabilities. Industries that utilize computer assisted design (CAD), that develop content for media and entertainment markets and that generate professional visualizations and renderings can benefit greatly from graphics solutions optimized for the professional graphics market.

In addition to traditional graphics markets, there is a large and growing market for graphics compute which is primarily made up of high performance compute and machine learning/deep learning. Traditional high performance compute focuses on scientific research, model simulation, and exploration which is mainly driven by university and government research needs for high precision graphics compute workloads. The second market is the rapidly growing area of machine learning and deep learning workloads. Graphics processors are used both in the training of machine learning models as well as the application of models via inference. The expansion of compute workloads on graphics processors is driving market expansion for traditional graphics silicon.

Another area of the market for graphics compute is blockchain technology, which is a decentralized digital ledger used to securely store, transmit and process sensitive and valuable data. Currently, the most well-known use case of blockchain is cryptocurrency; however, the number of applications and the potential impact of blockchain technology goes much further. Blockchain applications are typically performed using specifically designed application-specific integrated circuits (ASICs) or a general purpose CPU or GPU.

Our Graphics Products

Graphics processing is a fundamental component of almost everything we create and can be found in an APU, CPU, SoC or a combination of a discrete GPU with one of the other foregoing products working in tandem. Our customers generally use our graphics solutions to increase the speed of rendering images, to help improve image resolution and color definition, and increasingly to process massive data sets for cloud and datacenter applications. We develop our graphics products for use in various computing devices and entertainment platforms, including desktop PCs, notebook PCs, 2-in-1s, All-in-Ones (AIOs), professional workstations, and the datacenter. With each of our graphics products, we have available drivers and supporting software packages that enable the effective use of these products under a variety of operating systems and applications.

Our APUs deliver visual processing functionality for value and mainstream PCs by integrating a CPU and a GPU on a single chip, while discrete GPUs (which are also known as dGPUs) offer high performance graphics processing across all platforms. AMD Accelerated Parallel Processing or General Purpose GPU (GPGPU) refers to a set of advanced hardware and software technologies that enable discrete AMD GPUs, working in concert with the CPU, to accelerate computational tasks beyond traditional CPU processing by utilizing the vast number of discrete GPU cores while working with the CPU to process information cooperatively. In addition, computing devices with heterogeneous computing features run computationally-intensive tasks more efficiently, which we believe provides a superior application experience to the end user. Moreover, heterogeneous computing allows for the elevation of the GPU to the same level as the CPU for memory access, queuing and execution.

Discrete Desktop and Notebook Graphics. Our discrete GPUs for desktop and notebook PCs support current generation application program interface (APIs) like DirectX® 12 and Vulkan™, support new displays using Radeon™

FreeSync™ and Radeon™ FreeSync HDR™ technologies, and are designed to support VR in PC platforms. In June 2018, we introduced the Radeon™ RX Vega56 Nano Edition bringing Vega graphics to small form factor PCs. In October 2018, we introduced new AMD Radeon Vega Mobile graphics processors for next generation notebooks powered by the AMD "Vega" architecture for cool and quiet operation. In November 2018, we introduced the Radeon RX 590 graphics card built upon 12 nm process technology. The Radeon RX 590 pairs with the advanced AMD Radeon FreeSync gaming display technology to deliver an exceptional gaming experience. In December 2018, we announced AMD Radeon™ Software Adrenalin 2019 Edition, the next generation of our software suite for AMD Radeon GPUs that provides gamers, creators and enthusiasts with new

immersive features for visual experiences. It provides high performance and enables streaming of PC-based games and video to mobile devices as well as to standalone VR headsets. In January 2019, we introduced the AMD Radeon™ VII, a premium graphics card for gamers, creators and enthusiasts. It is built on 7nm process technology and has 16GB of HBM2 memory and 1 TB/s memory bandwidth.

Professional Graphics. Our AMD Radeon™ Pro and AMD FirePro™ family of professional graphics products include 3D and 2D multi-view graphics cards and GPUs designed for integration in mobile and desktop workstations. AMD Radeon Pro graphics cards are designed for demanding use cases such as Design and Manufacturing for CAD and Media and Entertainment for broadcast and animation pipelines. AMD Radeon Pro supports end users utilizing GPU accelerated visualization for construction, architecture and mechanical design through gaming and visualization engines on high resolution displays or with VR and AR. Software drivers for AMD Radeon Pro cards are designed to deliver high stability and performance across a wide variety of software packages including those requiring certifications for end user use. Our AMD Radeon™ Instinct family of GPU products are specifically designed to address growing demand for datacenter applications, including deep learning training and inference, as well as traditional high performance computing (HPC) workloads such as simulation where the compute capabilities of GPUs provide exceptional flexibility and performance. Combined with our open-source software, Radeon Open Ecosystem (ROCm), we can deliver acceleration platforms to address intensive predictive data analytics challenges while minimizing power and space needs in the datacenter.

We also provide the AMD FirePro™ S-Series GPU products for the server market, which target HPC primarily focused on artificial and machine intelligence, deep neutral networks (DNN), geosciences, biosciences, academic and government workloads, and virtual desktop infrastructure (VDI) use cases primarily focused on workstation-class virtualization, remote desktop and content streaming workloads. In August 2018, we announced the AMD Radeon™ Pro WX 8200 graphics card for high-end workstation graphics performance. Also in August 2018, we announced the Radeon™ Pro V340 graphics card, a high-performance dual-GPU Virtual Desktop Infrastructure (VDI) solution purpose-built to power and accelerate datacenter visualization workloads, including CAD, design, Desktop as a Service (DaaS) and rendering. The AMD Radeon Pro V340 graphics card is a dual-GPU solution based on the advanced AMD "Vega" architecture. In November 2018, we announced AMD Radeon Instinct™ MI60 and MI50 accelerators, 7nm datacenter GPUs, designed to deliver the compute performance required for next-generation deep learning, HPC, cloud computing and rendering applications. The AMD Radeon Instinct MI60 and MI50 accelerators feature flexible mixed-precision capabilities, powered by high-performance compute units that expand the types of workloads these accelerators can address, including a range of HPC and deep learning applications.

Enterprise, Embedded and Semi-Custom

The Enterprise, Embedded and Semi-Custom Markets

Server. A server is a computer system that performs services for connected customer businesses as part of a client-server architecture. Many servers are designed to run an application or applications often for extended periods of time with minimal human intervention. Examples of servers include cloud, web, e-mail and print servers. These servers can run a variety of applications, including business intelligence, enterprise resource planning, customer relationship management and advanced scientific or engineering models to solve advanced computational problems in disciplines ranging from financial modeling to weather forecasting to oil and gas exploration. Servers are also used in cloud computing, which is a computing model where data, applications and services are delivered over the internet or an intranet which can be rapidly provisioned and released with minimal effort. Today's datacenters require new technologies and configuration models to meet the demand driven by the growing amount of data that needs to be stored, accessed and managed. Servers must be efficient, scalable and adaptable to meet the compute characteristics of new and changing workloads.

Embedded. Embedded products address computing needs in PC-adjacent markets, such as industrial control and automation, digital signage, point-of-sale/self-service kiosks, medical imaging and casino gaming machines as well as enterprise-class telecommunications, networking, security, storage systems and thin clients (which are computers that serve as an access device on a network). Typically, AMD embedded products are used in applications that require high to moderate levels of performance, where key features may include mobility, relatively low power, small form factor, and 24x7 operations. High-performance graphics are increasingly important in many embedded systems.

Support for Linux®, Windows® and other operating systems as well as for increasingly sophisticated applications are also critical for some customers. Other requirements may include meeting rigid specifications for industrial temperatures, shock, vibration and reliability. The embedded market has moved from developing proprietary, custom designs to leveraging industry-standard instruction set architectures and processors as a way to help reduce costs and speed time to market.

Semi-Custom. We have leveraged our core IP, including our graphics and processing technologies developed for the gaming, VR, AR and machine intelligence markets, to develop semi-custom solutions for customers who want differentiation in their products. In this market, semiconductor suppliers work alongside system designers and manufacturers to enhance

the performance and overall user experience for semi-custom customers. AMD has used this type of collaborative development approach with many of today's leading game console manufacturers and can also address customer needs in many other markets beyond game consoles. AMD leverages our existing IP to create a variety of products tailored to a specific customer's needs, ranging from complex fully-customized SoCs to more modest adaptations and integrations of existing CPU, APU or GPU products.

Our Enterprise, Embedded and Semi-Custom Products

Server Processors. Our microprocessors for server platforms currently include the AMD EPYC™ Series processors and AMD Opteron™ X and A-Series processors. The AMD EPYC 7000 Series of high performance processors that have up to 32 "Zen" compute cores and are designed to support a full range of integer, floating point, memory bandwidth and I/O benchmarks and workloads. The AMD Opteron X3000 Series APUs are a family of fully integrated CPU, GPU and I/O designed to provide processing and graphics performance for personal and small business needs.

Embedded Processors. Our embedded processors are increasingly driving intelligence into new areas of our lives, like interactive digital signage, casino gaming, and medical imaging devices. These products are designed to support greater connectivity and productivity, and we believe they can be a strong driver for the "internet of things" and "immersive computing" areas in the computing industry. Our products for embedded platforms include AMD Embedded R-Series APU, CPU and SoC, AMD Embedded G-Series SoC platform and AMD Embedded Radeon™ GPUs. In February 2018, we introduced two new product families, the AMD EPYC™ Embedded 3000 processor and AMD Ryzen™ Embedded V1000 processor. The AMD EPYC Embedded 3000 brings the power of "Zen" to a variety of new markets including networking, storage, and edge computing devices. AMD Ryzen Embedded V1000 targets medical imaging, industrial systems, digital gaming and thin clients.

Semi-Custom. Our semi-custom products are tailored, high-performance, customer-specific solutions based on AMD's CPU, GPU and multi-media technologies. We work closely together with our customers to define solutions to precisely match the requirements of the device or application. Historically we have leveraged our core graphics processing technology into the game console market by licensing our graphic technology in game consoles such as the Microsoft® Xbox 360™ and Nintendo Wii and Wii U. We developed the semi-custom SoC products that power the current generation Sony PlayStation® 4 and PlayStation® 4 Pro and Microsoft® Xbox One™ and Xbox One S™ and Xbox One X™ game consoles.

Marketing and Sales

We sell our products through our direct sales force and through independent distributors and sales representatives in both domestic and international markets. Our sales arrangements generally operate on the basis of product forecasts provided by the particular customer, but do not typically include any commitment or requirement for minimum product purchases. We primarily use purchase orders, sales order acknowledgments and contractual agreements as evidence of our sales arrangements. Our agreements typically contain standard terms and conditions covering matters such as payment terms, warranties and indemnities for issues specific to our products.

We generally warrant that our products sold to our customers will conform to our approved specifications and be free from defects in material and workmanship under normal use and conditions for one year. We may also offer one to three year limited warranties based on product type and negotiated warranty terms with certain customers.

We market and sell our latest products under the AMD trademark. Our desktop PC product brands for microprocessors are AMD Ryzen™, AMD Ryzen™ PRO, Threadripper™, AMD A-Series, AMD FX™ , AMD Athlon™, AM Athlon™ PRO, and AMD Pro A-Series processors. Our notebook and 2-in-1s for microprocessors are AMD Ryzen™ processors with Radeon™ Vega GPUs, AMD A-Series, AMD Athlon, AMD Ryzen™ PRO and AMD Pro A-Series processors. Our server brands for microprocessors are AMD EPYC™ and AMD Opteron™ processors. We also sell low-power versions of our AMD Opteron, AMD Athlon , as well as AMD Geode™, AMD Ryzen™, AMD EPYC™, AMD R-Series and G-Series processors as embedded processor solutions. Our product brand for the consumer graphics market is AMD Radeon™ graphics, and AMD Embedded Radeon™ graphics is our product brand for the embedded graphics market. Our product brand for professional graphics products are AMD Radeon™ Pro and AMD FirePro™ graphics as well as Radeon Instinct™ accelerators for servers. We also market and sell our chipsets under AMD trademarks.

We market our products through direct marketing and co-marketing programs. In addition, we have cooperative advertising and marketing programs with customers and third parties, including market development programs, pursuant to which we may provide product information, training, marketing materials and funds. Under our co-marketing development programs, eligible customers can use market development funds as reimbursement for advertisements and marketing programs related to our products and third-party systems integrating our products, subject to meeting defined criteria.

Customers

Our microprocessor customers consist primarily of original equipment manufacturers (OEMs), large direct datacenters, original design manufacturers (ODMs), system integrators and independent distributors in both domestic and international markets. ODMs provide design and/or manufacturing services to branded and unbranded private label resellers, OEMs and system builders. Our graphics product customers include the foregoing as well as add-in-board manufacturers (AIBs). Large direct datacenters consist of cloud service providers.

Customers of our chipset products consist primarily of PC OEMs, often through ODMs or other contract manufacturers, who build the OEM motherboards, as well as desktop and server motherboard manufacturers who incorporate chipsets into their channel motherboards.

We work closely with our customers to define product features, performance and timing of new products so that the products we are developing meet our customers' needs. We also employ application engineers to assist our customers in designing, testing and qualifying system designs that incorporate our products. We believe that our commitment to customer service and design support improves our customers' time-to-market and fosters relationships that encourage customers to use the next generation of our products.

We also work with our customers to create differentiated products that leverage our CPU, GPU and APU technology. Customers of our semi-custom products pay us non-recurring engineering fees for design and development services and a purchase price for the resulting semi-custom products.

Our major customers, Sony Interactive Entertainment LLC and Microsoft Corporation, each accounted for more than 10% of our consolidated net revenue for the year ended December 29, 2018. Sales to Sony Interactive Entertainment LLC and Microsoft Corporation consisted of products from our Enterprise, Embedded and Semi-Custom segment. A loss of any of these customers would have a material adverse effect on our business.

Original Equipment Manufacturers

We focus on three types of OEM customers: multi-nationals, selected regional accounts and some local system integrators, who target commercial and consumer end customers of all sizes. Large multi-nationals and regional accounts are the core of our OEM customers. Our OEM customers include numerous foreign and domestic manufacturers of servers and workstations, desktops, notebooks, PC motherboards and game consoles.

Third-Party Distributors

Our authorized channel distributors resell to sub-distributors and mid-sized and smaller OEMs and ODMs. Typically, distributors handle a wide variety of products, and may include those that compete with our products. Distributors typically maintain an inventory of our products. In most instances, our agreements with distributors protect their inventory of our products against price reductions and provide return rights with respect to any product that we have removed from our price book that is not more than 12 months older than the manufacturing code date. In addition, some agreements with our distributors may contain standard stock rotation provisions permitting limited levels of product returns.

Add-in-Board (AIB) Manufacturers and System Integrators

We offer component-level graphics and chipset products to AIB manufacturers who in turn build and sell board-level products using our technology to system integrators (SIs), retail buyers and sub distributors. Our agreements with AIBs protect their inventory of our products against price reductions. We also sell directly to our SI customers. SIs typically sell from positions of regional or product-based strength in the market. They usually operate on short design cycles and can respond quickly with new technologies. SIs often use discrete graphics solutions as a means to differentiate their products and add value to their customers.

Competition in the Microprocessor and Chipset Market

Intel Corporation has been the market share leader for microprocessors for many years. Intel's market share, margins and significant financial resources enable it to market its products aggressively, to target our customers and our channel partners with special incentives and to influence customers who do business with us. These aggressive activities have in the past resulted in lower unit sales and a lower average selling price for many of our products and adversely affected our margins and profitability.

Intel exerts substantial influence over computer manufacturers and their channels of distribution through various brand and other marketing programs. As a result of Intel's position in the microprocessor market, Intel has been able to

control x86 microprocessor and computer system standards and benchmarks and to dictate the type of products the microprocessor

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market requires of us. Intel also dominates the computer system platform, which includes core logic chipsets, graphics chips, networking devices (wired and wireless), non-volatile storage and other components necessary to assemble a computer system. OEMs that purchase microprocessors for computer systems are highly dependent on Intel, which can make them less innovative on their own and, to a large extent, can become distributors of Intel technology. Additionally, Intel is able to drive de facto standards and specifications for x86 microprocessors that could cause us and other companies to have delayed access to such standards.
As long as Intel remains in this dominant position, we may be materially adversely affected by Intel's:

- business practices, including rebating and allocation strategies and pricing actions which may limit our market share and margins;
- product mix and introduction schedules;
- product bundling, marketing and merchandising strategies;
- exclusivity payments to its current and potential customers, retailers and channel partners that require or result in exclusive product arrangements;
- de facto control over industry standards, and heavy influence on PC manufacturers and other PC industry participants, including motherboard, memory, chipset and basic input/output system (BIOS) suppliers and software companies as well as the graphics interface for Intel platforms; and
- marketing and advertising expenditures in support of positioning the Intel brand over the brand of its OEM customers and retailers.

Intel has substantially greater financial resources than we do and accordingly spends substantially greater amounts on marketing and research and development than we do. We expect Intel to maintain its market position and to continue to invest heavily in marketing, research and development, new manufacturing facilities and other technology companies.
Intel could take actions that place our discrete GPUs at a competitive disadvantage, including giving one or more of our competitors in the graphics market, such as Nvidia Corporation, preferential access to its proprietary graphics interface or other useful information. Also, Intel has announced that it is developing their own high-end discrete GPUs. Intel's position in the microprocessor market and integrated graphics chipset market, its introduction of competitive new products, its existing relationships with top-tier OEMs and its aggressive marketing and pricing strategies could result in lower unit sales and lower average selling prices for our products, which could have a material adverse effect on us.
Other competitors include a variety of companies providing or developing ARM-based designs at relatively low cost and low power processors for the computing market including tablets and thin-client form factors, as well as dense servers, set-top boxes and gaming consoles. ARM Holdings designs and licenses its ARM cores and architecture to third parties, including us, and offers supporting software and services. Our ability to compete with companies who use ARM-based solutions depends on our ability to timely design and bring to market energy-efficient, high-performing products at an attractive price point.
Competition in the Graphics Markets
In the graphics market, our competitors include suppliers of discrete graphics, embedded graphics processors and integrated graphics processor (IGP) chipsets. Intel manufactures and sells embedded graphics processors and IGP chipsets, and is a dominant competitor with respect to this portion of our business. Higher unit shipments of our APUs and Intel's integrated graphics may drive computer manufacturers to reduce the number of systems they build paired with discrete graphics components, particularly for notebooks, because they may offer satisfactory graphics performance for most mainstream PC users, at a lower cost. Intel could take actions that place our discrete GPUs and IGP chipsets at a competitive disadvantage such as giving one or more of our competitors in the graphics market, such as Nvidia Corporation, preferential access to its proprietary graphics interface or other useful information. Also, Intel is developing its own high-end discrete GPUs.
Our principal competitor in the discrete graphics market is Nvidia and they are considered the market share leader. Other competitors include a number of smaller companies, which may have greater flexibility to address specific market needs, but less financial resources to do so, especially as we believe that the growing complexity of graphics

processors and the associated research and development costs represent an increasingly higher barrier to entry in this market.

We are the market share leader in semi-custom game console products, where graphics performance is critical, we compete primarily against Nvidia.

Competition in the Server Markets

In the server market, we compete primarily against Intel.

Research and Development

We focus our research and development activities on improving product performance and enhancing product design. Our main area of focus is on delivering the next generation of CPU and GPU IP, and designing that IP into our SoCs for our next generation of products, with, in each case, improved system performance and performance-per-watt characteristics. For example, we are focusing on improving the battery life of our APU products for notebooks and the performance and power efficiency of our discrete GPUs and our microprocessors for servers. We are also focusing on delivering a range of low-power integrated platforms to serve key markets, including commercial clients, mobile computing and gaming. We believe that these platforms will bring customers increased performance and energy efficiency. We also work with industry leaders on process technology, software and other functional intellectual property and with others in the industry and industry consortia to conduct early stage research and development. We conduct product and system research and development activities for our products in the United States with additional design and development engineering teams located in Australia, China, Canada, India, Singapore and Taiwan, who undertake specific activities at the direction of our U.S. headquarters.

Manufacturing Arrangements and Assembly and Test Facilities

Third-Party Wafer Foundry Facilities

GLOBALFOUNDRIES Inc. On March 2, 2009, we entered into a Wafer Supply Agreement (WSA) with GLOBALFOUNDRIES Inc. (GF). The WSA governs the terms by which we purchase products manufactured by GF, a related party to us. Pursuant to the WSA, we are required to purchase all of our microprocessor and APU product requirements, and a certain portion of our GPU products from GF manufactured at process nodes larger than 7 nanometer (nm), with limited exceptions.

Taiwan Semiconductor Manufacturing Company. We also have foundry arrangements with Taiwan Semiconductor Manufacturing Company (TSMC) for the production of wafers for certain products.

Other Third-Party Manufacturers. We outsource board-level graphics product manufacturing to third-party manufacturers.

Assembly, Test, Mark and Packaging Facilities

Wafers for our products are delivered from third-party foundries to our test, assembly and packaging partners located in the Asia-Pacific region who package and test our final semiconductor products. We are party to two assembly, test, mark and pack (ATMP) joint ventures (collectively, the JVs) with Tongfu Fujitsu Microelectronics Co., Ltd. The majority of our ATMP services are provided by the JVs,

Intellectual Property and Licensing

We rely on contracts and intellectual property rights to protect our products and technologies from unauthorized third-party copying and use. Intellectual property rights include copyrights, patents, patent applications, trademarks, trade secrets and mask work rights. As of December 29, 2018, we had approximately 5,000 patents in the United States and approximately 900 patent applications pending in the United States. In certain cases, we have filed corresponding applications in foreign jurisdictions. Including United States and foreign matters, we have approximately 10,600 patent matters worldwide consisting of approximately 8,000 issued patents and 2,600 patent applications pending. We expect to file future patent applications in both the United States and abroad on significant inventions, as we deem appropriate. We do not believe that any individual patent, or the expiration of any patent, is or would be material to our business.

As is typical in the semiconductor industry, we have numerous cross-licensing and technology exchange agreements with other companies under which we both transfer and receive technology and intellectual property rights. One such agreement is the cross-license agreement that we entered into with Intel on November 11, 2009. Under the cross-license agreement, we granted to Intel and Intel granted to us, non-exclusive, royalty-free licenses to all of each other's patents that were first filed no later than November 11, 2014 and each party can exploit these patents anywhere in the world for making and selling certain semiconductor- and electronic-related products. Under the cross-license agreement, Intel has rights to make semiconductor products for third parties, but the third-party product designs are not licensed as a result of such manufacture. We have rights to perform assembly and testing for third parties but not rights to make semiconductor products for third parties. The term of the cross-license agreement continues until the

expiration of the last to expire of the licensed patents, unless earlier terminated. A party can terminate the cross-license agreement or the rights and licenses of

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the other party if the other party materially breaches the cross-license agreement and does not correct the noticed material breach within 60 days. Upon such termination, the terminated party's license rights terminate but the terminating party's license rights continue, subject to that party's continued compliance with the terms of the cross-license agreement. The cross-license agreement will automatically terminate if a party undergoes a change of control (as defined in the cross license agreement), and both parties' licenses will terminate. Upon the bankruptcy of a party, that party may assume, but may not assign, the cross-license agreement, and in the event that the cross-license agreement cannot be assumed, the cross-license agreement and the licenses granted will terminate.

Backlog

Sales are made primarily pursuant to purchase orders for current delivery or agreements covering purchases over a period of time. Some of these orders or agreements may be revised or canceled without penalty. Generally, in light of current industry practice, we do not believe that such orders or agreements provide meaningful backlog figures or are necessarily indicative of actual sales for any succeeding period. With respect to our semi-custom SoC products, our orders and agreements are more stringent resulting in meaningful backlog for the coming quarter.

Seasonality

Our operating results tend to vary seasonally. Historically, first quarter PC product sales are generally lower than fourth quarter sales and with respect to our semi-custom SoC products for game consoles our sales pattern usually reflects higher sales in the second and third quarters compared to the first and fourth quarters.

Employees

As of December 29, 2018, we had approximately 10,100 employees.

Environmental Regulations

Our operations and properties have in the past been and continue to be subject to various United States and foreign laws and regulations, including those relating to materials used in our products and manufacturing processes, discharge of pollutants into the environment, the treatment, transport, storage and disposal of solid and hazardous wastes and remediation of contamination. These laws and regulations require our suppliers to obtain permits for operations making our products, including the discharge of air pollutants and wastewater. Although our management systems are designed to oversee our suppliers' compliance, we cannot assure you that our suppliers have been or will be at all times in complete compliance with such laws, regulations and permits. If our suppliers violate or fail to comply with any of them, a range of consequences could result, including fines, suspension of production, alteration of manufacturing processes, import/export restrictions, sales limitations, criminal and civil liabilities or other sanctions. We could also be held liable for any and all consequences arising out of exposure to hazardous materials used, stored, released, disposed of by us or located at, under or emanating from our facilities or other environmental or natural resource damage. While we have budgeted for foreseeable associated expenditures, we cannot assure you that future environmental legal requirements will not become more stringent or costly in the future. Therefore, we cannot assure you that our costs of complying with current and future environmental and health and safety laws, and our liabilities arising from past and future releases of, or exposure to, hazardous substances will not have a material adverse effect on us.

Environmental laws are complex, change frequently and have tended to become more stringent over time. For example, the European Union (EU) and China are two among a growing number of jurisdictions that have enacted restrictions on the use of lead and other materials in electronic products. These regulations affect semiconductor devices and packaging. As regulations restricting materials in electronic products continue to increase around the world, there is a risk that the cost, quality and manufacturing yields of products that are subject to these restrictions, may be less favorable compared to products that are not subject to such restrictions, or that the transition to compliant products may not meet customer roadmaps, or produce sudden changes in demand, which may result in excess inventory. A number of jurisdictions including the EU, Australia, California and China are developing or have finalized market entry or public procurement regulations for computers and servers based on ENERGY STAR specifications as well as additional energy consumption limits. There is the potential for certain of our products being excluded from some of these markets which could materially adversely affect us.

Certain environmental laws, including the U.S. Comprehensive, Environmental Response, Compensation and Liability Act of 1980, or the Superfund Act, impose strict or, under certain circumstances, joint and several liability on current and previous owners or operators of real property for the cost of removal or remediation of hazardous substances and impose liability for damages to natural resources. These laws often impose liability even if the owner or operator did not know of, or was not responsible for, the release of such hazardous substances. These environmental laws also assess liability on

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persons who arrange for hazardous substances to be sent to disposal or treatment facilities when such facilities are found to be contaminated. Such persons can be responsible for cleanup costs even if they never owned or operated the contaminated facility.

We are named as a responsible party on Superfund clean-up orders for three sites in Sunnyvale, California that are on the National Priorities List. Since 1981, we have discovered hazardous material releases to the groundwater from former underground tanks and proceeded to investigate and conduct remediation at these three sites. The chemicals released into the groundwater were commonly used in the semiconductor industry in the United States in the wafer fabrication process prior to 1979.

In 1991, we received Final Site Clean-up Requirements Orders from the California Regional Water Quality Control Board relating to the three sites. We have entered into settlement agreements with other responsible parties on two of the orders. During the term of such agreements, other parties have agreed to assume most of the foreseeable costs as well as the primary role in conducting remediation activities under the orders. We remain responsible for additional costs beyond the scope of the agreements as well as all remaining costs in the event that the other parties do not fulfill their obligations under the settlement agreements.

To address anticipated future remediation costs under the orders, we have computed and recorded an estimated environmental liability of approximately $3 million and have not recorded any potential insurance recoveries in determining the estimated costs of the cleanup. Costs could also increase as a result of additional test and remediation obligations imposed by the Environmental Protection Agency or California Regional Water Quality Control Board. The progress of future remediation efforts cannot be predicted with certainty and these costs may change. We believe that the potential liability, if any, in excess of amounts already accrued, will not have a material adverse effect on our financial condition, cash flows or results of operations.

ITEM 1A. RISK FACTORS

The risks and uncertainties described below are not the only ones we face. If any of the following risks actually occurs, our business, financial condition or results of operations could be materially adversely affected. In addition, you should consider the interrelationship and compounding effects of two or more risks occurring simultaneously.

Intel Corporation's dominance of the microprocessor market and its aggressive business practices may limit our ability to compete effectively.

Intel Corporation has been the market share leader for microprocessors for many years. Intel's market share, margins and significant financial resources enable it to market its products aggressively, to target our customers and our channel partners with special incentives and to influence customers who do business with us. These aggressive activities have in the past and are likely in the future to result in lower unit sales and a lower average selling price for many of our products and adversely affect our margins and profitability.

Intel exerts substantial influence over computer manufacturers and their channels of distribution through various brand and other marketing programs. As a result of Intel's position in the microprocessor market, Intel has been able to control x86 microprocessor and computer system standards and benchmarks and to dictate the type of products the microprocessor market requires of us. Intel also dominates the computer system platform, which includes core logic chipsets, graphics chips, networking devices (wired and wireless), non-volatile storage and other components necessary to assemble a computer system. Additionally, Intel is able to drive de facto standards and specifications for x86 microprocessors that could cause us and other companies to have delayed access to such standards.

Intel has substantially greater financial resources than we do and accordingly spends substantially greater amounts on marketing and research and development than we do. We expect Intel to maintain its market position and to continue to invest heavily in marketing, research and development, new manufacturing facilities and other technology companies. To the extent Intel manufactures a significantly larger portion of its microprocessor products using more advanced process technologies, or introduces competitive new products into the market before we do, we may be more vulnerable to Intel's aggressive marketing and pricing strategies for microprocessor products.

As long as Intel remains in this dominant position, we may be materially adversely affected by Intel's:

- business practices, including rebating and allocation strategies and pricing actions, designed to limit our market share and margins;
- product mix and introduction schedules;
- product bundling, marketing and merchandising strategies;
- exclusivity payments to its current and potential customers, retailers and channel partners;
- de facto control over industry standards, and heavy influence on PC manufacturers and other PC industry participants, including motherboard, memory, chipset and basic input/output system (BIOS) suppliers and software companies as well as the graphics interface for Intel platforms; and
- marketing and advertising expenditures in support of positioning the Intel brand over the brand of its original equipment manufacturer OEM customers and retailers.

Intel could also take actions that place our discrete GPUs at a competitive disadvantage, including giving one or more of our competitors in the graphics market, such as Nvidia Corporation, preferential access to its proprietary graphics interface or other useful information. Also, Intel recently announced that it is developing their own high-end discrete GPUs. Intel's position in the microprocessor market and integrated graphics chipset market, its introduction of competitive new products, its existing relationships with top-tier OEMs, and its aggressive marketing and pricing strategies could result in lower unit sales and a lower average selling price for our products, which could have a material adverse effect on us.

We have a wafer supply agreement with GF with obligations to purchase all of our microprocessor and APU product requirements, and a certain portion of our GPU product requirements manufactured at process nodes larger than 7 nanometer from GF, with limited exceptions. If GF is not able to satisfy our manufacturing requirements, our business could be adversely impacted.

The wafer supply agreement (WSA) governs the terms by which we purchase products manufactured by GF. The WSA is in place until 2024. Pursuant to the WSA, we are required to purchase all of our microprocessor and APU product requirements, and a portion of our GPU product requirements from GF manufactured at process nodes larger

than 7 nanometer (nm), with limited exceptions. If GF is unable to achieve anticipated manufacturing yields, manufacture our products on a timely basis at competitive prices or meet our capacity requirements, then we may experience supply shortages for certain products or increased costs and our business could be materially adversely affected.

In January 2019, we entered into the seventh amendment to the WSA with GF (the Seventh Amendment). The Seventh Amendment modifies certain purchase commitments, pricing and other terms of the WSA applicable to wafer purchases at the 12 nm technology node and above by us for the period commencing January 1, 2019 and continuing through March 1, 2024. If we fail to meet the agreed wafer purchase target during a calendar year we will be required to pay to GF a portion of the difference between our actual wafer purchases and the applicable annual purchase target. If our actual wafer requirements are less than the number of wafers required to meet the applicable annual wafer purchase target, we could have excess inventory or higher inventory unit costs, both of which may adversely impact our gross margin and our results of operations.

In addition, GF has relied on Mubadala Technology Investments LLC (Mubadala Tech) for its funding needs. If Mubadala Tech fails to adequately fund GF on a timely basis, or at all, and if GF is not otherwise able to adequately fund its operations, GF’s ability to manufacture products for us could be materially adversely affected.

We rely on third parties to manufacture our products, and if they are unable to do so on a timely basis in sufficient quantities and using competitive technologies, our business could be materially adversely affected.

We rely on third-party wafer foundries to fabricate the silicon wafers for all of our products. We also rely on third-party manufacturers to assemble, test, mark and pack (ATMP) our products. It is important to have reliable relationships with all of these third-party manufacturing suppliers to ensure adequate product supply to respond to customer demand.

We cannot guarantee that these manufacturers or our other third-party manufacturing suppliers will be able to meet our near-term or long-term manufacturing requirements. If we experience supply constraints from our third-party manufacturing suppliers, we may be required to allocate the affected products amongst our customers, which could have a material adverse effect on our relationships with these customers and on our financial condition. In addition, if we are unable to meet customer demand due to fluctuating or late supply from our manufacturing suppliers, it could result in lost sales and have a material adverse effect on our business.

We do not have long-term commitment contracts with some of our third-party manufacturing suppliers. We obtain some of these manufacturing services on a purchase order basis and these manufacturers are not required to provide us with any specified minimum quantity of product beyond the quantities in an existing purchase order. Accordingly, we depend on these suppliers to allocate to us a portion of their manufacturing capacity sufficient to meet our needs, to produce products of acceptable quality and at acceptable manufacturing yields and to deliver those products to us on a timely basis and at acceptable prices. The manufacturers we use also fabricate wafers and ATMP products for other companies, including certain of our competitors. They could choose to prioritize capacity for other customers, increase the prices that they charge us on short notice or reduce or eliminate deliveries to us, which could have a material adverse effect on our business.

Other risks associated with our dependence on third-party manufacturers include limited control over delivery schedules and quality assurance, lack of capacity in periods of excess demand, misappropriation of our intellectual property, dependence on several small undercapitalized subcontractors and limited ability to manage inventory and parts. Moreover, if any of our third-party manufacturers suffer any damage to facilities, lose benefits under material agreements, experience power outages, lack sufficient capacity to manufacture our products, encounter financial difficulties, are unable to secure necessary raw materials from their suppliers or suffer any other disruption or reduction in efficiency, we may encounter supply delays or disruptions. If we are unable to secure sufficient or reliable supplies of products, our ability to meet customer demand may be adversely affected and this could materially affect our business.

If we transition the production of some of our products to new manufacturers, we may experience delayed product introductions, lower yields or poorer performance of our products. If we experience problems with product quality or are unable to secure sufficient capacity from a particular third-party manufacturer, or if we for other reasons cease utilizing one of those suppliers, we may be unable to secure an alternative supply for any specific product in a short time frame. We could experience significant delays in the shipment of our products if we are required to find alternative third-party manufacturers, which could have a material adverse effect on our business.

We are party to two ATMP joint ventures (collectively, the JVs) with Tongfu Fujitsu Microelectronics Co., Ltd. The majority of our ATMP services are provided by the JVs and there is no guarantee that the JVs will be able to fulfill

our long-term ATMP requirements. If we are unable to meet customer demand due to fluctuating or late supply from the JVs, it could result in lost sales and have a material adverse effect on our business.

Failure to achieve expected manufacturing yields for our products could negatively impact our financial results.

Semiconductor manufacturing yields are a result of both product design and process technology, which is typically proprietary to the manufacturer, and low yields can result from design failures, process technology failures or a combination of both. Our third-party foundries, including GF, are responsible for the process technologies used to fabricate silicon wafers. If our third-party foundries experience manufacturing inefficiencies or encounter disruptions, errors or difficulties during production, we may fail to achieve acceptable yields or experience product delivery delays. We cannot be certain that our third-party foundries will be able to develop, obtain or successfully implement leading-edge process technologies needed to manufacture future generations of our products profitably or on a timely basis or that our competitors will not develop new technologies, products

or processes earlier. Moreover, during periods when foundries are implementing new process technologies, their manufacturing facilities may not be fully productive. A substantial delay in the technology transitions to smaller process technologies could have a material adverse effect on us, particularly if our competitors transition to more cost effective technologies before us. For example, we are presently focusing our 7nm product portfolio on Taiwan Semiconductor Co., Ltd.'s (TSMC) 7nm process. If TSMC is not able to manufacture our products on 7nm in sufficient quantities to meet customer demand, it could have a material adverse effect on our business.
Any decrease in manufacturing yields could result in an increase in per unit costs, which would adversely impact our gross margin and/or force us to allocate our reduced product supply amongst our customers, which could harm our relationships and reputation with our customers and materially adversely affect our business.
The success of our business is dependent upon our ability to introduce products on a timely basis with features and performance levels that provide value to our customers while supporting and coinciding with significant industry transitions.
Our success depends to a significant extent on the development, qualification, implementation and acceptance of new product designs and improvements that provide value to our customers. Our ability to develop, qualify and distribute, and have manufactured, new products and related technologies to meet evolving industry requirements, at prices acceptable to our customers and on a timely basis are significant factors in determining our competitiveness in our target markets. As consumers have new product feature preferences or have different requirements than those consumers in the PC market, PC sales could be negatively impacted, which could adversely impact our business. Our product roadmap includes our next generation AMD Ryzen, AMD Radeon and AMD EPYC processors using 7 nm process technology. We cannot assure you that our efforts to execute our product roadmap will result in innovative products and technologies that provide value to our customers. If we fail to or are delayed in developing, qualifying or shipping new products or technologies that provide value to our customers and address these new trends or if we fail to predict which new form factors consumers will adopt and adjust our business accordingly, we may lose competitive positioning, which could cause us to lose market share and require us to discount the selling prices of our products. Although we make substantial investments in research and development, we cannot be certain that we will be able to develop, obtain or successfully implement new products and technologies on a timely basis or that they will be well-received by our customers. Moreover, our investments in new products and technologies involve certain risks and uncertainties and could disrupt our ongoing business. New investments may not generate sufficient revenue, may incur unanticipated liabilities and may divert our limited resources and distract management from our current operations. We cannot be certain that our ongoing investments in new products and technologies will be successful, will meet our expectations and will not adversely affect our reputation, financial condition and operating results. Delays in developing, qualifying or shipping new products can also cause us to miss our customers' product design windows or, in some cases, breach contractual obligations or cause us to pay penalties. If our customers do not include our products in the initial design of their computer systems or products, they will typically not use our products in their systems or products until at least the next design configuration. The process of being qualified for inclusion in a customer's system or product can be lengthy and could cause us to further miss a cycle in the demand of end-users, which also could result in a loss of market share and harm our business. We also depend on the success and timing of our customers' platform launches. If our customers delay their product launches or if our customers do not effectively market their platforms with our products, it could result in a delay in bringing our products to market and cause us to miss a cycle in the demand of end-users, which could materially adversely affect our business. In addition, market demand requires that products incorporate new features and performance standards on an industry-wide basis. Over the life of a specific product, the sale price is typically reduced over time. The introduction of new products and enhancements to existing products is necessary to maintain the overall corporate average selling price. If we are unable to introduce new products with sufficiently high sale prices or to increase unit sales volumes capable of offsetting the reductions in the sale prices of existing products over time, our business could be materially adversely affected.
If we cannot generate sufficient revenue and operating cash flow or obtain external financing, we may face a cash shortfall and be unable to make all of our planned investments in research and development or other strategic investments.

Our ability to fund research and development expenditures depends on generating sufficient revenue and cash flow from operations and the availability of external financing, if necessary. Our research and development expenditures, together with ongoing operating expenses, will be a substantial drain on our cash flow and may decrease our cash balances. If new competitors, technological advances by existing competitors, or other competitive factors require us to invest significantly greater resources than anticipated in our research and development efforts, our operating expenses would increase. If we are required to invest significantly greater resources than anticipated in research and development efforts without an increase in revenue, our operating results could decline.

We regularly assess markets for external financing opportunities, including debt and equity financing. Additional debt or equity financing may not be available when needed or, if available, may not be available on satisfactory terms. The health of the credit markets may adversely impact our ability to obtain financing when needed. Any downgrades from credit rating agencies such as Moody’s or Standard & Poor’s may adversely impact our ability to obtain external financing or the terms of such financing. Credit agency downgrades or concerns regarding our credit worthiness may impact relationships with our suppliers, who may

limit our credit lines. Our inability to obtain needed financing or to generate sufficient cash from operations may require us to abandon projects or curtail planned investments in research and development or other strategic initiatives. If we curtail planned investments in research and development or abandon projects, our products may fail to remain competitive and our business would be materially adversely affected.

The loss of a significant customer may have a material adverse effect on us.

We depend on a small number of customers for a substantial portion of our business and we expect that a small number of customers will continue to account for a significant part of our revenue in the future. If one of our key customers decides to stop buying our products, or if one of these customers materially reduces or reorganizes its operations or its demand for our products, our business would be materially adversely affected.

Our receipt of revenue from our semi-custom SoC products is dependent upon our technology being designed into third-party products and the success of those products.

The revenue that we receive from our semi-custom SoC products is in the form of non-recurring engineering fees charged to third parties for design and development services and revenue received in connection with sales of our semi-custom SoC products to these third parties. As a result, our ability to generate revenue from our semi-custom products depends on our ability to secure customers for our semi-custom design pipeline, our customers' desire to pursue the project, and our semi-custom SoC products being incorporated into those customer's products. Any revenue from sales of our semi-custom SoC products is directly related to sales of the third-party's products and reflective of their success in the market. Moreover, we have no control over the marketing efforts of these third parties, and we cannot make any assurances that sales of their products will be successful in current or future years. Consequently, the semi-custom SoC product revenue expected by us may not be fully realized and our operating results may be adversely affected.

Global economic and market uncertainty may adversely impact our business and operating results.

Uncertain global economic conditions have in the past and may in the future adversely impact our business, including, without limitation, a slowdown in the Chinese economy, one of the largest global markets for desktop and notebook PCs. Uncertainty in the worldwide economic environment may negatively impact consumer confidence and spending causing our customers to postpone purchases. In addition, during challenging economic times, our current or potential future customers may experience cash flow problems and as a result may modify, delay or cancel plans to purchase our products. Additionally, if our customers are not successful in generating sufficient revenue or are unable to secure financing, they may not be able to pay, or may delay payment of, accounts receivable that they owe us. The risk related to our customers' potentially defaulting on or delaying payments to us is increased because we expect that a small number of customers will continue to account for a substantial part of our revenue. Any inability of our current or potential future customers to pay us for our products may adversely affect our earnings and cash flow. Moreover, our key suppliers may reduce their output or become insolvent, thereby adversely impacting our ability to manufacture our products. In addition, uncertain economic conditions may make it more difficult for us to raise funds through borrowings or private or public sales of debt or equity securities.

Our products may be subject to security vulnerabilities that could have a material adverse effect on us.

The products that we sell are complex and may be subject to security vulnerabilities that could result in, among other things, the loss, corruption, theft or misuse of confidential data or system performance issues. Our efforts to prevent and address security vulnerabilities may decrease performance, be only partially effective or not successful at all. We may also depend on third parties, such as customers, vendors and end users, to deploy our mitigations or create their own, and they may delay, decline or modify the implementation of such mitigations. Our relationships with our customers could be adversely affected as some of our customers may stop purchasing our products, reduce or delay future purchases of our products, or use competing products. Any of these actions by our customers could adversely affect our revenue. We also are subject to claims and litigation related to side-channel exploits, such as Spectre, and may face additional claims or litigation for future vulnerabilities. Actual or perceived security vulnerabilities of our products may subject us to adverse publicity, damage to our brand and reputation, and could materially harm our business or financial results.

IT outages, data loss, data breaches and cyber-attacks could compromise our intellectual property or other sensitive information, be costly to remediate or cause significant damage to our business, reputation and operations.

In the ordinary course of our business, we maintain sensitive data on our information technology (IT) assets, and also may maintain sensitive information on our business partners' and third party providers' IT assets, including our intellectual property and proprietary or confidential business information relating to our business and that of our customers and business partners. Maintaining the security of this information is critical to our business and reputation. We believe that companies have been increasingly subject to a wide variety of security incidents, cyber-attacks, hacking and phishing attacks, and other attempts to gain unauthorized access. These threats can come from a variety of sources, all ranging in sophistication from an individual hacker or insider threat to a state-sponsored attack. Cyber threats may be generic, or they may be custom-crafted against our information systems. Cyber-attacks have become increasingly more prevalent and much harder to detect, defend against or prevent.

Our network and storage applications, as well as those of our customers, business partners, and third-party providers, may be subject to unauthorized access by hackers or breached due to operator error, malfeasance or other system disruptions.
It is often difficult to anticipate or immediately detect such incidents and the damage caused by such incidents. These data breaches and any unauthorized access, misuse or disclosure of our information or intellectual property could compromise our intellectual property and expose sensitive business information. Cyber-attacks on us or our customers, business partners or third party providers could also cause us to incur significant remediation costs, result in product development delays, disrupt key business operations and divert attention of management and key information technology resources. These incidents could also subject us to liability, expose us to significant expense and cause significant harm to our reputation and business. In addition, we are currently subject to claims and could be subject to additional claims in the future for damages resulting from loss of data from alleged vulnerabilities in the security of our processors. We also maintain confidential and personally identifiable information about our workers. The integrity and protection of our worker and consumer data is critical to our business and our workers and consumers have a high expectation that we will adequately protect their personal information. We anticipate an increase in costs related to:

- enhancing and implementing information security controls, including costs related to upgrading application, computer, and network security components;
- training workers to maintain and monitor our security controls;
- remediating any data security breach and addressing the related litigation;
- mitigating reputational harm; and
- compliance with external regulations.

We often partner with third-party providers for certain worker services and we may provide certain limited worker information to such third parties based on the scope of the services provided to us. However, if these third parties fail to adopt or adhere to adequate data security practices, or in the event of a breach of their networks, our workers' data may be improperly accessed, used or disclosed. A breach of data privacy is likely to cause significant disruption of our business operations. Failure to adequately maintain and update our security systems could materially adversely affect our operations and our ability to maintain worker confidence. Failure to prevent unauthorized access to electronic and other confidential information, IT outages, data loss and data breaches could materially adversely affect our financial condition, our competitive position and operating results.
Our operating results are subject to quarterly and seasonal sales patterns.
The profile of our sales may be weighted differently during the year. A large portion of our quarterly sales have historically been made in the last month of the quarter. This uneven sales pattern makes prediction of revenue for each financial period difficult and increases the risk of unanticipated variations in quarterly results and financial condition. In addition, our operating results tend to vary seasonally with the markets in which our products are sold. For example, historically, first quarter PC product sales are generally lower than fourth quarter sales and with respect to our semi-custom SoC products for game consoles our sales pattern usually reflects higher sales in the second and third quarters compared to the first and fourth quarters. Many of the factors that create and affect quarterly and seasonal trends are beyond our control.
We may not be able to generate sufficient cash to service our debt obligations or meet our working capital requirements.
Our ability to make payments on and to refinance our debt will depend on our financial and operating performance, which may fluctuate significantly from quarter to quarter, and is subject to prevailing economic, financial and business conditions along with other factors, many of which are beyond our control. We cannot assure you that we will be able to generate cash flow or that we will be able to borrow funds, including under our secured revolving line of credit for a principal amount up to $500 million (our Secured Revolving Line of Credit), in amounts sufficient to enable us to service our debt or to meet our working capital requirements. If we are not able to generate sufficient cash flow from operations or to borrow sufficient funds to service our debt, we may be required to sell assets or equity, reduce expenditures, refinance all or a portion of our existing debt or obtain additional financing. We cannot assure you that we will be able to refinance our debt, sell assets or equity, borrow funds under our Secured Revolving Line of

Credit or borrow more funds on terms acceptable to us, if at all.

We have a large amount of indebtedness which could adversely affect our financial position and prevent us from implementing our strategy or fulfilling our contractual obligations.

Our total debt as of December 29, 2018 was $1.3 billion, net of unamortized debt issuance costs and unamortized debt discount associated with the 2.125% Notes. Our large indebtedness may:

- make it difficult for us to satisfy our financial obligations, including making scheduled principal and interest payments;
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions and general corporate and other purposes;

- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general corporate purposes;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;
- place us at a competitive disadvantage compared to our competitors with relatively less debt; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

We enter into sale and factoring arrangements from time to time with respect to certain accounts receivables, which arrangements are non-recourse to us in the event that an account debtor fails to pay for credit-related reasons, and are not included in our indebtedness. We could become obligated to repurchase such accounts receivables or otherwise incur liability to the counterparties under these arrangements under certain circumstances, such as where a commercial dispute arises between us and an account debtor.

The agreements governing our notes and our Secured Revolving Line of Credit impose restrictions on us that may adversely affect our ability to operate our business.

The indentures governing our 6.75% Senior Notes due 2019 (6.75% Notes), 7.50% Senior Notes due 2022 (7.50% Notes) and 7.00% Senior Notes due 2024 (7.00% Notes) contain various covenants which limit our ability to, among other things:

- incur additional indebtedness;
- pay dividends and make other restricted payments;
- make certain investments, including investments in our unrestricted subsidiaries;
- create or permit certain liens;
- create or permit restrictions on the ability of certain restricted subsidiaries to pay dividends or make other distributions to us;
- use the proceeds from sales of assets;
- enter into certain types of transactions with affiliates; and
- consolidate or merge or sell our assets as an entirety or substantially as an entirety.

In addition, the Amended and Restated Loan Agreement restricts our ability to make cash payments on the notes to the extent that, on the date of such payment, a default or event of default exists under the Amended and Restated Loan Agreement, or we have not had at all times during the 45 consecutive days immediately preceding such payment, or would not have, on a pro forma basis after giving effect to such payment, Excess Cash Availability (as defined in the Amended and Restated Loan Agreement) of at least $50 million. Any of our future debt agreements may contain similar restrictions. If we fail to make any cash payment on a series of notes when required by the applicable indenture, it would constitute an event of default under such indenture, which, in turn, would constitute an event of default under the agreements governing our other indebtedness.

Our Secured Revolving Line of Credit also contains various covenants which limit our ability to, among other things, make certain investments, merge or consolidate with other entities and permit certain subsidiaries from incurring indebtedness. In addition, further restrictions apply when certain payment conditions (the Payment Conditions) are not satisfied with respect to specified transactions, events or payments. The Payment Conditions include that (i) no default or event of default exists and (ii) at all times during the 45 consecutive days immediately prior to such transaction, event or payment and on a pro forma basis after giving effect to such transaction, event or payment and any incurrence or repayment of indebtedness in connection therewith, the Excess Cash Availability (as defined in the Amended and Restated Loan Agreement) available cash is greater than the greater of 15% of the total commitment amount and $75 million. If Payment Conditions are not satisfied under certain circumstances, we will become subject to various additional covenants which limit our ability to, among other things:

- create liens upon any of the Loan Parties’ property (other than customary permitted liens and liens in respect of up to $1.5 billion of secured credit facilities debt, which amount includes our Secured Revolving Line of Credit);
- declare or make cash distributions;
- create any encumbrance on the ability of a subsidiary to make any upstream payments;
- make asset dispositions other than certain ordinary course dispositions and certain supply chain finance arrangements;
- make certain loans, make payments with respect to subordinated debt or certain borrowed money prior to its due date; and

•enter into any non-arm’s-length transaction with an affiliate (except for certain customary exceptions).

The agreements governing our notes and our Secured Revolving Line of Credit contain cross-default provisions whereby a default under one agreement would likely result in cross defaults under agreements covering other borrowings. For example,

the occurrence of a default with respect to any indebtedness or any failure to repay debt when due in an amount in excess of $50 million would cause a cross default under the indentures (to the extent such default would result in the acceleration of such indebtedness) governing our 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes, as well as under our Secured Revolving Line of Credit. The occurrence of a default under any of these borrowing arrangements would permit the applicable note holders or the lenders under our Secured Revolving Line of Credit to declare all amounts outstanding under those borrowing arrangements to be immediately due and payable. If the note holders or the trustee under the indentures governing our 6.75% Notes, 7.50% Notes, 7.00% Notes or 2.125% Notes or the lenders under our Secured Revolving Line of Credit accelerate the repayment of borrowings, we cannot assure you that we will have sufficient assets to repay those borrowings.

The markets in which our products are sold are highly competitive.

The markets in which our products are sold are very competitive and delivering the latest and best products to market on a timely basis is critical to achieving revenue growth. We believe that the main factors that determine our product competitiveness are timely product introductions, product quality, product features and capabilities (including enabling state-of-the-art visual and virtual reality experiences), energy efficiency (including power consumption and battery life), reliability, processor clock speed, performance, size (or form factor), selling price, cost, adherence to industry standards (and the creation of open industry standards), level of integration, software and hardware compatibility, security and stability, brand recognition and availability.

We expect that competition will continue to be intense due to rapid technological changes, frequent product introductions by our competitors or new competitors of products that may provide better performance/experience or may include additional features that render our products uncompetitive. We may also face aggressive pricing by competitors, especially during challenging economic times. In addition, our competitors have significant marketing and sales resources which could increase the competitive environment in such a declining market, leading to lower prices and margins. Some competitors may have greater access or rights to complementary technologies, including interface, processor and memory technical information. For instance, with our APU products and other competing solutions with integrated graphics, we believe that demand for additional discrete graphics chips and cards may decrease in the future due to improvements in the quality and performance of integrated graphics. If competitors introduce competitive new products into the market before us, demand for our products could be adversely impacted and our business could be adversely affected. In addition, Intel Corporation has announced that it plans to expand its position in integrated graphics for the PC market with high-end discrete graphics solutions for a broad range of computing segments, which may negatively impact our ability to compete in these computing segments.

In addition, we are entering markets with current and new competitors who may be able to adapt more quickly to customer requirements and emerging technologies. We cannot assure you that we will be able to compete successfully against current or new competitors who may have stronger positions in these new markets or superior ability to anticipate customer requirements and emerging industry trends. We may face delays or disruptions in research and development efforts, or we may be required to invest significantly greater resources in research and development than anticipated.

Our worldwide operations are subject to political, legal and economic risks and natural disasters, which could have a material adverse effect on us.

We maintain operations around the world, including in the United States, Canada, Europe, Australia and Asia. We rely on third-party wafer foundries in Europe and Asia. Nearly all product assembly and final testing of our products is performed at manufacturing facilities, operated by third-party manufacturing facilities, in China, Malaysia and Taiwan. We also have international sales operations. International sales, as a percent of net revenue, were 80% in 2018. We expect that international sales will continue to be a significant portion of total sales in the foreseeable future. The political, legal and economic risks associated with our operations in foreign countries include, without limitation:

- expropriation;
- changes in a specific country’s or region’s political or economic conditions;
- changes in tax laws, trade protection measures and import or export licensing requirements;
- difficulties in protecting our intellectual property;
- difficulties in managing staffing and exposure to different employment practices and labor laws;

- changes in foreign currency exchange rates;
- restrictions on transfers of funds and other assets of our subsidiaries between jurisdictions;
- changes in freight and interest rates;
- disruption in air transportation between the United States and our overseas facilities;
- loss or modification of exemptions for taxes and tariffs; and
- compliance with U.S. laws and regulations related to international operations, including export control and economic sanctions laws and regulations and the Foreign Corrupt Practices Act.

In addition, our worldwide operations (or those of our business partners) could be subject to natural disasters such as earthquakes, tsunamis, flooding, typhoons and volcanic eruptions that disrupt manufacturing or other operations. For example, our Santa Clara operations are located near major earthquake fault lines in California. There may be conflict or uncertainty in the countries in which we operate, including public health issues (for example, an outbreak of a contagious disease such as avian influenza, measles or Ebola), safety issues, natural disasters, fire, disruptions of service from utilities, nuclear power plant accidents or general economic or political factors. For example, the United Kingdom's 2016 referendum, commonly referred to as "Brexit," has created economic and political uncertainty in the European Union. Also, the European Union's General Data Protection Regulation imposes significant new requirements on how we collect, process and transfer personal data, as well as significant fines for non-compliance. Also the United States administration has called for changes to domestic and foreign policy. The United States administration has announced tariffs on certain products imported into the United States with China as the country of origin, and we are taking steps to mitigate the impact of these tariffs on our business and AMD processor-based products. There is also a possibility of future tariffs imposed by the United States, China or other countries that could have a material adverse effect on our business. Any of the above risks, should they occur, could result in an increase in the cost of components, production delays, general business interruptions, delays from difficulties in obtaining export licenses for certain technology, tariffs and other barriers and restrictions, longer payment cycles, increased taxes, restrictions on the repatriation of funds and the burdens of complying with a variety of foreign laws, any of which could ultimately have a material adverse effect on our business.

Our issuance to West Coast Hitech L.P. (WCH) of warrants to purchase 75 million shares of our common stock, if and when exercised, will dilute the ownership interests of our existing stockholders, and the conversion of the 2.125% Notes may dilute the ownership interest of our existing stockholders, or may otherwise depress the price of our common stock.

Pursuant to the sixth amendment to the WSA (Sixth Amendment), we issued warrants to WCH to purchase 75 million shares of our common stock. Any issuance by us of shares of our common stock to WCH upon exercise of the warrants will dilute the ownership interests of our existing stockholders. Any sales in the public market by WCH of any shares owned by WCH could adversely affect prevailing market prices of our common stock, and the anticipated exercise by WCH of the warrants could depress the price of our common stock. On February 5, 2019, WCH sold approximately 34.9 million shares of our common stock and notified us it would exercise its warrant to purchase 75 million shares of our common stock at a purchase price of $5.98 per share for a total amount of $448.5 million. We expect to receive proceeds of $448.5 million upon the exercise of the warrant and issue the 75 million shares of our common stock to WCH in accordance with the terms of the Warrant Agreement.

Also, the conversion of some or all of the 2.125% Notes may dilute the ownership interests of our existing stockholders. The 2.125% Notes will mature on September 1, 2026, unless earlier redeemed or repurchased by us or converted. For example, during the fourth quarter of 2018, the sale price for conversion was satisfied as of the end of December 31, 2018 and as a result, the 2.125% Notes are eligible for conversion during the first calendar quarter of 2019. Any sales in the public market of our common stock issuable upon such conversion could adversely affect prevailing market prices of our common stock. In addition, the existence of the 2.125% Notes may encourage short selling by market participants because the conversion thereof could be used to satisfy short positions, or the anticipated conversion of the 2.125% Notes into cash and/or shares of our common stock could depress the price of our common stock.

Uncertainties involving the ordering and shipment of our products could materially adversely affect us.

We typically sell our products pursuant to individual purchase orders. We generally do not have long-term supply arrangements with our customers or minimum purchase requirements except that orders generally must be for standard pack quantities. Generally, our customers may cancel orders for standard products more than 30 days prior to shipment without incurring significant fees. We base our inventory levels in part on customers' estimates of demand for their products, which may not accurately predict the quantity or type of our products that our customers will want in the future or ultimately end up purchasing. Our ability to forecast demand is even further complicated when our products are sold indirectly through downstream channel distributors and customers, as our forecasts for demand are then based on estimates provided by multiple parties throughout the downstream channel.

PC and consumer markets are characterized by short product lifecycles, which can lead to rapid obsolescence and price erosion. In addition, our customers may change their inventory practices on short notice for any reason. We may build inventories during periods of anticipated growth, and the cancellation or deferral of product orders or overproduction due to failure of anticipated orders to materialize, could result in excess or obsolete inventory, which could result in write-downs of inventory and an adverse effect on gross margins.

Factors that may result in excess or obsolete inventory, which could result in write-downs of the value of our inventory, a reduction in the average selling price or a reduction in our gross margin include:

- a sudden or significant decrease in demand for our products;
- a production or design defect in our products;
- a higher incidence of inventory obsolescence because of rapidly changing technology and customer requirements;

- a failure to accurately estimate customer demand for our products, including for our older products as our new products are introduced; or
- our competitors introducing new products or taking aggressive pricing actions.

The demand for our products depends in part on the market conditions in the industries into which they are sold. Fluctuations in demand for our products or a market decline in any of these industries could have a material adverse effect on our results of operations.

Industry-wide fluctuations in the computer marketplace have materially adversely affected us in the past and may materially adversely affect us in the future. A large portion of our Computing and Graphics revenue is focused on the consumer desktop PC and notebook segments, which have in the past experienced a decline driven by, among other factors, the adoption of smaller and other form factors, increased competition and changes in replacement cycles. The success of our semi-custom SoC products is dependent on securing customers for our semi-custom design pipeline and consumer market conditions, including the success of the Sony PlayStation®4, Sony PlayStation®4 Pro, Microsoft® Xbox One™ S and Microsoft® Xbox One™ X game console systems worldwide. In addition, the GPU market has at times seen elevated demand due to the application of GPU products to cryptocurrency mining. For example, our GPU revenue has been affected in part by the volatility of the cryptocurrency mining market. Demand for cryptocurrency has changed and is likely to continue to change quickly. For example, China and South Korea have instituted restrictions on cryptocurrency trading and the valuations of the currencies, and corresponding interest in mining of such currencies, are subject to significant fluctuations. If we are unable to manage the risks related to the volatility of the cryptocurrency mining market, our GPU business could be materially adversely affected.

Our ability to design and introduce new products in a timely manner is dependent upon third-party intellectual property.

In the design and development of new and enhanced products, we rely on third-party intellectual property such as development and testing tools for software and hardware. Furthermore, certain product features may rely on intellectual property acquired from third parties. The design requirements necessary to meet customer demand for more features and greater functionality from semiconductor products may exceed the capabilities of the third-party intellectual property or development or testing tools available to us. If the third-party intellectual property that we use becomes unavailable, is not available with required functionality and performance in the time frame or price point needed for our new products or fails to produce designs that meet customer demands, our business could be materially adversely affected.

We depend on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components to support our business.

We depend on third-party companies for the design, manufacture and supply of motherboards, graphics cards, software (e.g. BIOS, operating systems, drivers) and other components that our customers utilize to support and/or use our microprocessor, GPU and APU offerings. We also rely on our add-in-board (AIB) partners to support our GPU and APU products. In addition, our microprocessors are not designed to function with motherboards and chipsets designed to work with Intel microprocessors. If the designers, manufacturers, AIBs and suppliers of motherboards, graphics cards, software and other components decrease their support for our product offerings, our business could be materially adversely affected.

If we lose Microsoft Corporation’s support for our products or other software vendors do not design and develop software to run on our products, our ability to sell our products could be materially adversely affected.

Our ability to innovate beyond the x86 instruction set controlled by Intel depends partially on Microsoft designing and developing its operating systems to run on or support our x86-based microprocessor products. With respect to our graphics products, we depend in part on Microsoft to design and develop its operating system to run on or support our graphics products. Similarly, the success of our products in the market, such as our APU products, is dependent on independent software providers designing and developing software to run on our products. If Microsoft does not continue to design and develop its operating systems so that they work with our x86 instruction sets or does not continue to develop and maintain their operating systems to support our graphics products, independent software providers may forego designing their software applications to take advantage of our innovations and customers may not purchase PCs with our products. In addition, some software drivers licensed for use with our products are certified

by Microsoft. If Microsoft did not certify a driver, or if we otherwise fail to retain the support of Microsoft or other software vendors, our ability to market our products would be materially adversely affected.

Our reliance on third-party distributors and AIB partners subjects us to certain risks.

We market and sell our products directly and through third-party distributors and AIB partners pursuant to agreements that can generally be terminated for convenience by either party upon prior notice to the other party. These agreements are non-exclusive and permit both our distributors and AIB partners to offer our competitors' products. We are dependent on our distributors and AIB partners to supplement our direct marketing and sales efforts. If any significant distributor or AIB or a substantial number of our distributors or AIB partners terminated their relationship with us, decided to market our competitors' products over our products or decided not to market our products at all, our ability to bring our products to market would be impacted and we would be materially adversely affected. In addition, if we are unable to collect accounts receivable from our significant distributors and/

or AIB partners, it could have a material adverse effect on our business. If we are unable to manage the risks related to the use of our third-party distributors and AIB partners or offer appropriate incentives to focus them on the sale of our products, our business could be materially adversely affected.

Additionally, distributors and AIB partners typically maintain an inventory of our products. In most instances, our agreements with distributors protect their inventory of our products against price reductions, as well as provide return rights for any product that we have removed from our price book and that is not more than 12 months older than the manufacturing date. Some agreements with our distributors also contain standard stock rotation provisions permitting limited levels of product returns. Our agreements with AIB partners protect their inventory of our products against price reductions. In the event of a significant decline in the price of our products, the price protection rights we offer would materially adversely affect us because our revenue and corresponding gross margin would decline.

We may incur future impairments of goodwill and technology license purchases.

We perform our annual goodwill impairment analysis as of the first day of the fourth quarter of each year. Subsequent to our annual goodwill impairment analysis, we monitor for any events or changes in circumstances, such as significant adverse changes in business climate or operating results, changes in management's business strategy, an inability to successfully introduce new products in the marketplace, an inability to successfully achieve internal forecasts or significant declines in our stock price, which may represent an indicator of impairment. The occurrence of any of these events may require us to record future goodwill impairment charges.

We license certain third-party technologies and tools for the design and production of our products. We report the value of those licenses as intangible assets on the balance sheet and we periodically evaluate the carrying value of those licenses based on their future economic benefit to us. Factors such as the life of the assets, changes in competing technologies, and changes to the business strategy may represent an indicator of impairment. The occurrence of any of these events may require us to record future technology license impairment charges. For example, during the fourth quarter of 2018, we recorded an impairment charge in Cost of sales of $45 million on technology licenses related to products that are no longer being used.

Our inability to continue to attract and retain qualified personnel may hinder our business.

Much of our future success depends upon the continued service of numerous qualified engineering, marketing, sales and executive personnel. Competition for highly skilled employees and executives in the technology industry is intense and our competitors have targeted our employees that have desired skills. If we are not able to continue to attract, train and retain qualified personnel necessary for our business, the progress of our product development programs could be hindered, and we could be materially adversely affected. To help attract, retain and motivate qualified personnel, we use share-based incentive awards such as employee stock options and non-vested share units (restricted stock units). If the value of such stock awards does not appreciate as measured by the performance of the price of our common stock, or if our share-based compensation otherwise ceases to be viewed as a valuable benefit, our ability to attract, retain and motivate personnel could be weakened, which could harm our results of operations. Also, if the value of our stock awards increases substantially, this could potentially create great personal wealth for our employees and affect our ability to retain these employees. In addition, any future restructuring plans may adversely impact our ability to attract and retain key employees.

In the event of a change of control, we may not be able to repurchase our outstanding debt as required by the applicable indentures and our Secured Revolving Line of Credit, which would result in a default under the indentures and our Secured Revolving Line of Credit.

Upon a change of control, we will be required to offer to repurchase all of our 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes then outstanding at 101% of the principal amount thereof, plus accrued and unpaid interest, if any, up to, but excluding, the repurchase date. In addition, a change of control would be an event of default under our Secured Revolving Line of Credit. As of December 29, 2018, $70 million of borrowings were outstanding under the Secured Revolving Line of Credit, $26 million related to letters of credit under the Secured Revolving Line of Credit remained outstanding and $1.5 billion principal amount was outstanding under our notes. Future debt agreements may contain similar provisions. We may not have the financial resources to repurchase our outstanding notes and prepay all of our outstanding obligations under our Secured Revolving Line of Credit.

The semiconductor industry is highly cyclical and has experienced severe downturns that have materially adversely affected, and may continue to materially adversely affect, our business in the future.

The semiconductor industry is highly cyclical and has experienced significant downturns, often in conjunction with constant and rapid technological change, wide fluctuations in supply and demand, continuous new product introductions, price erosion and declines in general economic conditions. We have incurred substantial losses in recent downturns, due to:

- substantial declines in average selling prices;
- the cyclical nature of supply and demand imbalances in the semiconductor industry;
- a decline in demand for end-user products (such as PCs) that incorporate our products; and

•excess inventory levels.

Industry-wide fluctuations in the computer marketplace have materially adversely affected us in the past and may materially adversely affect us in the future. For example, a large portion of our Computing and Graphics revenue is focused on consumer desktop PC and notebook segments. While overall growth in Computing and Graphics is stabilizing, the areas within Computing and Graphics are changing. Our ability to take advantage of the opportunities within Computing and Graphics is based on foreseeing those changes and making timely investments in the form factors that serve those growing sub-segments.

Global economic uncertainty and weakness have in the past impacted the semiconductor market as consumers and businesses have deferred purchases, which negatively impacted demand for our products. Our financial performance has been, and may in the future be, negatively affected by these downturns.

The growth of our business is also dependent on continued demand for our products from high-growth adjacent emerging global markets. Our ability to be successful in such markets depends in part on our ability to establish adequate local infrastructure, as well as our ability to cultivate and maintain local relationships in these markets. If demand from these markets is below our expectations, sales of our products may decrease, which would have a material adverse effect on us.

Acquisitions, divestitures and/or joint ventures could disrupt our business, harm our financial condition and operating results or dilute, or adversely affect the price of, our common stock.

Our success will depend, in part, on our ability to expand our product offerings and grow our business in response to changing technologies, customer demands and competitive pressures. In some circumstances, we may pursue growth through the acquisition of complementary businesses, solutions or technologies or through divestitures or joint ventures rather than through internal development. The identification of suitable acquisition or joint venture candidates can be difficult, time-consuming and costly, and we may not be able to successfully complete identified acquisitions or joint ventures. Moreover, if such acquisitions or joint ventures require us to seek additional debt or equity financing, we may not be able to obtain such financing on terms favorable to us or at all. Even if we successfully complete an acquisition or a joint venture, we may not be able to assimilate and integrate effectively or efficiently the acquired business, technologies, solutions, assets, personnel or operations, particularly if key personnel of the acquired company decide not to work for us. Acquisitions and joint ventures may also involve the entry into geographic or business markets in which we have little or no prior experience. Consequently, we may not achieve anticipated benefits of the acquisitions or joint ventures which could harm our operating results. In addition, to complete an acquisition, we may issue equity securities, which would dilute our stockholders’ ownership and could adversely affect the price of our common stock, as well as incur debt, assume contingent liabilities or have amortization expenses and write-downs of acquired assets, which could adversely affect our results of operations. Acquisitions and joint ventures may also reduce our cash available for operations and other uses, which could harm our business. Also, any failure on our part to effectively evaluate and execute new business initiatives could adversely affect our business. We may not adequately assess the risk of new business initiatives and subsequent events may arise that alter the risks that were initially considered.

Furthermore, we may not achieve the objectives and expectations with respect to future operations, products and services.The majority of our ATMP services are provided by the JVs and there is no guarantee that the JVs will be able to fulfill our long-term ATMP requirements. If we are unable to meet customer demand due to fluctuating or late supply from the JVs, it could result in lost sales and have a material adverse effect on our business.

In addition, we may not realize the anticipated benefits from any new business initiatives. We have a joint venture with Higon Information Technology Co., Ltd. (formerly, Tianjin Haiguang Advanced Technology Investment Co., Ltd.) (THATIC), comprised of two separate legal entities, China JV1 and China JV2 (collectively, the THATIC JV). We may not realize the expected benefits from this joint venture, including the THATIC JV’s expected future performance, the receipt of any future milestone payments from certain licensed intellectual property, and the receipt of any royalty payments from future sales of products by the THATIC JV.

Our business is dependent upon the proper functioning of our internal business processes and information systems and modification or interruption of such systems may disrupt our business, processes and internal controls.

We rely upon a number of internal business processes and information systems to support key business functions, and the efficient operation of these processes and systems is critical to our business. Our business processes and information systems need to be sufficiently scalable to support the growth of our business and may require modifications or upgrades that expose us to a number of operational risks. As such, our information systems will continually evolve and adapt in order to meet our business needs. These changes may be costly and disruptive to our operations and could impose substantial demands on management time.

These changes may also require changes in our information systems, modification of internal control procedures and significant training of employees and third-party resources. We continuously work on simplifying our information systems and applications through consolidation and standardization efforts. There can be no assurance that our business and operations will not experience any disruption in connection with this transition. Our information technology systems, and those of third-party information technology providers or business partners, may also be vulnerable to damage or disruption caused by circumstances beyond our control including catastrophic events, power anomalies or outages, natural disasters, viruses or malware, cyber-

attacks, data breaches and computer system or network failures, exposing us to significant cost, reputational harm and disruption or damage to our business.

In addition, as our IT environment continues to evolve, we are embracing new ways of communicating and sharing data internally and externally with customers and partners using methods such as mobility and the cloud that can promote business efficiency. However, these practices can also result in a more distributed IT environment, making it more difficult for us to maintain visibility and control over internal and external users, and meet scalability and administrative requirements. If our security controls cannot keep pace with the speed of these changes, or if we are not able to meet regulatory and compliance requirements, our business would be materially adversely affected.

If essential equipment, materials or manufacturing processes are not available to manufacture our products, we could be materially adversely affected.

We may purchase equipment and materials for use by our back-end manufacturing service providers from a number of suppliers and our operations depend upon obtaining deliveries of adequate supplies of equipment and materials on a timely basis. Our third-party suppliers also depend on the same timely delivery of adequate quantities of equipment and materials in the manufacture of our products. In addition, as many of our products increase in technical complexity, we rely on our third-party suppliers to update their processes in order to continue meeting our back-end manufacturing needs. Certain equipment and materials that are used in the manufacture of our products are available only from a limited number of suppliers, or in some cases, a sole supplier. We also depend on a limited number of suppliers to provide the majority of certain types of integrated circuit packages for our microprocessors, including our APU products. Similarly, certain non-proprietary materials or components such as memory, printed circuit boards (PCBs), interposers, substrates and capacitors used in the manufacture of our products are currently available from only a limited number of sources. Because some of the equipment and materials that we and our third-party manufacturing suppliers purchase are complex, it is sometimes difficult to substitute one supplier for another. From time to time, suppliers may extend lead times, limit supply or increase prices due to capacity constraints or other factors. Also, some of these materials and components may be subject to rapid changes in price and availability. Interruption of supply or increased demand in the industry could cause shortages and price increases in various essential materials. Dependence on a sole supplier or a limited number of suppliers exacerbates these risks. If we are unable to procure certain of these materials for our back-end manufacturing operations, or our third-party foundries or manufacturing suppliers are unable to procure materials for manufacturing our products, our business would be materially adversely affected.

If our products are not compatible with some or all industry-standard software and hardware, we could be materially adversely affected.

Our products may not be fully compatible with some or all industry-standard software and hardware. Further, we may be unsuccessful in correcting any such compatibility problems in a timely manner. If our customers are unable to achieve compatibility with software or hardware, we could be materially adversely affected. In addition, the mere announcement of an incompatibility problem relating to our products could have a material adverse effect on our business.

Costs related to defective products could have a material adverse effect on us.

Products as complex as those we offer may contain defects or failures when first introduced or when new versions or enhancements to existing products are released. We cannot assure you that, despite our testing procedures, errors will not be found in new products or releases after commencement of commercial shipments in the future, which could result in loss of or delay in market acceptance of our products, material recall and replacement costs, loss of revenue, writing down the inventory of defective products, the diversion of the attention of our engineering personnel from product development efforts, defending against litigation related to defective products or related liabilities, including property damage, personal injury, damage to our reputation in the industry and loss of data or intangible property, and could adversely affect our relationships with our customers. In addition, we may have difficulty identifying the end customers of the defective products in the field. As a result, we could incur substantial costs to implement modifications to correct defects. Any of these problems could materially adversely affect our business.

We could be subject to potential product liability claims if one of our products causes, or merely appears to have caused, an injury, whether tangible or intangible. Claims may be made by consumers or others selling our products,

and we may be subject to claims against us even if an alleged injury is due to the actions of others. A product liability claim, recall or other claim with respect to uninsured liabilities or for amounts in excess of insured liabilities could have a material adverse effect on our business.

If we fail to maintain the efficiency of our supply chain as we respond to changes in customer demand for our products, our business could be materially adversely affected.

Our ability to meet customer demand for our products depends, in part, on our ability to deliver the products our customers want on a timely basis. Accordingly, we rely on our supply chain for the manufacturing, distribution and fulfillment of our products. As we continue to grow our business, expand to high-growth adjacent markets, acquire new customers and strengthen relationships with existing customers, the efficiency of our supply chain will become increasingly important because many of our customers tend to have specific requirements for particular products, and specific time-frames in which they require delivery

of these products. If we are unable to consistently deliver the right products to our customers on a timely basis in the right locations, our customers may reduce the quantities they order from us, which could have a material adverse effect on our business.

We outsource to third parties certain supply-chain logistics functions, including portions of our product distribution, transportation management and information technology support services.

We rely on third-party providers to operate our regional product distribution centers and to manage the transportation of our work-in-process and finished products among our facilities, to our manufacturing suppliers and to our customers. In addition, we rely on third parties to provide certain information technology services to us, including help desk support, desktop application services, business and software support applications, server and storage administration, datacenter operations, database administration and voice, video and remote access. We cannot guarantee that these providers will fulfill their respective responsibilities in a timely manner in accordance with the contract terms, in which case our internal operations and the distribution of our products to our customers could be materially adversely affected. Also, we cannot guarantee that our contracts with these third-party providers will be renewed, in which case we would have to transition these functions in-house or secure new providers, which could have a material adverse effect on our business if the transition is not executed appropriately.

Our stock price is subject to volatility.

Our stock price has experienced price and volume fluctuations and could be subject to wide fluctuations in the future. The trading price of our stock may fluctuate widely due to various factors including, actual or anticipated fluctuations in our financial conditions and operating results, changes in financial estimates by us or financial estimates and ratings by securities analysts, changes in our capital structure, including issuance of additional debt or equity to the public, interest rate changes, news regarding our products or products of our competitors, and broad market and industry fluctuations. Stock price fluctuations could impact the value of our equity compensation, which could affect our ability to recruit and retain employees. In addition, volatility in our stock price could adversely affect our business and financing opportunities.

Worldwide political conditions may adversely affect demand for our products.

Worldwide political conditions may create uncertainties that could adversely affect our business. The United States has been and may continue to be involved in armed conflicts that could have a further impact on our sales and our supply chain. The consequences of armed conflict, political instability or civil or military unrest are unpredictable, and we may not be able to foresee events that could have a material adverse effect on us. Terrorist attacks or other hostile acts may negatively affect our operations, or adversely affect demand for our products, and such attacks or related armed conflicts may impact our physical facilities or those of our suppliers or customers. Furthermore, these attacks or hostile acts may make travel and the transportation of our products more difficult and more expensive, which could materially adversely affect us. Any of these events could cause consumer spending to decrease or result in increased volatility in the United States economy and worldwide financial markets.

Unfavorable currency exchange rate fluctuations could adversely affect us.

We have costs, assets and liabilities that are denominated in foreign currencies. As a consequence, movements in exchange rates could cause our foreign currency denominated expenses to increase as a percentage of revenue, affecting our profitability and cash flows. Whenever we believe appropriate, we hedge a portion of our short-term foreign currency exposure to protect against fluctuations in currency exchange rates. We determine our total foreign currency exposure using projections of long-term expenditures for items such as payroll. We cannot assure you that these activities will be effective in reducing foreign exchange rate exposure. Failure to do so could have an adverse effect on our business, financial condition, results of operations and cash flow. In addition, the majority of our product sales are denominated in U.S. dollars. Fluctuations in the exchange rate between the U.S. dollar and the local currency can cause increases or decreases in the cost of our products in the local currency of such customers. An appreciation of the U.S. dollar relative to the local currency could reduce sales of our products.

Our inability to effectively control the sales of our products on the gray market could have a material adverse effect on us.

We market and sell our products directly to OEMs and through authorized third-party distributors. From time to time, our products are diverted from our authorized distribution channels and are sold on the “gray market.” Gray market

products result in shadow inventory that is not visible to us, thus making it difficult to forecast demand accurately. Also, when gray market products enter the market, we and our distribution channels compete with these heavily discounted gray market products, which adversely affects demand for our products and negatively impact our margins. In addition, our inability to control gray market activities could result in customer satisfaction issues because any time products are purchased outside our authorized distribution channels there is a risk that our customers are buying counterfeit or substandard products, including products that may have been altered, mishandled or damaged, or are used products represented as new.

If we cannot adequately protect our technology or other intellectual property in the United States and abroad, through patents, copyrights, trade secrets, trademarks and other measures, we may lose a competitive advantage and incur significant expenses.

We rely on a combination of protections provided by contracts, including confidentiality and nondisclosure agreements, copyrights, patents, trademarks and common law rights, such as trade secrets, to protect our intellectual property. However, we cannot assure you that we will be able to adequately protect our technology or other intellectual property from third-party infringement or from misappropriation in the United States and abroad. Any patent licensed by us or issued to us could be challenged, invalidated or circumvented or rights granted there under may not provide a competitive advantage to us.

Furthermore, patent applications that we file may not result in issuance of a patent or, if a patent is issued, the patent may not be issued in a form that is advantageous to us. Despite our efforts to protect our intellectual property rights, others may independently develop similar products, duplicate our products or design around our patents and other rights. In addition, it is difficult to monitor compliance with, and enforce, our intellectual property on a worldwide basis in a cost-effective manner. In jurisdictions where foreign laws provide less intellectual property protection than afforded in the United States and abroad, our technology or other intellectual property may be compromised, and our business would be materially adversely affected.

We are party to litigation and may become a party to other claims or litigation that could cause us to incur substantial costs or pay substantial damages or prohibit us from selling our products.

From time to time, we are a defendant or plaintiff in various legal actions. For example, as described in Note 19 of our consolidated financial statements, we have been subject to certain claims concerning federal securities laws and corporate governance. Our products are purchased by and/or used by consumers, which could increase our exposure to consumer actions such as product liability claims and consumer class action claims, including those described in Note 19 of our consolidated financial statements. On occasion, we receive claims that individuals were allegedly exposed to substances used in our former semiconductor wafer manufacturing facilities and that this alleged exposure caused harm. Litigation can involve complex factual and legal questions, and its outcome is uncertain. It is possible that if a claim is successfully asserted against us, including the claims described in Note 19 of our consolidated financial statements, it could result in the payment of damages that could be material to our business.

With respect to intellectual property litigation, from time to time, we have been notified of, or third parties may bring or have brought, actions against us and/or against our customers based on allegations that we are infringing the intellectual property rights of others, contributing to or inducing the infringement of the intellectual property rights of others, improperly claiming ownership of intellectual property or otherwise improperly using the intellectual property of others. If any such claims are asserted, we may seek to obtain a license under the third parties’ intellectual property rights. We cannot assure you that we will be able to obtain all of the necessary licenses on satisfactory terms, if at all. These parties may file lawsuits against us or our customers seeking damages (potentially up to and including treble damages) or an injunction against the sale of products that incorporate allegedly infringed intellectual property or against the operation of our business as presently conducted, which could result in our having to stop the sale of some of our products or to increase the costs of selling some of our products or which could damage our reputation. The award of damages, including material royalty payments, or other types of damages, or the entry of an injunction against the manufacture and sale of some or all of our products could have a material adverse effect on us. We could decide, in the alternative, to redesign our products or to resort to litigation to challenge such claims. Such challenges could be extremely expensive and time-consuming regardless of their merit, could cause delays in product release or shipment and/or could have a material adverse effect on us. We cannot assure you that litigation related to our intellectual property rights or the intellectual property rights of others can always be avoided or successfully concluded.

Even if we were to prevail, any litigation could be costly and time-consuming and would divert the attention of our management and key personnel from our business operations, which could have a material adverse effect on us.

Our business is subject to potential tax liabilities.

The Company is subject to income tax, indirect tax or other tax claims by tax agencies in jurisdictions in which it conducts business. Significant judgment is required in determining our worldwide provision for income taxes. Tax

laws are dynamic and subject to change as new laws are passed and new interpretations of the law are issued or applied. The United States federal government enacted significant tax reform, and certain provisions of the new law may adversely affect us. The Tax Cuts and Jobs Act of 2017 (the Tax Reform Act) has resulted in significant changes to the United States corporate income tax system. These changes include a federal statutory rate reduction from 35% to 21%, the elimination or reduction of certain domestic deductions and credits and limitations on the deductibility of interest expense. The Tax Reform Act also transitions international taxation from a worldwide system to a modified territorial system and includes base erosion prevention measures on non-U.S. earnings, which has the effect of subjecting certain earnings of our foreign subsidiaries to United States taxation. These changes became effective in 2018.

In the ordinary course of our business, there are many transactions and calculations where the ultimate income tax, indirect tax, or other tax determination is uncertain. Although we believe our tax estimates are reasonable, we cannot assure that the final

determination of any tax audits and litigation will not be materially different from that which is reflected in historical tax provisions and accruals. Should additional taxes be assessed as a result of an audit, assessment or litigation, there could be a material adverse effect on our cash, tax provisions and net income in the period or periods for which that determination is made.

We are subject to environmental laws, conflict minerals-related provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act as well as a variety of other laws or regulations that could result in additional costs and liabilities.

Our operations and properties have in the past been and continue to be subject to various United States and foreign laws and regulations, including those relating to materials used in our products and manufacturing processes, discharge of pollutants into the environment, the treatment, transport, storage and disposal of solid and hazardous wastes and remediation of contamination. These laws and regulations require our suppliers to obtain permits for operations making our products, including the discharge of air pollutants and wastewater. Although our management systems are designed to oversee our suppliers' compliance, we cannot assure you that our suppliers have been or will be at all times in complete compliance with such laws, regulations and permits. If our suppliers violate or fail to comply with any of them, a range of consequences could result, including fines, suspension of production, alteration of manufacturing processes, import/export restrictions, sales limitations, criminal and civil liabilities or other sanctions. Such non-compliance from our manufacturing suppliers could result in disruptions in supply, higher sourcing costs, and/or reputational damage for us.

Environmental laws are complex, change frequently and have tended to become more stringent over time. For example, the European Union (EU) and China are two among a growing number of jurisdictions that have enacted restrictions on the use of lead and other materials in electronic products. These regulations affect semiconductor devices and packaging. As regulations restricting materials in electronic products continue to increase around the world, there is a risk that the cost, quality and manufacturing yields of products that are subject to these restrictions may be less favorable compared to products that are not subject to such restrictions, or that the transition to compliant products may not meet customer roadmaps, or produce sudden changes in demand, which may result in excess inventory. A number of jurisdictions including the EU, Australia, California and China are developing or have finalized market entry or public procurement regulations for computers and servers based on ENERGY STAR specifications as well as additional energy consumption limits. There is the potential for certain of our products being excluded from some of these markets which could materially adversely affect us.

Certain environmental laws, including the United States Comprehensive, Environmental Response, Compensation and Liability Act of 1980, or the Superfund Act, impose strict or, under certain circumstances, joint and several liability on current and previous owners or operators of real property for the cost of removal or remediation of hazardous substances and impose liability for damages to natural resources. These laws often impose liability even if the owner or operator did not know of, or was not responsible for, the release of such hazardous substances. These environmental laws also assess liability on persons who arrange for hazardous substances to be sent to disposal or treatment facilities when such facilities are found to be contaminated. Such persons can be responsible for cleanup costs even if they never owned or operated the contaminated facility. We have been named as a responsible party at three Superfund sites in Sunnyvale, California. Although we have not yet been, we could be named a potentially responsible party at other Superfund or contaminated sites in the future. In addition, contamination that has not yet been identified could exist at our other facilities.

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the SEC adopted disclosure and reporting requirements for companies that use "conflict" minerals originating from the Democratic Republic of Congo or adjoining countries. We continue to incur additional costs associated with complying with these requirements, such as costs related to developing internal controls for the due diligence process, determining the source of any conflict minerals used in our products, auditing the process and reporting to our customers and the SEC. In addition to the SEC regulation, the European Union, China and other jurisdictions are developing new policies focused on conflict minerals that may impact and increase the cost of our compliance program. Also, since our supply chain is complex, we may face reputational challenges if we are unable to sufficiently verify the origins of the subject minerals. Moreover, we are likely to encounter challenges to satisfy those customers who require that all of the components of

our products are certified as “conflict free.” If we cannot satisfy these customers, they may choose a competitor’s products.

The United States federal government has issued new policies for federal procurement focused on eradicating the practice of forced labor and human trafficking. In addition, the United Kingdom, Australia and the State of California have issued laws that require us to disclose our policy and practices for identifying and eliminating forced labor and human trafficking in our supply chain. Several customers as well as the Responsible Business Alliance have also issued expectations to eliminate these practices that may impact us. While we have a policy and management systems to identify and avoid these practices in our supply chain, we cannot guarantee that our suppliers will always be in conformance to these laws and expectations. We may face enforcement liability and reputational challenges if we are unable to sufficiently meet these expectations. Moreover, we are likely to encounter challenges with customers if we cannot satisfy their forced and trafficked labor polices and they may choose a competitor’s product.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

As of December 29, 2018, we leased approximately 2.47 million square feet of space for research and development, engineering, administrative and warehouse use, including our headquarters in Santa Clara, California, our principal administrative facilities in Austin, Texas, our main facility with respect to graphics and chipset products located in Markham, Ontario, Canada and a number of smaller regional sales offices located in commercial centers near customers, principally in the United States, Latin America, Europe and Asia. These leases expire at varying dates through 2028, although some of these leases include optional renewals. We occupy 220,000 square feet of space in our headquarters in Santa Clara, California under a 10-year operating lease which commenced in August 2017. We have the option to extend the term of the lease for two additional 5-year periods. The lease for our principal administrative facilities in Austin, Texas expires in March 2025, and provides for one 10-year optional renewal. The leases for our facilities in Markham, Ontario, Canada expire in February 2028, and provide for one 5-year optional renewals.

We currently do not anticipate difficulty in either retaining occupancy of any of our facilities through lease renewals prior to expiration or through month-to-month occupancy, or replacing them with equivalent facilities.

We believe that our existing facilities are suitable and adequate for our present purposes, and that, the productive capacity of such facilities is substantially being utilized or we have plans to utilize such capacity.

ITEM 3. LEGAL PROCEEDINGS

Shareholder Derivative Lawsuits (Wessels, Hamilton and Ha)

On March 20, 2014, a purported shareholder derivative lawsuit captioned Wessels v. Read, et al., Case No. 1:14 cv-262486 (Wessels) was filed against us (as a nominal defendant only) and certain of our directors and officers in the Santa Clara County Superior Court of the State of California. The complaint purports to assert claims against us and certain individual directors and officers for breach of fiduciary duty, waste of corporate assets and unjust enrichment. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by us and the individual directors and officers regarding our 32nm technology and “Llano” product, which statements and omissions, the plaintiffs claim, allegedly operated to artificially inflate the price paid for our common stock during the period. On April 27, 2015, a similar purported shareholder derivative lawsuit captioned Christopher Hamilton and David Hamilton v. Barnes, et al., Case No. 5:15-cv-01890 (Hamilton) was filed against us (as a nominal defendant only) and certain of our directors and officers in the United States District Court for the Northern District of California.

On September 29, 2015, a similar purported shareholder derivative lawsuit captioned Jake Ha v Caldwell, et al., Case No. 3:15-cv-04485 (Ha) was filed against us (as a nominal defendant only) and certain of our directors and officers in the United States District Court for the Northern District of California. The lawsuit also seeks a court order voiding the stockholder vote on our 2015 proxy. The case was transferred to the judge handling the Hamilton Lawsuit and is now Case No. 4:15-cv-04485. The Wessels, Hamilton and Ha shareholder derivative lawsuits were stayed pending resolution of a class action lawsuit captioned Hatamian v. AMD, et al., C.A. No. 3:14-cv-00226 filed against us in the United States District Court for the Northern District of California (the Hatamian Lawsuit). The Hatamian Lawsuit asserted claims against us and certain of our officers for alleged violations of Section 10(b) of the Exchange Act of 1934, as amended (the Exchange Act), and SEC Rule 10b-5 concerning certain statements regarding our 32nm technology and “Llano” products. On October 9, 2017, the parties signed a definitive settlement agreement resolving the Hatamian Lawsuit and submitted it to the Court for approval. Under the terms of this agreement, the settlement was funded entirely by certain of our insurance carriers and the defendants continued to deny any liability or wrongdoing. On March 2, 2018, the court approved the settlement and entered a final judgment in the Hatamian Lawsuit.

On January 30, 2018, the Wessels and Hamilton plaintiffs amended their complaints. On February 2, 2018, the Ha plaintiff also filed an amended complaint. On February 22, 2018, we filed motions to dismiss the Hamilton and Ha plaintiffs’ amended complaints. On April 2, 2018, we filed a demurrer seeking to dismiss the Wessels amended

complaint. On July 23, 2018, the Santa Clara Superior Court sustained our demurrer in the Wessels case, dismissing all claims in that matter with prejudice. The Wessels plaintiff filed a Notice of Appeal on September 27, 2018. On October 4, 2018, the Federal Court issued an order dismissing the Hamilton and Ha amended complaints. The Hamilton plaintiffs filed a Notice of Appeal on October 8, 2018, and the Ha plaintiffs filed a Notice of Appeal on October 15, 2018.

The Wessels, Hamilton, and Ha appeals are currently pending; the plaintiffs have not yet filed their opening briefs in any of the three matters. On November 19, 2018, the Hamilton and Ha plaintiffs filed a motion seeking summary reversal of the order dismissing their claims. We opposed this motion on December 13, 2018, and it remains pending.

Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.

Kim Securities Litigation

On January 16, 2018, a putative class action lawsuit captioned Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 was filed against us in the United States District Court for the Northern District of California. The complaint purports to assert claims against us and certain individual officers for alleged violations of Sections 10(b) and 20(a) of the Exchange Act, and Rule 10b-5 of the Exchange Act. The plaintiff seeks to represent a proposed class of all persons who purchased or otherwise acquired our common stock during the period February 21, 2017 through January 11, 2018. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by us and the individual officers regarding a security vulnerability (Spectre), which statements and omissions, the plaintiff claims, allegedly caused our common stock price to be artificially inflated during the purported class period. The complaint seeks unspecified compensatory damages, attorneys' fees and costs. On August 3, 2018, plaintiffs filed an amended complaint with similar allegations and shortening the class period to June 29, 2017 through January 11, 2018. We filed a motion to dismiss plaintiffs' claims on September 25, 2018, and plaintiffs filed an opposition to our motion to dismiss on November 14, 2018.

Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.

Hauck et al. Litigation

Since January 19, 2018, three putative class action complaints have been filed against us in the United States District Court for the Northern District of California: (1) Diana Hauck et al. v. AMD, Inc., Case No. 5:18-cv-0047, filed on January 19, 2018; (2) Brian Speck et al. v. AMD, Inc., Case No. 5:18-cv-0744, filed on February 4, 2018; and (3) Nathan Barnes and Jonathan Caskey-Medina, et al. v. AMD, Inc., Case No. 5:18-cv-00883, filed on February 9, 2018. On April 9, 2018, the court consolidated these cases and ordered that Diana Hauck et al. v. AMD, Inc. serve as the lead case. On June 13, 2018, six plaintiffs (from California, Louisiana, Florida, and Massachusetts) filed a consolidated amended complaint alleging that we failed to disclose our processors' alleged vulnerability to Spectre. Plaintiffs further allege that our processors cannot perform at their advertised processing speeds without exposing consumers to Spectre, and that any "patches" to remedy this security vulnerability will result in degradation of processor performance. The plaintiffs seek damages under several causes of action on behalf of a nationwide class and four state subclasses (California, Florida, Massachusetts, Louisiana) of consumers who purchased our processors and/or devices containing AMD processors. The plaintiffs also seek attorneys' fees, equitable relief, and restitution. Pursuant to the court's order directing the parties to litigate only eight of the causes of action in the consolidated amended complaint initially, we filed a motion to dismiss on July 13, 2018. On October 29, 2018, after the plaintiffs voluntarily dismissed one of their claims, the court granted our motion and dismissed six causes of action with leave to amend. The plaintiffs filed their amended consolidated complaint on December 6, 2018. On January 3, 2019, we again moved to dismiss the subset of claims currently at issue.

Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.

Quarterhill Inc. Litigation

On July 2, 2018, three entities named Aquila Innovations, Inc. (Aquila), Collabo Innovations, Inc. (Collabo), and Polaris Innovations, Ltd. (Polaris), filed separate patent infringement complaints against us in the United States District Court for the Western District of Texas. Aquila alleges that we infringe two patents (6,239,614 and 6,895,519) relating to power management; Collabo alleges that we infringe one patent (7,930,575) related to power management; and Polaris alleges that we infringe two patents (6,728,144 and 8,117,526) relating to control or use of dynamic random-access memory, or DRAM. Each of the three complaints seeks unspecified monetary damages, interest, fees, expenses, and costs against us; Aquila and Collabo also seek enhanced damages. Aquila, Collabo, and Polaris each appear to be related to a patent assertion entity named Quarterhill Inc. (formerly WiLAN Inc.). On November 16, 2018, AMD filed answers in the Collabo and Aquila cases and filed a motion to dismiss in the Polaris case. On January 25, 2019, we filed amended answers and counterclaims in the Collabo and Aquila cases.

Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.

Zeng Shareholder Derivative Lawsuit

On March 8, 2018, a purported shareholder derivative lawsuit captioned Zeng v. Su, et al., Case No. 18CIV01192 was filed against us (as a nominal defendant only) and certain of our directors and officers in the San Mateo County Superior Court of the State of California. The complaint purports to assert claims against us and certain individual directors and officers for breach of

fiduciary duty, unjust enrichment, abuse of control, gross mismanagement and waste of corporate assets. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by us and the individual directors and officers regarding Spectre, which statements and omissions, the plaintiffs claim, allegedly operated to artificially inflate the price paid for our common stock during the period. On April 26, 2018, the lawsuit was transferred to Santa Clara County and assigned a new case number, 18CV327692. On August 14, 2018, the Court stayed this lawsuit pending a decision on the motion to dismiss in Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 filed against us in the United States District Court for the Northern District of California.
Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.
In re Advanced Micro Devices, Inc. Shareholder Derivative Litigation
Two purported shareholder derivative lawsuits were filed against us (as a nominal defendant only) and certain of our directors and officers in the United States District Court, Northern District of California: (1) Jacqueline Dolby, derivatively on behalf of AMD, Inc. v. Su et al., Case No. 5:18-cv-03575, filed on June 14, 2018; and (2) Gusinsky Trust, derivatively on behalf of AMD, Inc. v. Su et al., Case No. 5:18-cv-03811, filed on June 26, 2018. The complaints purport to assert claims against us and certain individual directors and officers for violation of Section 14(a) of the Exchange Act and SEC Rule 14a-9, breach of fiduciary duty, waste of corporate assets, and unjust enrichment. The complaints seek damages purportedly caused by alleged materially misleading statements and/or material omissions by us and the individual directors and officers regarding Spectre. The plaintiffs allege that these statements and omissions operated to artificially inflate the price paid for our common stock during the period. On July 12, 2018, the court consolidated the Dolby and Gusinsky Trust shareholder derivative lawsuits under the caption In re Advanced Micro Devices, Inc. Shareholder Derivative Litigation. On August 10, 2018, the Court stayed this lawsuit pending a decision on the motion to dismiss in Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 filed against us in the United States District Court for the Northern District of California.
Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.
Dickey Litigation
On October 26, 2015, a putative class action complaint captioned Dickey et al. v. AMD, No. 15-cv-04922 was filed against us in the United States District Court for the Northern District of California. Plaintiffs allege that we misled consumers by using the term “eight cores” in connection with the marketing of certain AMD FX CPUs that are based on our “Bulldozer” core architecture. The plaintiffs allege these products cannot perform eight calculations simultaneously, without restriction. The plaintiffs seek to obtain damages under several causes of action for a nationwide class of consumers who allegedly were deceived into purchasing certain Bulldozer-based CPUs that were marketed as containing eight cores. The plaintiffs also seek attorneys’ fees. On December 21, 2015, we filed a motion to dismiss the complaint, which was granted on April 7, 2016. The plaintiffs then filed an amended complaint with a narrowed putative class definition, which the Court dismissed upon our motion on October 31, 2016. The plaintiffs subsequently filed a second amended complaint, and we filed a motion to dismiss the second amended complaint. On June 14, 2017, the Court issued an order granting in part and denying in part our motion to dismiss, and allowing the plaintiffs to move forward with a portion of their complaint. On March 27, 2018, plaintiffs filed their motion for class certification. On January 17, 2019, the Court granted plaintiffs’ motion for class certification. The class definition does not encompass our Ryzen™ or EPYC™ processors. On January 31, 2019, we filed a petition in the Ninth Circuit Court of Appeals seeking review of certain aspects of the January 17, 2019 class certification order.
Based upon information presently known to management, we believe that the potential liability, if any, will not have a material adverse effect on our financial condition, cash flows or results of operations.
Environmental Matters
We are named as a responsible party on Superfund clean-up orders for three sites in Sunnyvale, California that are on the National Priorities List. Since 1981, we have discovered hazardous material releases to the groundwater from former underground tanks and proceeded to investigate and conduct remediation at these three sites. The chemicals released into the groundwater were commonly used in the semiconductor industry in the United States in the wafer fabrication process prior to 1979.

In 1991, we received Final Site Clean-up Requirements Orders from the California Regional Water Quality Control Board relating to the three sites. We have entered into settlement agreements with other responsible parties on two of the orders. During the term of such agreements, other parties have agreed to assume most of the foreseeable costs as well as the primary role in conducting remediation activities under the orders. We remain responsible for additional costs beyond the scope of the agreements as well as all remaining costs in the event that the other parties do not fulfill their obligations under the settlement agreements.

To address anticipated future remediation costs under the orders, we have computed and recorded an estimated environmental liability of approximately $3 million and have not recorded any potential insurance recoveries in determining the estimated costs of the cleanup. Costs could also increase as a result of additional test and remediation obligations imposed by the Environmental Protection Agency or California Regional Water Quality Control Board. The progress of future remediation efforts cannot be predicted with certainty and these costs may change. We believe that the potential liability, if any, in excess of amounts already accrued, will not have a material adverse effect on our financial condition, cash flows or results of operations.

Other Matters

We are a defendant or plaintiff in various actions that arose in the normal course of business. With respect to these matters, based on our management's current knowledge, we believe that the amount or range of reasonably possible loss, if any, will not, either individually or in the aggregate, have a material adverse effect on our business, financial position, results of operations or cash flows.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is listed on The NASDAQ Global Select Market (NASDAQ) under the symbol "AMD". On February 1, 2019, there were 4,614 registered holders of our common stock, and the closing price of our common stock was $24.51 per share as reported on NASDAQ.
For information about our equity compensation plans, see Part III, Item 11, below.
Performance Graph
Comparison of Five-Year Cumulative Total Returns
Advanced Micro Devices, S&P 500 Index and S&P 500 Semiconductor Index

The following graph shows a five-year comparison of cumulative total return on our common stock, the S&P 500 Index and the S&P 500 Semiconductor Index from December 28, 2013 through December 29, 2018. The past performance of our common stock is no indication of future performance.

	Base Period	Years Ending				
Company / Index	12/28/2013	12/27/2014	12/26/2015	12/31/2016	12/30/2017	12/29/2018
Advanced Micro Devices, Inc.	100	70.11	77.25	300.00	271.96	471.43
S&P 500 Index	100	115.76	116.64	129.55	157.84	150.92
S&P 500 Semiconductors Index	100	139.35	140.00	175.90	239.79	224.48

Unregistered Sales of Equity Securities

On December 26, 2018, we issued warrants to purchase 127,435 shares of our common stock to a commercial partner pursuant to a strategic arrangement with such partner. The warrants have an exercise price of $20.0423 per share and expire on December 26, 2021. The warrants were issued pursuant to Section 4(a)(2) of the Securities Act of 1933, as amended.

During the fourth quarter of 2018, we settled $35 million in aggregate principal amount of our 7.00% Senior Notes due 2024 (7.00% Notes) with 1,789,751 treasury shares.

ITEM 6. SELECTED FINANCIAL DATA

	2018[1]	2017[1][2]	2016[1][2]	2015[1]	2014[1]
	In millions except per share amounts				
Net revenue	$6,475	$5,253	$4,319	$3,991	$5,506
Net income (loss) [3][4][5][6][7]	337	(33)	(498)	(660)	(403)
Earnings (loss) per share					
Basic	$0.34	$(0.03)	$(0.60)	$(0.84)	$(0.53)
Diluted	$0.32	$(0.03)	$(0.60)	$(0.84)	$(0.53)
Shares used in per share calculation					
Basic	982	952	835	783	768
Diluted	1,064	952	835	783	768
Long-term debt, net and other long term liabilities [8][9]	$1,306	$1,443	$1,559	$2,093	$2,110
Total assets [9]	$4,556	$3,552	$3,328	$3,084	$3,737

(1) 2018, 2017, 2015 and 2014 each consisted of 52 weeks, whereas 2016 consisted of 53 weeks.

(2) 2017 and 2016 amounts adjusted to reflect the retrospective application of Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) 2014-09, Revenue from Contracts with Customers. Refer to Note 2 Summary of Significant Accounting Policies.

(3) During the third quarter of 2016, we agreed to pay GF $100 million in installments related to the Sixth Amendment with GF starting in the fourth fiscal quarter of 2016 through the third quarter of 2017. As of December 30, 2017, we paid GF $100 million in aggregate. In addition, in 2016 we recorded a charge of $340 million in Cost of sales, consisting of the $100 million payment under the Sixth Amendment and the $240 million value of the warrant under the Warrant Agreement issued in consideration of the Sixth Amendment.

(4) In 2015 and 2014, we implemented restructuring plans and incurred net charges of $53 million and $58 million in 2015 and 2014, respectively, which primarily consisted of severance and related employee benefits.

(5) In 2015, we exited the dense server systems business, formerly SeaMicro resulting in a charge of $76 million in restructuring and other special charges, net. In 2014, we incurred other special charges of $13 million primarily related to the departure of a former CEO.

(6) In 2014, we recorded a goodwill impairment charge of $233 million related to our Computing and Graphics segment. Also in 2014, we recorded a $58 million lower of cost or market inventory adjustment related to our second generation APU products. In 2015, we recorded an inventory write-down of $65 million, which was primarily the result of lower anticipated demand for older-generation APUs, and a technology node transition charge of $33 million.

(7) In 2016, we recorded a cumulative pre-tax gain on the sale of our 85% equity interest in ATMP JV of $146 million which was recognized in Other income (expense) on our consolidated statements of operations.

(8) Total long-term debt and other long term liabilities decreased by $534 million from 2015 to 2016, primarily due to $1,048 million of net debt repayment, partially offset by the issuance of $805 million in principal amount of 2.125% Notes net of unamortized discount of $308 million and unamortized financing cost of $14 million, and $38 million increase in other long-term liabilities mainly due to higher technology licenses payable.

(9) Amounts retrospectively reflected adoption of FASB ASU 2015-03, Simplifying the Presentation of Debt Issuance Costs beginning in the first quarter of 2016. We reclassified debt issuance costs from long-term assets to long-term debt, net by $25 million and $30 million for 2015 and 2014, respectively, on our consolidated balance sheets.

ITEM 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with the consolidated financial statements as of December 29, 2018 and December 30, 2017 and for each of the three years in the period ended December 29, 2018 and related notes, which are included in this Annual Report on Form 10-K as well as with the other sections of this Annual Report on Form 10-K, including “Part I, Item 1: Business,” “Part II, Item 6: Selected Financial Data” and “Part II, Item 8: Financial Statements and Supplementary Data.”

Introduction

We are a global semiconductor company primarily offering:

- x86 microprocessors, as standalone devices or as incorporated into an accelerated processing unit (APU), chipsets, discrete and integrated graphics processing units (GPUs), and professional GPUs; and
- server and embedded processors, semi-custom System-on-Chip (SoC) products and technology for game consoles.

We also license portions of our intellectual property (IP) portfolio.

In this management’s discussion and analysis (MD&A), we will describe the results of operations and the financial condition for us and our consolidated subsidiaries, including a discussion of our results of operations for 2018 compared to 2017 and 2017 compared to 2016, an analysis of changes in our financial condition and a discussion of our contractual obligations and off balance sheet arrangements.

Overview

Our 2018 financial results demonstrate the success of our strong product roadmap execution. Customers continued to adopt our high performance products as new products accounted for over 65% of our annual 2018 revenue. Net revenue for 2018 was $6.5 billion, an increase of 23% compared to 2017 net revenue of $5.3 billion. Gross margin, as a percentage of net revenue for 2018, was 38%, a 4% increase compared to 34% in 2017. Our operating income for 2018 improved to $451 million compared to operating income of $127 million for 2017. Our net income for 2018 improved to $337 million compared to a net loss of $33 million in the prior year.

We significantly expanded our desktop processor offerings in 2018 with the launch of our second-generation AMD Ryzen and high-end AMD Ryzen Threadripper™ WX processors for gamers, creators and hardware enthusiasts. We announced the availability of our first desktop consumer and commercial Ryzen and Ryzen PRO APUs that combine our high-performance “Zen” CPU and Radeon “Vega” graphics cores into a single chip. We also introduced the first entry-level processors based on our “Zen” CPU and “Vega” GPU cores for the consumer and commercial desktop PC market with the AMD Athlon™ and AMD PRO processors. In the notebook market, multiple customers launched premium consumer and commercial PCs featuring our mobile AMD Ryzen APUs, including our first enterprise-class notebooks powered by our new AMD Ryzen PRO APUs. For the high-performance embedded markets, we introduced the AMD EPYC™ Embedded 3000 processor and AMD Ryzen Embedded V1000 processor families that bring new levels of computing and graphics performance to the thin client, digital signage, and infrastructure markets.

Cash, cash equivalents and marketable securities as of December 29, 2018 were $1.16 billion, down from $1.18 billion at the end of 2017. Principal amount of total debt as of December 29, 2018 was $1.53 billion, compared to $1.70 billion as of December 30, 2017.

We intend the discussion of our financial condition and results of operations that follows to provide information that will assist in understanding our financial statements, the changes in certain key items in those financial statements from period to period, the primary factors that resulted in those changes, and how certain accounting principles, policies and estimates affect our financial statements.

Critical Accounting Estimates

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles (U.S. GAAP). The preparation of our financial statements requires us to make estimates and judgments that affect the reported amounts in our consolidated financial statements. We evaluate our estimates on an on-going basis, including those related to our revenue, inventories, goodwill impairments and income taxes. We base our estimates on historical

experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities. Although actual results have historically been reasonably consistent with

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management's expectations, the actual results may differ from these estimates or our estimates may be affected by different assumptions or conditions.

Management believes the following critical accounting estimates are the most significant to the presentation of our financial statements and require the most difficult, subjective and complex judgments.

Revenue recognition. In accordance with the adoption of the new revenue standard effective the beginning of the first quarter of 2018, we now recognize revenue upon the shipment of the product to our distributors (sell-in), rather than upon the resale of the product by our distributors to their customers (sell-through). Accordingly, we have established provisions for rights of return and price protection on unsold product held by our distributors.

Revenue Allowances. We record a provision for estimated sales returns and allowances on product sales for estimated future price reductions and other customer incentives in the same period that the related revenues are recorded. We base these estimates on actual historical sales returns, historical allowances, historical price reductions, market activity and other known or anticipated trends and factors. These estimates are subject to management's judgment and actual provisions could be different from our estimates and current provisions, resulting in future adjustments to our revenue and operating results.

Inventory Valuation. At each balance sheet date, we evaluate our ending inventories for excess quantities and obsolescence based on projected sales outlook. This evaluation includes analysis of historical sales levels by product and projections of future demand. These projections assist us in determining the carrying value of our inventory. In addition, we write off inventories that we consider obsolete. We adjust the remaining specific inventory balances to approximate the lower of our standard manufacturing cost or net realizable value. Among other factors, management considers forecasted demand in relation to the inventory on hand, competitiveness of product offerings, market conditions and product life cycles when determining obsolescence and realizable value. If in any period we anticipate future demand or market conditions to be less favorable than our previous estimates, additional inventory write-downs may be required and would be reflected in cost of sales in the period the revision is made. This would have a negative impact on our gross margin in that period. If in any period we are able to sell inventories that were not valued or that had been written down in a previous period, related revenues would be recorded without any offsetting charge to cost of sales resulting in a net benefit to our gross margin in that period.

Goodwill. We perform our goodwill impairment analysis as of the first day of the fourth quarter of each year and, if certain events or circumstances indicate that an impairment loss may have been incurred, on a more frequent basis. The analysis may include both qualitative and quantitative factors to assess the likelihood of an impairment. Qualitative factors include industry and market consideration, overall financial performance, share price trends and market capitalization and Company-specific events. We first analyze qualitative factors. If we conclude it is more likely than not that the fair value of a reporting unit exceeds its carrying amount, we do not proceed to perform a quantitative impairment test.

A quantitative impairment analysis, if necessary, considers the income approach, which requires estimates of the present value of expected future cash flows to determine a reporting unit's fair value. Significant estimates include revenue growth rates and operating margins used to calculate projected future cash flows, discount rates, and future economic and market conditions. If we conclude it is more likely than not that the fair value of the reporting unit is less than its carrying value, a quantitative goodwill impairment test will be performed by comparing the fair value of each reporting unit to its carrying value.

A goodwill impairment charge is recognized for the amount by which the reporting unit's fair value is less than its carrying value. Any loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.

Income Taxes. In determining taxable income for financial statement reporting purposes, we must make certain estimates and judgments. These estimates and judgments are applied in the calculation of certain tax liabilities and in the determination of the recoverability of deferred tax assets which arise from temporary differences between the recognition of assets and liabilities for tax and financial statement reporting purposes.

We must assess the likelihood that we will be able to recover our deferred tax assets. If recovery is not likely, we must increase our charge to income tax expense in the form of a valuation allowance for the deferred tax assets that we estimate will not ultimately be recoverable. We consider past performance, future expected taxable income and

prudent and feasible tax planning strategies in determining the need for a valuation allowance.

In addition, the calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax rules and the potential for future adjustment of our uncertain tax positions by the Internal Revenue Service or other taxing authorities. If our estimates of these taxes are greater or less than actual results, an additional tax benefit or charge will result. We recognize the interest and penalties related to unrecognized tax benefits as interest expense and income tax expense, respectively.

In December 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017 (Tax Reform Act). The legislation significantly changes U.S. tax law by, among other things, lowering corporate income tax rates, implementing a modified territorial tax system and imposing a transition tax on deemed repatriated earnings of foreign subsidiaries. The Tax Reform Act permanently reduces the U.S. corporate income tax rate from a maximum of 35% to a flat 21% rate, effective January 1, 2018. The SEC staff issued Staff Accounting Bulletin No. 118 (SAB 118) to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Reform Act. More specifically, SAB 118 allowed companies to record provisional amounts during a measurement period that is similar to the measurement period used when accounting for business combinations. As a result, we have recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities in our consolidated financial statements for the year ended December 30, 2017. During 2018, we finalized our computation of the impact of the Tax Reform Act.

In January 2018, the FASB released guidance on the accounting for tax on the global intangible low-taxed income (GILTI) provisions of the Tax Reform Act. The GILTI provisions impose a tax on foreign income in excess of a deemed return on tangible assets of foreign corporations. The guidance allows companies to make an accounting policy election to either (i) account for GILTI as a component of tax expense in the period in which they are subject to the rules (the period cost method), or (ii) account for GILTI in the Company's measurement of deferred taxes (the deferred method). After completing the analysis of the GILTI provisions, we elected to account for GILTI using the period cost method.

Results of Operations

We report our financial performance based on the following two reportable segments:the Computing and Graphics segment and the Enterprise, Embedded and Semi-Custom segment.

Additional information on our reportable segments is contained in Note 15: Segment Reporting of the Notes to Financial Statements (Part II, Item 8 of this Form 10-K).

Our operating results tend to vary seasonally. Historically, first quarter PC product sales were generally lower than fourth quarter sales and with respect to our semi-custom SoC products for game consoles our sales pattern usually reflects higher sales in the second and third quarters compared to the first and fourth quarters.

The following table provides a summary of net revenue and operating income (loss) by segment for 2018, 2017 and 2016.

	2018	2017	2016
	(In millions)		
Net revenue:			
Computing and Graphics	$4,125	$2,977	$1,988
Enterprise, Embedded and Semi-Custom	2,350	2,276	2,331
Total net revenue	$6,475	$5,253	$4,319
Operating income (loss):			
Computing and Graphics	$470	$92	$(243)
Enterprise, Embedded and Semi-Custom	163	132	287
All Other	(182)	(97)	(417)
Total operating income (loss)	$451	$127	$(373)

Computing and Graphics

Computing and Graphics net revenue of $4.1 billion in 2018 increased by 39%, compared to $3.0 billion in 2017, primarily as a result of a 15% increase in average selling price and a 17% increase in unit shipments. The increase in average selling price and unit shipments was primarily driven by higher demand for our Ryzen™ processors.

Computing and Graphics net revenue of $3.0 billion in 2017 increased by 50%, compared to $2.0 billion in 2016 as a result of a 38% increase in average selling price and a 1% increase in unit shipments. The increase in the average selling price was primarily driven by Ryzen desktop processor and Radeon graphics products sales. The increase in unit shipments was primarily attributable to higher demand for our Radeon graphics products.

Computing and Graphics operating income was $470 million in 2018 compared to operating income of $92 million in 2017. The improvement in operating income was primarily driven by higher demand for Ryzen and Radeon products as customers continued to adopt our new products, partially offset by a $195 million increase in operating expenses. Operating expenses increased for the reasons set forth under “Expenses” below.

Computing and Graphics operating income was $92 million in 2017, compared to an operating loss of $243 million in 2016. The improvement in operating results was primarily due to the increase in net revenue referenced above, partially offset by the related increase in cost of sales and operating expenses. Operating expenses increased for the reasons set forth under "Expenses" below.

Enterprise, Embedded and Semi-Custom

Enterprise, Embedded and Semi-Custom net revenue of $2.4 billion in 2018 increased by 3% compared to net revenue of $2.3 billion 2017. The increase in net revenue was primarily due to higher sales of our EPYC™ server products, partially offset by lower semi-custom revenue.

Enterprise, Embedded and Semi-Custom net revenue of $2.28 billion in 2017 decreased by 2% compared to net revenue of $2.33 billion in 2016. IP related revenue and sales of our EPYC datacenter processors, which were launched in June of 2017, were mostly offset by a decrease in non-recurring engineering (NRE) revenue and lower sales of our semi-custom SoC products.

Enterprise, Embedded and Semi-Custom operating income was $163 million in 2018 compared to operating income of $132 million in 2017. The improvement in operating income was due primarily to richer server and semi-custom product mix, partially offset by a $50 million increase in operating expenses and lower IP-related revenue. In 2017, operating income also included a licensing gain of $52 million. Operating expenses increased for the reasons set forth under "Expenses" below.

Enterprise, Embedded and Semi-Custom operating income was $132 million in 2017 compared to operating income of $287 million in 2016. The decline in operating results was primarily due to an increase in operating expenses driven primarily by datacenter-related expenses and lower licensing gain recorded in 2017 related to the licensed IP to the THATIC JV compared to 2016. Operating expenses increased for the reasons set forth under "Expenses" below.

All Other

All Other operating loss of $182 million in 2018 included stock-based compensation expense of $137 million and an impairment of technology licenses of $45 million.

All Other operating loss of $97 million in 2017 was related to stock-based compensation expense.

All Other operating loss of $417 million in 2016 included a charge of $340 million, which was comprised of the $100 million payment under the Sixth Amendment and the $240 million value of the warrant under the Warrant Agreement with WCH, and stock-based compensation expense of $86 million, partially offset by restructuring reversals of $10 million.

Comparison of Gross Margin, Expenses, Interest Expense, Other Income (Expense), Net Income Taxes and Equity Loss in Investee

The following is a summary of certain consolidated statement of operations data for 2018, 2017 and 2016:

	2018	2017	2016
	(In millions, except for percentages)		
Cost of sales	$ 4,028	$ 3,466	$ 3,316
Gross margin	2,447	1,787	1,003
Gross margin percentage	38 %	34 %	23 %
Research and development	1,434	1,196	1,008
Marketing, general and administrative	562	516	466
Restructuring and other special charges, net	—	—	(10)
Licensing gain	—	(52)	(88)
Interest expense	(121)	(126)	(156)
Other income (expense), net	—	(9)	80
Provision (benefit) for income taxes	(9)	18	39
Equity loss in investee	$ (2)	$ (7)	$ (10)

Gross Margin

Gross margin as a percentage of net revenue was 38% in 2018 compared to 34% in 2017. The improvement in gross margin was primarily driven by the ramp of new products with higher gross margin than the corporate average.

Gross margin as a percentage of net revenue was 34% in 2017 compared to 23% in 2016. Gross margin improved in 2017 primarily due to the absence of the charge of $340 million recorded in 2016, comprised of a $100 million payment under the Sixth Amendment and the value of the warrant of $240 million under the Warrant Agreement, which accounted for eight gross margin percentage points. In addition, the increase in gross margin percentage for 2017 compared to 2016 was due to a favorable shift in product mix to new Radeon GPU and Ryzen desktop processor products in the Computing and Graphics segment.

Expenses

Research and Development Expenses

Research and development expenses of $1.4 billion in 2018 increased by $238 million, or 20%, compared to $1.2 billion in 2017. The increase was primarily driven by a $168 million increase in product engineering and design related costs attributable to both segments, and higher annual employee incentives driven by improved financial performance.

Research and development expenses of $1.2 billion in 2017 increased by $188 million, or 19%, compared to $1.0 billion in 2016. The increase was primarily due to a $136 million increase in product engineering and design related costs attributable to both segments, and higher annual employee incentives driven by improved financial performance.

Marketing, General and Administrative Expenses

Marketing, general and administrative expenses of $562 million in 2018 increased by $46 million, or 9%, compared to $516 million in 2017. The increase was primarily due to a $41 million increase in sales and marketing activities attributable to both segments and higher annual employee incentives driven by our improved financial performance.

Marketing, general and administrative expenses of $516 million in 2017 increased by $50 million, or 11%, compared to $466 million in 2016. The increase was primarily due to a $29 million increase in sales and marketing activities attributable to both segments and higher annual employee incentives driven by our improved financial performance.

Interest Expense

Interest expense of $121 million in 2018 decreased by $5 million compared to $126 million in 2017, primarily due to lower debt balances and lower weighted average interest rates.

Interest expense of $126 million in 2017 decreased by $30 million compared to $156 million in 2016, primarily due to lower weighted average interest rates and lower debt balances.

Other Income (Expense), Net

Other income (expense), net of zero in 2018 changed by $9 million compared to $9 million Other expense, net in 2017. The change from 2017 to 2018 was primarily due to $12 million higher interest income in 2018 mainly related to a withholding tax refund from a foreign jurisdiction.

Other expense, net of $9 million in 2017 changed by $89 million compared to $80 million Other income, net in 2016. The change from 2016 to 2017 was primarily due to the absence in 2017 of the substantial gain on sale of equity interests in ATMP JV that was partially offset by loss on debt redemption in 2016.

Provision (Benefit) For Income Taxes

We recorded an income tax benefit of $9 million in 2018 and an income tax provision of $18 million and $39 million in 2017 and 2016, respectively.

The income tax benefit in 2018 was primarily due to a $36 million refund of withholding tax from a foreign jurisdiction related to a legal settlement from 2010, offset by $13 million of U.S. income taxes resulting from the Tax Reform Act, $7 million tax provision in foreign locations and $7 million of withholding taxes on cross-border transactions.

The income tax provision in 2017 was primarily due to withholding taxes applicable to IP-related revenue and licensing gains from foreign locations.

The income tax provision in 2016 was primarily due to $41 million of foreign taxes in profitable locations including $27 million attributable to a gain on the sale of 85% of the ownership interest in the subsidiary operating a factory in Suzhou and $9 million of withholding taxes on cross-border transactions where no foreign tax credit is expected to be realizable, offset by $2 million of tax benefits for Canadian tax credits and the monetization of certain U.S. tax credits.

International Sales

International sales as a percentage of net revenue were 80% in 2018 and 74% in 2017. The increase in international sales as a percentage of net revenue in 2018 compared to 2017 was primarily driven by a higher proportion of revenue from China and Taiwan related to sales of our products within the Computing and Graphics segment.

International sales as a percentage of net revenue were 74% in 2017 and 79% in 2016. The decrease in international sales as a percentage of net revenue in 2017 compared to 2016 was primarily driven by a higher proportion of revenue from domestic sales of our desktop processors, graphics processors and semi-custom SoC products.

We expect that international sales will continue to be a significant portion of total sales in the foreseeable future. Substantially all of our sales transactions were denominated in U.S. dollars.

FINANCIAL CONDITION

Liquidity and Capital Resources

As of December 29, 2018, our cash, cash equivalents and marketable securities were $1.16 billion compared to $1.18 billion as of December 30, 2017. The percentage of cash and cash equivalents held domestically was 88% as of December 29, 2018, and 95% as of December 30, 2017. Our operating, investing and financing activities for fiscal 2018, 2017 and 2016 were as follows:

	2018	2017	2016
	(In millions)		
Net cash provided by (used in):			
Operating activities	$34	$12	$81
Investing activities	(170)	(54)	277
Financing activities	28	(33)	122
Net increase (decrease) in cash and cash equivalents, and restricted cash	$(108)	$(75)	$480

Our aggregate principal debt obligations were $1.5 billion and $1.7 billion as of December 29, 2018 and December 30, 2017, respectively.

We believe our cash, cash equivalents and marketable securities balance along with our Secured Revolving Line of Credit will be sufficient to fund operations, including capital expenditures, over the next 12 months. We believe we will be able to access the capital markets should we require additional funds. However, we cannot assure that such funds will be available on favorable terms, or at all.

Operating Activities

Net cash provided by operating activities was $34 million in 2018 compared to net cash provided by operating activities of $12 million in 2017. The increase in net cash provided in operating activities was primarily due to changes in working capital, largely driven by higher cash collections from increased revenue, partially offset by higher labor costs and timing of accounts payable payments.

Net cash provided by operating activities was $12 million in 2017 compared to net cash provided by operating activities of $81 million in 2016. The decrease in cash inflows from operating activities was primarily due to higher operating costs including higher wafer purchases and higher labor costs, partially offset by higher cash collection primarily due to higher revenue and lower interest payments resulting from debt reductions.

Investing Activities

Net cash used in investing activities was $170 million in 2018, which primarily consisted of $163 million for purchases of property and equipment, a net cash outflow from purchases and maturities of available-for-sale debt securities partially offset by collection of deferred proceeds on sale of receivables.

Net cash used in investing activities was $54 million in 2017, which consisted primarily of a cash outflow of $113 million for purchases of property and equipment, partially offset by collection of deferred proceeds on sale of receivables.

Net cash provided by investing activities was $277 million in 2016, which primarily consisted of a net cash inflow of $342 million from sale of equity interests in the ATMP JV, partially offset by purchases of property and equipment .

Financing Activities

Net cash provided by financing activities was $28 million in 2018, which consisted of a net cash inflow of $69 million from the issuance of common stock through employee equity incentive plans, partially offset by the repurchase of an aggregate principal amount of $40 million of our outstanding 6.75% Senior Notes due 2019 (6.75% Notes) and 7.00% Senior Notes due 2024 (7.00% Notes) for $41 million in cash.

Net cash used in financing activities was $33 million in 2017, which primarily consisted of the repurchases of an aggregate principal amount of $103 million of our outstanding 6.75% Notes and 7.00% Notes for $110 million in cash and $13 million for tax withholding on the vesting of restricted stock, partially offset by the $70 million net proceeds from our Secured Revolving Line of Credit and the $20 million proceeds from issuance of common stock under stock-based compensation equity plans.

Net cash provided by financing activities was $122 million in 2016, which primarily consisted of the $782 million net proceeds from the issuance of our 2.125% Convertible Senior Notes due 2026 (2.125% Notes), the $667 million net proceeds from selling 115 million shares of our common stock and the $20 million proceeds from issuance of common stock under stock-based compensation equity plans, partially offset by the repurchases of an aggregate principal amount of $1.1 billion of our outstanding 6.75% Notes, 7.75% Senior Notes due 2020 (7.75% Notes), 7.50% Senior Notes due 2022 (7.50% Notes) and 7.00% Notes for $1.1 billion in cash and repayments in aggregate of $230 million of our Secured Revolving Line of Credit.

Contractual Obligations

The following table summarizes our consolidated principal contractual cash obligations, as of December 29, 2018, and is supplemented by the discussion following the table:

	Payment due by period						
(In millions)	Total	2019	2020	2021	2022	2023	2024 and thereafter
Term Debt	$1,458	$66	$—	$—	$337	$ —	$ 1,055
Secured Revolving Line of Credit	70	70	—	—	—	—	—
Other long-term liabilities [(1)]	170	50	42	40	35	1	2
Aggregate interest obligation [(2)]	349	63	61	61	60	35	69
Operating leases	322	54	48	43	40	35	102
Purchase obligations [(3)]	337	287	29	15	4	2	—
Obligations to GF [(4)]	2,435	1,200	715	520	—	—	—
Total contractual obligations [(5)]	$5,141	$1,790	$895	$679	$476	$ 73	$ 1,228

(1) Amounts largely represent future fixed and non-cancellable cash payments associated with software technology and licenses and IP licenses, including the payments due within the next 12 months.

(2) Represents estimated aggregate interest obligations for our outstanding debt obligations that are payable in cash, excluding non-cash amortization of debt issuance costs and debt discount.

(3) We have purchase obligations for goods and services where payments are based, in part, on the volume or type of services we acquire. In those cases, we only included the minimum volume of purchase obligations in the table above. Purchase orders for goods and services that are cancellable upon notice and without significant penalties are not included in the amounts above.

(4) Subsequent to the year end, on January 28, 2019, we entered into a Seventh Amendment with GF, which among other terms modified our minimum wafer purchase obligations to GF which are reflected in the above table. These minimum purchase obligations are our contractual minimums and do not necessarily reflect our actual expected expenditures, which could be significantly different. We cannot meaningfully quantify or estimate our future

purchase obligations to GF beyond 2021 but expect that our future purchases from GF will continue to be material.

(5) Total amount excludes contractual obligations already recorded on our condensed consolidated balance sheets except for debt obligations and other liabilities related to software and technology licenses and IP licenses.

Senior Notes
6.75% Senior Notes Due 2019
On February 26, 2014, we issued $600 million of our 6.75% Notes. Our 6.75% Notes are our general unsecured senior obligations. Interest is payable on March 1 and September 1 of each year beginning September 1, 2014 until the maturity date of March 1, 2019. Our 6.75% Notes are governed by the terms of an indenture (the 6.75% Indenture) dated February 26, 2014 between us and Wells Fargo Bank, N.A., as trustee.
At any time before March 1, 2019, we may redeem some or all of our 6.75% Notes at a price equal to 100% of the principal amount, plus accrued and unpaid interest and a “make whole” premium (as set forth in the 6.75% Indenture).
In 2016, we repurchased $404 million in aggregate principal amount of our 6.75% Notes pursuant to a partial tender offer for $442 million. In 2017, we settled $30 million in aggregate principal amount of our 6.75% Notes, of which $26 million was settled in cash and $5 million was settled in treasury stock. During 2018, we settled $101 million in aggregate principal amount of our 6.75% Notes, of which $14 million was settled in cash and $87 million was settled in treasury stock. As of December 29, 2018, the outstanding aggregate principal amount of our 6.75% Notes was $66 million.
See Note 13 of “Notes to Consolidated Financial Statements” below, for additional information regarding our 6.75% Notes.
7.50% Senior Notes Due 2022
On August 15, 2012, we issued $500 million of our 7.50% Notes. Our 7.50% Notes are our general unsecured senior obligations. Interest is payable on February 15 and August 15 of each year beginning February 15, 2013 until the maturity date of August 15, 2022. The 7.50% Notes are governed by the terms of an indenture (the 7.50% Indenture) dated August 15, 2012 between us and Wells Fargo Bank, N.A., as trustee.
Prior to August 15, 2022, we may redeem some or all of our 7.50% Notes at a price equal to 100% of the principal amount, plus accrued and unpaid interest and a “make whole” premium (as set forth in the 7.50% Indenture).
In 2014, we repurchased $25 million in aggregate principal amount of our 7.50% Notes. In 2016, we repurchased $125 million in aggregate principal amount of our 7.50% Notes. In 2017, we settled $3 million in aggregate principal amount of our 7.50% Notes in treasury stock. During 2018, we settled $10 million in aggregate principal amount of our 7.50% Notes in treasury stock. As of December 29, 2018, the outstanding aggregate principal amount of our 7.50% Notes was $337 million.
See Note 13 of “Notes to Consolidated Financial Statements” below, for additional information regarding our 7.50% Notes.
7.00% Senior Notes Due 2024
On June 16, 2014, we issued $500 million of our 7.00% Notes. The 7.00% Notes are our general unsecured senior obligations. Interest is payable on January 1 and July 1 of each year beginning January 1, 2015 until the maturity date of July 1, 2024. The 7.00% Notes are governed by the terms of an indenture (the 7.00% Indenture) dated June 16, 2014 between us and Wells Fargo Bank, N.A., as trustee.
Prior to July 1, 2019, we may redeem some or all of the 7.00% Notes at a price equal to 100% of the principal amount plus accrued and unpaid interest and a “make whole” premium (as set forth in the 7.00% Indenture).
Starting July 1, 2019, we may redeem our 7.00% Notes for cash at the following specified prices plus accrued and unpaid interest:

Period	Price as Percentage of Principal Amount
Beginning on July 1, 2019 through June 30, 2020	103.500%
Beginning on July 1, 2020 through June 30, 2021	102.333%
Beginning on July 1, 2021 through June 30, 2022	101.167%
On July 1, 2022 and thereafter	100.000%

In 2016, we settled $84 million in aggregate principal amount of our 7.00% Notes for $77 million in cash and $8 million with treasury stock. In 2017, we settled $105 million in aggregate principal amount of our 7.00% Notes for $84 million in cash and $26 million in treasury stock. During 2018, we settled $61 million in aggregate principal amount of our 7.00% Notes for $26 million in cash and $35 million in treasury stock. As of December 29, 2018, the outstanding aggregate principal amount of the 7.00% Notes was $250 million.

See Note 13 of “Notes to Consolidated Financial Statements” below, for additional information regarding our 7.00% Notes.
During 2018, we recorded $12 million in losses on extinguishment of debt associated with the debt repurchases noted above.

2.125% Convertible Senior Notes Due 2026

On September 14, 2016, we issued $700 million in aggregate principal amount of our 2.125% Notes. We also granted an option to the underwriters to purchase up to an additional $105 million aggregate principal amount of our 2.125% Notes. On September 28, 2016, this option was exercised in full and we issued an additional $105 million aggregate principal amount of our 2.125% Notes.
Our 2.125% Notes are our general unsecured senior obligations and will mature on September 1, 2026, unless earlier repurchased or converted. Interest is payable in arrears on March 1 and September 1 of each year beginning on March 1, 2017. Our 2.125% Notes are governed by the terms of a base indenture and a supplemental indenture (together the 2.125% Indentures) dated September 14, 2016 between us and Wells Fargo Bank, N.A., as trustee.
Holders may convert their notes at their option at any time prior to the close of business on the business day immediately preceding June 1, 2026 only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on September 30, 2016 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day; (2) during the five business day period after any 10 consecutive trading day period (the “measurement period”) in which the trading price per $1,000 principal amount of notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; or (3) upon the occurrence of specified corporate events. On or after June 1, 2026 and until the close of business on the business day immediately preceding the maturity date, holders may convert their notes at any time, regardless of the foregoing circumstances. Upon conversion, we will pay or deliver, as the case may be, cash, shares of our common stock or a combination of cash and shares of our common stock, at our election.
During the fourth quarter of 2018, the conversion conditions were satisfied and as a result, the 2.125% Notes are eligible for conversion during the first calendar quarter of 2019. We may not redeem the notes prior to the maturity date, and no sinking fund is provided for the notes.
The conversion rate is initially 125.0031 shares of common stock per $1,000 principal amount of notes (equivalent to an initial conversion price of approximately $8.00 per share of common stock). The conversion rate is subject to adjustment in some events but will not be adjusted for any accrued and unpaid interest. In addition, following certain corporate events that occur prior to the maturity date, we will increase the conversion rate for a holder who elects to convert its notes in connection with such a corporate event in certain circumstances.
If we undergo a fundamental change prior to the maturity date of the notes, holders may require us to repurchase for cash all or any portion of their notes at a fundamental change repurchase price equal to 100% of the principal amount of the notes to be repurchased plus accrued and unpaid interest to, but excluding, the fundamental change repurchase date.
As of December 29, 2018, the outstanding aggregate principal amount of our 2.125% Notes was $805 million. See Note 13 of “Notes to Consolidated Financial Statements” below for additional information regarding our 2.125% Notes.
Potential Repurchase of Outstanding Notes
We may elect to purchase or otherwise retire all or a portion of our 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes with cash, stock or other assets from time to time in open market or privately negotiated transactions, either directly or through intermediaries or by tender offer when we believe the market conditions are favorable to do so.
Secured Revolving Line of Credit

On April 14, 2015, we and our subsidiary, AMD International Sales & Service, Ltd. (together, the Borrowers), ATI Technologies ULC (collectively with the Borrowers, the Loan Parties), a group of lenders and Bank of America N.A., acting as the agent for the lenders, entered into an amended and restated loan and security agreement, as amended (the Agreement). The Agreement provides for a secured revolving line of credit (the Secured Revolving Line of Credit) that allows the Borrowers to borrow, repay and re-borrow amounts from time to time up to $500 million with up to $45 million available for issuance of letters of credit, subject to certain conditions. Borrowings are limited up to a certain amount of eligible accounts receivable, as determined in accordance with the Agreement. The size of the commitment under the Secured Revolving Line of Credit may be increased by up to an aggregate amount of $200 million. The commitments under the Secured Revolving Line of Credit are available through

March 21, 2022. The Borrowers are subject to commitment fees and letter of credit facility fees. The Loan Parties are required to comply with certain covenants under the Agreement.

The Secured Revolving Line of Credit bears interest, at the option of the Borrowers, either at (a) a customary London Interbank Offered Rate (LIBOR) plus an applicable margin (as determined in accordance with the agreement), or (b) (i) the greatest of (x) the bank’s prime rate, (y) the federal funds rate as published by the Federal Reserve Bank of New York plus 0.50%, and (z) LIBOR for a one-month period plus 1.00%, plus (ii) an applicable margin.

As of December 29, 2018 and December 30, 2017, the Secured Revolving Line of Credit had an outstanding loan balance of $70 million at an interest rate of 6.00% and 4.75%. respectively. As of December 31, 2016, we had repaid an aggregate of $230 million of the Secured Revolving Line of Credit and we had no borrowings outstanding. As of December 29, 2018, the Secured Revolving Line of Credit had $26 million related to outstanding letters of credit and up to $175 million available for future borrowings. We report intra-period changes in revolving credit balance on a net basis in our condensed consolidated statement of cash flows as we intend the period of the borrowings to be brief, repaying borrowed amounts within 90 days. As of December 29, 2018, we were in compliance with all required covenants stated in the Loan Agreement.

The agreements governing our 6.75% Notes, 7.50% Notes, 7.00% Notes, 2.125% Notes and our Secured Revolving Line of Credit contain cross-default provisions whereby a default under one agreement would likely result in cross defaults under agreements covering other borrowings. The occurrence of a default under any of these borrowing arrangements would permit the applicable note holders or the lenders under the Secured Revolving Line of Credit to declare all amounts outstanding under those borrowing arrangements to be immediately due and payable.

Operating Leases

We lease certain of our facilities and in some jurisdictions we lease the land on which our facilities are built under non-cancellable lease agreements that expire at various dates through 2028. In addition, we lease certain office equipment for terms ranging from one to five years. Total future non-cancellable lease obligations as of December 29, 2018 were $322 million, including $259 million of future lease payments related to leases in Austin, Texas, Santa Clara, California, Markham, Canada, Singapore and Shanghai, China.

During the second quarter of 2018, we entered into a 10-year operating lease to occupy approximately 270,000 square feet of office space in Shanghai, China. Base rent payments commenced in October 2018 and the total estimated base rent payments over the life of the lease are approximately $72 million. As of December 29, 2018, the total estimate of future base rent over the life of the lease is approximately $68 million. In addition to the base rent payments, we are obligated to pay certain customary amounts for our share of operating expenses and tax obligations. We will also incur costs for capital projects for the new office space.

During the third quarter of 2016, we entered into a 10-year operating lease to occupy 220,000 square feet of new office space in Santa Clara. The base rent obligation commenced in August 2017. As of December 29, 2018, the total estimate of future base rent over the life of the lease is approximately $94 million, included in amounts above. In addition to the base rent payments, we will be obligated to pay certain customary amounts for our share of operating expenses and tax obligation. We will also incur costs for capital projects on the new office space. We have the option to extend the term of the lease for two additional five-year periods.

Off-Balance Sheet Arrangements

As of December 29, 2018, we had no off-balance sheet arrangements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Interest Rate Risk. Our exposure to market risk for changes in interest rates relates primarily to our investment portfolio and long-term debt. We usually invest our cash in investments with short maturities or with frequent interest reset terms. Accordingly, our interest income fluctuates with short-term market conditions. As of December 29, 2018, our investment portfolio consisted primarily of commercial paper. These investments were highly liquid. Due to the relatively short, weighted-average maturity of our investment portfolio and the current low interest rate environment, our exposure to interest rate risk is minimal.

As of December 29, 2018, all of our outstanding long term debt had fixed interest rates. Consequently, our exposure to market risk for changes in interest rates on reported interest expense and corresponding cash flows is minimal.

We will continue to monitor our exposure to interest rate risk.

Default Risk. We mitigate default risk in our investment portfolio by investing in only high credit quality securities and by constantly positioning our portfolio to respond to a significant reduction in a credit rating of any investment issuer or guarantor. Our portfolio includes investments in marketable debt securities with active secondary or resale markets to ensure portfolio liquidity. We are averse to principal loss and strive to preserve our invested funds by limiting default risk and market risk.

We actively monitor market conditions and developments specific to the securities and security classes in which we invest. We believe that we take a conservative approach to investing our funds in that we invest only in highly-rated debt securities with relatively short maturities and do not invest in securities which we believe involve a higher degree of risk. As of December 29, 2018, substantially all of our investments in debt securities were A-rated by at least one of the rating agencies. While we believe we take prudent measures to mitigate investment-related risks, such risks cannot be fully eliminated as there are circumstances outside of our control.

There were no significant sales of available-for-sale securities during 2018.

The following table presents the cost basis, fair value and related weighted-average interest rates by year of maturity for our investment portfolio and debt obligations as of December 29, 2018:

	2019	2020	2021	2022	2023	2024 and thereafter	Total	2018 Fair Value
	(In millions, except for percentages)							
Investment Portfolio								
Cash equivalents:								
Fixed rate amounts	$488	$ —	$ —	$—	$ —	$—	$488	$488
Weighted-average rate	2.45 %	—	—	—	—	—	2.45 %	
Variable rate amounts	$312	$ —	$ —	$—	$ —	$—	$312	$312
Weighted-average rate	2.29 %	—	—	—	—	—	2.29 %	
Marketable securities								
Fixed rate amounts	$78	$ —	$ —	$—	$ —	$—	$78	$78
Weighted-average rate	2.77 %	—	—	—	—	—	2.77 %	
Total Investment Portfolio	$878	$ —	$ —	$—	$ —	$—	$878	$878
Debt Obligations								
Fixed rate amounts	$66	$ —	$ —	$337	$ —	$1,055	$1,458	$2,494
Weighted-average effective interest rate	6.75 %	—%	—%	7.50 %	—%	3.28 %	4.41 %	
Variable rate amounts	$70	$ —	$ —	$—	$ —	$—	$70	$70
Weighted-average effective interest rate	6.00 %	—%	—%	— %	—%	— %	6.00 %	
Total Debt Obligations	$136	$ —	$ —	$337	$ —	$1,055	$1,528	$2,564

Foreign Exchange Risk. As a result of our foreign operations, we incur costs and we carry assets and liabilities that are denominated in foreign currencies, while sales of products are primarily denominated in U.S. dollars.

We maintain a foreign currency hedging strategy which uses derivative financial instruments to mitigate the risks associated with changes in foreign currency exchange rates. This strategy takes into consideration all of our exposures.

We do not use derivative financial instruments for trading or speculative purposes.
In applying our strategy, from time to time we use foreign currency forward contracts to hedge certain forecasted expenses denominated in foreign currencies. We designate these contracts as cash flow hedges of forecasted expenses to the extent eligible

under the accounting rules and evaluate hedge effectiveness prospectively and retrospectively. As such, the effective portion of the gain or loss on these contracts is reported as a component of accumulated other comprehensive income (loss) and reclassified to earnings in the same line item as the associated forecasted transaction and in the same period during which the hedged transaction affects earnings. Any ineffective portion is immediately recorded in earnings.
We also use, from time to time, foreign currency forward contracts to economically hedge recognized foreign currency exposures on the balance sheets of various subsidiaries. We do not designate these forward contracts as hedging instruments. Accordingly, the gain or loss associated with these contracts is immediately recorded in earnings.
The following table provides information about our foreign currency forward contracts as of December 29, 2018 and December 30, 2017. All of our foreign currency forward contracts mature within 12 months.

	December 29, 2018			December 30, 2017		
	Notional Amount	Average Contract Rate	Estimated Fair Value Gain (Loss)	Notional Amount	Average Contract Rate	Estimated Fair Value Gain (Loss)
	(In millions except contract rates)					
Foreign currency forward contracts:						
Canadian Dollar	$110	1.3007	$ (5)	$111	1.2751	$ 2
Malaysian Ringgit	12	4.1775	—	—	—	—
Indian Rupee	45	72.2338	—	33	66.1548	1
Singapore Dollar	26	1.3478	—	23	1.3553	—
Taiwan Dollar	21	29.6490	—	18	29.6586	—
Chinese Renminbi	182	6.5733	(3)	115	6.7972	4
Total	$396		$ (8)	$300		$ 7

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA
Advanced Micro Devices, Inc.
Consolidated Statements of Operations [1]

	Year Ended		
	December 29, 2018	December 30, 2017	December 31, 2016
	(In millions, except per share amounts)		
Net revenue	$ 6,475	$ 5,253	$ 4,319
Cost of sales	4,028	3,466	3,316
Gross margin	2,447	1,787	1,003
Research and development	1,434	1,196	1,008
Marketing, general and administrative	562	516	466
Restructuring and other special charges, net	—	—	(10)
Licensing gain	—	(52)	(88)
Operating income (loss)	451	127	(373)
Interest expense	(121)	(126)	(156)
Other income (expense), net	—	(9)	80
Income (loss) before income taxes and equity loss	330	(8)	(449)
Provision (benefit) for income taxes	(9)	18	39
Equity loss in investee	(2)	(7)	(10)
Net income (loss)	$ 337	$ (33)	$ (498)
Earnings (loss) per share			
Basic	$ 0.34	$ (0.03)	$ (0.60)
Diluted	$ 0.32	$ (0.03)	$ (0.60)
Shares used in per share calculation			
Basic	982	952	835
Diluted	1,064	952	835

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

See accompanying notes to consolidated financial statements.

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Advanced Micro Devices, Inc.
Consolidated Statements of Comprehensive Income (Loss) [1]

	Year Ended		
	December 29, 2018	December 30, 2017	December 31, 2016
	(In millions)		
Net income (loss)	$337	$ (33)	$ (498)
Other comprehensive income (loss):			
Unrealized gains (losses) on available-for-sale securities:			
Unrealized gains (losses) arising during period, net of tax effects of $0, $0 and $1	—	1	—
Unrealized gains (losses) on cash flow hedges:			
Unrealized gains (losses) arising during period, net of tax effects of $0, $0 and $2	(19)	17	1
Reclassification adjustment for (gains) losses realized and included in net income (loss), net of tax effect of $0, $1 and $0	5	(7)	2
Total change in unrealized gains (losses) on cash flow hedges, net of tax	(14)	10	3
Total other comprehensive income (loss)	(14)	11	3
Cumulative-effect adjustment to accumulated deficit related to the adoption of ASU 2016-01, Financial Instruments	2	—	—
Total comprehensive income (loss)	$325	$ (22)	$ (495)

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

See accompanying notes to consolidated financial statements.

Advanced Micro Devices, Inc.
Consolidated Balance Sheets [1]

	December 29, 2018	December 30, 2017
	(In millions, except par value amounts)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,078	$ 1,185
Marketable securities	78	—
Accounts receivable, net	1,235	454
Inventories, net	845	694
Prepayment and receivables - related parties	52	33
Prepaid expenses	57	77
Other current assets	195	191
Total current assets	3,540	2,634
Property and equipment, net	348	261
Goodwill	289	289
Investment: equity method	58	58
Other assets	321	310
Total assets	$ 4,556	$ 3,552
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Short-term debt	$ 136	$ 70
Accounts payable	528	384
Payables to related parties	533	412
Accrued liabilities	763	555
Other current liabilities	24	92
Total current liabilities	1,984	1,513
Long-term debt, net	1,114	1,325
Other long-term liabilities	192	118
Commitments and contingencies (see Notes 18 and 19)		
Stockholders' equity:		
Capital stock:		
Common stock, par value $0.01; 2,250 shares authorized, 1,010 shares issued and 1,005 shares outstanding as of December 29, 2018; 1,500 shares authorized, 979 shares issued and 967 shares outstanding as of December 30, 2017	10	9
Additional paid-in capital	8,750	8,464
Treasury stock, at cost (5 shares as of December 29, 2018 and 12 shares as of December 30, 2017)	(50)	(108)
Accumulated deficit	(7,436)	(7,775)
Accumulated other comprehensive income (loss)	(8)	6
Total stockholders' equity	1,266	596
Total liabilities and stockholders' equity	$ 4,556	$ 3,552

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

See accompanying notes to consolidated financial statements.

Advanced Micro Devices, Inc.
Consolidated Statements of Stockholders' Equity (Deficit)[1]
Three Years Ended December 29, 2018
(In millions)

	Number of shares	Common Stock	Additional paid-in capital	Treasury stock	Accumulated deficit	Accumulated other comprehensive income (loss)	Total stockholders' equity (deficit)
December 26, 2015	792	$ 8	$ 7,017	$ (123)	$ (7,244)	$ (8)	$ (350)
Net loss	—	—	—	—	(498)	—	(498)
Other comprehensive income	—	—	—	—	—	3	3
Common stock issued under employee equity incentive plans, net of tax withholding	27	—	20	(4)	—	—	16
Stock-based compensation	—	—	86	—	—	—	86
Equity component of the 2.125% Notes, net	—	—	305	—	—	—	305
Warrant issued related to sixth amendment to the WSA	—	—	240	—	—	—	240
Issuance of common stock, net of issuance costs	115	1	666	—	—	—	667
Issuance of common stock to partially settle the 7.00% Notes	1	—	—	8	—	—	8
December 31, 2016	935	9	8,334	(119)	(7,742)	(5)	477
Net loss	—	—	—	—	(33)	—	(33)
Other comprehensive income	—	—	—	—	—	11	11
Common stock issued under employee equity incentive plans, net of tax withholding	32	—	20	(13)	—	—	7
Stock-based compensation	—	—	97	—	—	—	97
Issuance of treasury stock to partially settle the 6.75% notes and the 7.00% notes	—	—	13	24	—	—	37
December 30, 2017	967	9	8,464	(108)	(7,775)	6	596
Net income	—	—	—	—	337	—	337
Other comprehensive loss	—	—	—	—	—	(14)	(14)
Common stock issued under employee equity incentive plans, net of tax withholding	31	1	71	(6)	—	—	66
Stock-based compensation	—	—	137	—	—	—	137
Issuance of treasury stock to partially settle the 6.75% notes, 7.5% notes and the 7.00% notes	7	—	78	64	—	—	142
Cumulative-effect adjustment to accumulated deficit related to the adoption of ASU 2016-01, Financial Instruments	—	—	—	—	2	—	2
December 29, 2018	1,005	$ 10	$ 8,750	$ (50)	$ (7,436)	$ (8)	$ 1,266

[1] The cumulative-effect adjustment to Accumulated deficit related to the adoption of

ASU No.
2014-09, Revenue
from Contracts
with Customers as
of December 26,
2015 was $62
million. Refer to
Note 2.
See accompanying notes to consolidated financial statements.

Advanced Micro Devices, Inc.
Consolidated Statements of Cash Flows [1]

	Year Ended		
	December 29, 2018	December 30, 2017	December 31, 2016
	(In millions)		
Cash flows from operating activities:			
Net income (loss)	$ 337	$ (33)	$ (498)
Adjustments to reconcile net income (loss) to net cash used in operating activities:			
Net gain on sale of equity interests in ATMP JV	—	(3)	(146)
Net loss on disposal of property and equipment	27	—	1
Impairment of technology licenses	45	—	—
Depreciation and amortization	170	144	133
Deferred income taxes	(4)	—	11
Stock-based compensation expense	137	97	86
Amortization of debt discount and issuance costs	38	36	21
Loss on debt redemption	12	12	68
Fair value of warrant issued related to sixth amendment to the WSA	—	—	240
Other	(1)	3	(7)
Changes in operating assets and liabilities:			
Accounts receivable	(806)	(103)	178
Inventories	(151)	(3)	(48)
Prepayment and receivables - related parties	(19)	(1)	1
Prepaid expenses and other assets	(79)	(172)	(163)
Payables to related parties	121	29	138
Accounts payable, accrued liabilities and other	207	6	66
Net cash provided by operating activities	34	12	81
Cash flows from investing activities:			
Net proceeds from sale of equity interests in ATMP JV	—	1	342
Purchases of available-for-sale debt securities	(123)	(222)	—
Purchases of property and equipment	(163)	(113)	(77)
Proceeds from maturity of available-for-sale debt securities	45	222	—
Collection of deferred proceeds on sale of receivables	71	60	10
Other	—	(2)	2
Net cash provided by (used in) investing activities	(170)	(54)	277
Cash flows from financing activities:			
Proceeds from issuance of common stock, net of issuance costs	—	—	667
Proceeds from issuance of convertible senior notes, net of issuance costs	—	—	782
Proceeds from issuance of common stock through employee equity incentive plans	70	20	20
Proceeds from (repayments of) short-term borrowings, net	—	70	(230)
Repayments of long-term debt	(41)	(110)	(1,113)
Other	(1)	(13)	(4)
Net cash provided by (used in) financing activities	28	(33)	122
Net increase (decrease) in cash and cash equivalents, and restricted cash	(108)	(75)	480
Cash, cash equivalents, and restricted cash at beginning of year	1,191	1,266	786
Cash, cash equivalents, and restricted cash at end of year	$ 1,083	$ 1,191	$ 1,266

	Year Ended December 29, 2018	December 30, 2017	December 31, 2016
	(In millions)		
Supplemental cash flow information:			
Cash paid during the year for:			
Interest	$79	$ 88	$ 149
Income taxes, net of refund	$(8)	$ 20	$ 20
Non-cash investing and financing activities:			
Purchases of property and equipment, accrued but not paid	$49	$ 50	$ —
Issuance of treasury stock to partially settle debt	$141	$ 38	$ 8
Deferred proceeds on sale of receivables	$25	$ 21	$ 15
Non-cash acquisition of property and equipment	$28	$ 12	$ —
Reconciliation of cash, cash equivalents, and restricted cash			
Cash and cash equivalents	$1,078	$ 1,185	$ 1,264
Restricted cash included in Other current assets	$5	$ 3	$ 2
Restricted cash included in Other assets	$—	$ 3	$ —
Total cash, cash equivalents, and restricted cash	$1,083	$ 1,191	$ 1,266

(1) Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers, ASU 2016-15, Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments and ASU 2016-18, Statement of Cash Flows, Restricted Cash. Refer to Note 2.

See accompanying notes to consolidated financial statements.

Advanced Micro Devices, Inc.
Notes to Consolidated Financial Statements
Fiscal Years Ended December 29, 2018, December 30, 2017 and December 31, 2016
NOTE 1: Nature of Operations
Advanced Micro Devices, Inc. is a global semiconductor company. References herein to AMD or the Company mean Advanced Micro Devices, Inc. and its consolidated subsidiaries. The Company primarily offers:

(i) x86 microprocessors, as standalone devices or as incorporated into an accelerated processing unit (APU), chipsets, discrete and integrated graphics processing units (GPUs), and professional GPUs; and
(ii) server and embedded processors, semi-custom System-on-Chip (SoC) products and technology for game consoles.

We also license portions of our intellectual property (IP) portfolio.
NOTE 2: Summary of Significant Accounting Policies
Fiscal Year. The Company uses a 52 or 53 week fiscal year ending on the last Saturday in December. Fiscal 2018, 2017 and 2016 ended December 29, 2018, December 30, 2017 and December 31, 2016, respectively. Fiscal 2018, 2017 and 2016 consisted of 52, 52 and 53 weeks, respectively.
Principles of Consolidation. The consolidated financial statements include the Company’s accounts and those of its wholly-owned subsidiaries. Upon consolidation, all significant inter-company accounts and transactions are eliminated.
Use of Estimates. The preparation of consolidated financial statements in conformity with U.S. generally accepted accounting principles (U.S. GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of commitments and contingencies at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Actual results are likely to differ from those estimates, and such differences may be material to the financial statements. Areas where management uses subjective judgment include, but are not limited to, revenue allowances, inventory valuation, valuation and impairment of goodwill and deferred income taxes.
Revenue Recognition. Revenue is recognized when a customer obtains control of promised goods or services and is recognized in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. Sales, value-added, and other taxes collected concurrently with the provision of goods or services are excluded from revenue. Shipping and handling costs associated with product sales are included in cost of sales.
Nature of products and services
The Company's microprocessors, chipsets, GPUs, professional graphics products, server and embedded processors, and SoC products may be sold as standard non-custom products, or custom products manufactured to customers’ specifications.
Non-custom products: The Company transfers control and recognizes revenue when non-custom products are shipped to customers, which includes original equipment manufacturers (OEM) and distributors, in accordance with the shipping terms of the sale. Certain OEMs may be entitled to rights of return and rebates under OEM agreements. The Company also sells to distributors under terms allowing the majority of distributors certain rights of return and price protection on unsold merchandise held by them. The Company estimates the amount of variable consideration under OEM and distributor arrangements and, accordingly, records a provision for product returns, allowances for price protection and rebates based on actual historical experience and any known events.
The Company offers incentive programs to certain customers, including cooperative advertising, marketing promotions, volume based incentives and special pricing arrangements. Where funds provided for such programs can be estimated, the Company recognizes a reduction to revenue at the time the related revenue is recognized; otherwise, the Company recognizes such reduction to revenue at the later of when: i) the related revenue transaction occurs; or ii) the program is offered. For transactions where the Company reimburses a customer for a portion of the customer’s cost to perform specific product advertising or marketing and promotional activities, such amounts are recognized as a reduction to revenue unless they qualify for expense recognition.
Custom products: Custom products which are associated with the Company’s Enterprise, Embedded, and Semi-Custom segment (semi-custom products), under non-cancellable purchases orders and have no alternative use to the Company at contract

inception, are recognized as revenue, based on the value of the inventory and expected margin, over the time of production of the products by the Company. Sales of semi-custom products are not subject to a right of return.
Development and intellectual property licensing agreements: From time to time, the Company may enter into arrangements with customers that combine the provision of development services and a license to the right to use the IP, which is deemed to be a single performance obligation. Accordingly, the Company recognizes revenue for the entire consideration of the arrangement upon transfer of control of the IP license to the customer.
Customers are generally required to pay for products and services within the Company's standard contractual terms, which are typically net 30 to 60 days. The Company has determined that it does not have significant financing components in its contracts with customers.
Refer to Note 6: Supplemental Balance Sheet Information for further information.
Inventories. Inventories are stated at standard cost adjusted to approximate the lower of actual cost (first-in, first-out method) or net realizable value. The Company adjusts inventory carrying value for estimated obsolescence equal to the difference between the cost of inventory and the estimated net realizable value based upon assumptions about future demand and market conditions. The Company fully reserves for inventories and non-cancellable purchase orders for inventory deemed obsolete. The Company performs periodic reviews of inventory items to identify excess inventories on hand by comparing on-hand balances to anticipated usage using recent historical activity as well as anticipated or forecasted demand. If estimates of customer demand diminish further or market conditions become less favorable than those projected by the Company, additional inventory adjustments may be required.
Goodwill. The Company performs its goodwill impairment analysis as of the first day of the fourth quarter of each year and, if certain events or circumstances indicate that an impairment loss may have been incurred, on a more frequent basis. The analysis may include both qualitative and quantitative factors to assess the likelihood of an impairment.
Qualitative factors include industry and market consideration, overall financial performance, share price trends and market capitalization and Company-specific events. The Company first analyzes qualitative factors. If the Company concludes it is more likely than not that the fair value of a reporting unit exceeds its carrying amount, the Company does not proceed to perform a quantitative impairment test.
A quantitative impairment analysis, if necessary, considers the income approach, which requires estimates of the present value of expected future cash flows to determine a reporting unit's fair value. Significant estimates include revenue growth rates and operating margins used to calculate projected future cash flows, discount rates, and future economic and market conditions. If the Company concludes it is more likely than not that the fair value of the reporting unit is less than its carrying value, a quantitative goodwill impairment test will be performed by comparing the fair value of each reporting unit to its carrying value.
A goodwill impairment charge is recognized for the amount by which the reporting unit's fair value is less than its carrying value. Any loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.
Commitments and Contingencies. From time to time the Company is a defendant or plaintiff in various legal actions that arise in the normal course of business. The Company is also subject to income tax, indirect tax or other tax claims by tax agencies in jurisdictions in which it conducts business. In addition, the Company is a party to environmental matters including local, regional, state and federal government clean-up activities at or near locations where the Company currently or has in the past conducted business. The Company is required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of reasonably possible losses. A determination of the amount of reserves required for these commitments and contingencies that would be charged to earnings, if any, includes assessing the probability of adverse outcomes and estimating the amount of potential losses. The required reserves, if any, may change due to new developments in each matter or changes in circumstances such as a change in settlement strategy.
Cash Equivalents. Cash equivalents consist of financial instruments that are readily convertible into cash and have original maturities of three months or less at the time of purchase.
Accounts Receivable. Accounts receivable are primarily comprised of trade receivables that are recorded at the invoice amount, net of an allowance for doubtful accounts. Accounts receivable also include unbilled receivables, which primarily represent work completed on semi-custom products under non-cancellable purchase orders that have

no alternative use to the Company at contract inception, for which revenue has been recognized but not yet invoiced to customers. The Company maintains an allowance for doubtful accounts based on its assessment of the collectability of amounts owed by customers. The allowance consists of known specific troubled accounts as well as an amount based on overall estimated potential uncollectible accounts receivable based on historical experience.

Investments in Available-for-sale Debt Securities. The Company classifies its investments in debt securities at the date of acquisition as available-for-sale. Available-for-sale debt securities are reported at fair value with the related unrealized gains and losses included, net of tax, in accumulated other comprehensive income (loss), a component of stockholders' equity. Realized gains and losses and declines in the value of available-for-sale debt securities determined to be other than temporary are included in other income (expense), net. The cost of securities sold is determined based on the specific identification method.

The Company classifies investments in available-for-sale debt securities with maturities of more than three months at the time of purchase as marketable securities on its consolidated balance sheet. Classification of these securities as current is based on the Company's intent and belief in its ability to sell these securities and use the proceeds from sale in operations within 12 months.

Derivative Financial Instruments. The Company maintains a foreign currency hedging strategy which uses derivative financial instruments to mitigate the risks associated with changes in foreign currency exchange rates. This strategy takes into consideration all of the Company's consolidated exposures. The Company does not use derivative financial instruments for trading or speculative purposes.

In applying its strategy, the Company uses foreign currency forward contracts to hedge certain forecasted expenses denominated in foreign currencies. The Company designates these contracts as cash flow hedges of forecasted expenses, to the extent eligible under the accounting rules, and evaluates hedge effectiveness prospectively and retrospectively. As such, the effective portion of the gain or loss on these contracts is reported as a component of accumulated other comprehensive income (loss) and is reclassified to earnings in the same line item as the associated forecasted transaction and in the same period during which the hedged transaction affects earnings. Any ineffective portion is immediately recorded in earnings.

The Company also uses, from time to time, foreign currency forward contracts to economically hedge recognized foreign currency exposures on the balance sheets of various subsidiaries. The Company does not designate these forward contracts as hedging instruments. Accordingly, the gain or loss associated with these contracts is immediately recorded in earnings.

Property and Equipment. Property and equipment are stated at cost. Depreciation and amortization are provided on a straight-line basis over the estimated useful lives of the assets. Estimated useful lives are as follows: equipment uses two to six years, and leasehold improvements are measured by the shorter of the remaining terms of the leases or the estimated useful economic lives of the improvements.

Product Warranties. The Company generally warrants that its products sold to its customers will conform to its approved specifications and be free from defects in material and workmanship under normal use and conditions for one year. The Company may also offer one to three year limited warranties based on product type and negotiated warranty terms with certain customers. The Company accrues warranty costs to Cost of sales at the time of sale of warranted products.

Foreign Currency Translation/Transactions. The functional currency of all of the Company's foreign subsidiaries is the U.S. dollar. Assets and liabilities denominated in non-U.S. dollars have been remeasured into U.S. dollars at current exchange rates for monetary assets and liabilities and historical exchange rates for non-monetary assets and liabilities. Non-U.S. dollar denominated transactions have been remeasured at average exchange rates in effect during each period, except for those cost of sales and expense transactions related to non-monetary balance sheet amounts which have been remeasured at historical exchange rates. The gains or losses from foreign currency remeasurement are included in earnings.

Subsidies. The Company received investment grants in connection with the construction and operation of certain facilities in Canada and Asia. Generally, such grants are subject to forfeiture in declining amounts over the life of the agreement if the Company does not maintain certain levels of employment or meet other conditions specified in the relevant grant documents. Accordingly, amounts granted are initially recorded as a receivable until cash proceeds are received. In the period the grant receivable is recorded, a current and long-term liability is also recorded which is subsequently amortized as a reduction to cost of sales.

The Company also received grants relating to certain research and development projects. These research and development funds are generally recorded as a reduction of research and development expenses when all conditions

and requirements set forth in the underlying grant agreement are met.

Marketing and Advertising Expenses. Marketing and advertising expenses include cooperative advertising funding obligations under customer incentive programs, which costs are recorded upon agreement with customers and vendor partners. Cooperative advertising expenses are recorded as marketing, general and administrative expense to the extent the cash paid does not exceed the estimated fair value of the advertising benefit received. Any excess of cash paid over the estimated fair value of the advertising benefit received is recorded as a reduction of revenue. Marketing and advertising expenses for 2018, 2017 and 2016 were approximately $176 million, $156 million and $131 million, respectively.

Stock-Based Compensation. The Company estimates stock-based compensation cost for stock options at the grant date based on the option’s fair-value as calculated by the lattice-binomial option-pricing model. For restricted stock units, including performance-based restricted stock units (PRSUs), fair value is based on the closing price of the Company’s common stock on the grant date. The Company estimates the grant-date fair value of restricted stock units that involve a market condition using the Monte Carlo simulation model. The Company estimates the grant-date fair value of stock to be issued under the ESPP using the Black-Scholes model. Compensation expense is recognized over the vesting period of the applicable award using the straight-line method, except for the compensation expense related to PRSUs, which are recognized ratably for each vesting tranche from the service inception date to the end of the requisite service period.
Forfeiture rates are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.
Income Taxes. The Company computes the provision for income taxes using the liability method and recognizes deferred tax assets and liabilities for temporary differences between financial statement and income tax bases of assets and liabilities, as well as for operating loss and tax credit carryforwards. The Company measures deferred tax assets and liabilities using tax rates applicable to taxable income in effect for the years in which those tax assets are expected to be realized or settled and provides a valuation allowance against deferred tax assets when it cannot conclude that it is more likely than not that some or all deferred tax assets will be realized. In addition, the Company recognizes tax benefits from uncertain tax positions only if it expects that its tax positions are more likely than not that they will be sustained, based on the technical merits of the positions, on examination by the jurisdictional tax authority. The Company recognizes any accrued interest and penalties to unrecognized tax benefits as interest expense and income tax expense, respectively.
Recently Adopted Accounting Standards
Revenue from Contracts with Customers. In May 2014, the Financial Accounting Standards Board (FASB) issued ASU 2014-09, Revenue from Contracts with Customers (ASC 606), which creates a single source of revenue guidance under U.S. GAAP for all companies in all industries and replaces most existing revenue recognition guidance in U.S. GAAP. Under the new standard, revenue is recognized when a customer obtains control of promised goods or services and is recognized in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. In addition, the new standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The FASB has issued several amendments to the new standard, including clarification on accounting for licenses of intellectual property and identifying performance obligations. The Company adopted the new standard in the first quarter of 2018, using the full retrospective method, which required the Company to adjust prior reporting periods presented. The Company implemented internal controls and key system functionality to enable the preparation of financial information on adoption.
The most significant impacts of the adoption of ASC 606 to the Company related to: (1) the acceleration of revenue recognition for sales of semi-custom products subject to a non-cancellable customer purchase order, (2) the acceleration of revenue recognition for sales to distributors, and (3) the timing and financial statement classification of certain development and intellectual property licensing agreements. Revenue from sales of semi-custom products under non-cancellable purchases orders, and that have no alternative use to the Company at contract inception, is recognized, based on the value of the semi-custom products and expected margin, over the time of production of the semi-custom products by the Company, rather than upon shipment. Revenue from sales to the Company's distributors is recognized upon shipment of the product to the distributors (sell-in), net of provision for estimated reserves, instead of the previous revenue recognition which was upon the reported resale of the product by the distributors to their customers (sell-through). For a development and IP licensing agreement executed in 2017, the Company recognized IP-related revenue in the third quarter of 2018 for the entire amount of arrangement consideration upon the completion of all the technology milestones. Previously, the agreement resulted in the reduction to research and development expenses in 2017 for development work as the expenses were incurred and would have resulted in licensing revenue to be recognized in periods beyond 2017 upon completion of the deliverables, based on a fair value allocation of the consideration received. Revenue recognition related to the Company’s other revenue streams remain substantially

unchanged.

The adoption of ASC 606 had an impact on the Company's consolidated statements of operations and consolidated balance sheets, but had no impact on cash provided by or used in operating, financing, or investing activities on the consolidated statements of cash flows. The impact on the Company's 2017 and 2016 consolidated statement of operations as a result of the adoption of the new standard is as follows:

	Year Ended December 30, 2017			December 31, 2016		
	As reported	Adjustment	As adjusted	As reported	Adjustment	As adjusted
	(In millions, except per share amounts)					
Net revenue [1]	$5,329	$ (76)	$5,253	$4,272	$ 47	$4,319
Cost of sales [1]	3,506	(40)	3,466	3,274	42	3,316
Gross margin	1,823	(36)	1,787	998	5	1,003
Research and development [2]	1,160	36	1,196	1,008	—	1,008
Marketing, general and administrative	511	5	516	460	6	466
Restructuring and other special charges, net	—	—	—	(10)	—	(10)
Licensing gain	(52)	—	(52)	(88)	—	(88)
Operating income (loss)	204	(77)	127	(372)	(1)	(373)
Interest expense	(126)	—	(126)	(156)	—	(156)
Other income (expense), net	(9)	—	(9)	80	—	80
Income (loss) before equity loss and income taxes	69	(77)	(8)	(448)	(1)	(449)
Provision for income taxes	19	(1)	18	39	—	39
Equity loss in investee	(7)	—	(7)	(10)	—	(10)
Net income (loss)	$43	$ (76)	$(33)	$(497)	$ (1)	$(498)
Earnings (loss) per share						
Basic	$0.04	$ (0.07)	$(0.03)	$(0.60)	$ —	$(0.60)
Diluted	$0.04	$ (0.07)	$(0.03)	$(0.60)	$ —	$(0.60)
Shares used in per share calculation						
Basic	952		952	835		835
Diluted	1,039		952	835		835

(1) 2017 and 2016 revenue and cost of sales changes were due to a net drain (decrease in revenue) or net build (increase in revenue) in channel and semi-custom product inventories, respectively.

(2) 2017 Research and development expenses increased due to the absence of credits to research and development expenses recognized for a development and intellectual property licensing agreement under the "As reported" standard, the entire amount of consideration was recognized as revenue in 2018 upon transfer of control of the IP license to the customer under the new standard.

The impact on the Company's affected 2017 and 2016 consolidated balance sheets line items, as a result of the adoption of the new standard is as follows:

	Year Ended December 30, 2017			December 31, 2016		
	As reported	Adjustment	As adjusted	As reported	Adjustment	As adjusted
	(In millions)					
Accounts receivable, net [1]	$400	$ 54	$ 454	$311	$ 61	$ 372
Inventories, net [2]	739	(45)	694	751	(60)	691
Other current assets	188	3	191	109	6	115
Accrued liabilities	541	14	555	391	9	400
Other current liabilities [3]	57	35	92	69	—	69
Deferred income on shipments to distributors [4]	22	(22)	—	63	(63)	—
Accumulated deficit	(7,760)	(15)	(7,775)	(7,803)	61	(7,742)

(1) 2017 and 2016 Accounts receivable, net increased primarily due to the acceleration in timing of semi-custom product revenue.

(2) 2017 and 2016 Inventories, net decreased primarily due to the acceleration in timing of semi-custom product revenue.

(3) 2017 Other current liabilities adjusted primarily due to the absence of credits to research and development expenses recognized for a development and intellectual property licensing agreement under the "As reported" standard, the entire amount of consideration was recognized as revenue in 2018 upon transfer of control of the IP license to the customer under the new standard. The credits are recorded as deferred revenue under the new standard.

(4) 2017 and 2016 deferred income on shipments to distributors is eliminated due to the change in the revenue recognition model for sales to distributors, whereby revenue is recognized upon the shipment of the product to the distributors (sell-in), instead of upon reported resale of the product by the distributors to their customers (sell-through).

The impact on the Company's 2017 and 2016 net revenue and operating income (loss) by segments as a result of the adoption of the new standard is as follows:

	Year Ended December 30, 2017			December 31, 2016		
	As reported	Adjustment	As adjusted	As reported	Adjustment	As adjusted
	(In millions)					
Net revenue:						
Computing and Graphics [1]	$3,029	$ (52)	$2,977	$1,967	$ 21	$1,988
Enterprise, Embedded and Semi-Custom [2]	2,300	(24)	2,276	2,305	26	2,331
Total net revenue	$5,329	$ (76)	$5,253	$4,272	$ 47	$4,319
Operating income (loss):						
Computing and Graphics [3]	$147	$ (55)	$92	$(238)	$ (5)	$(243)
Enterprise, Embedded and Semi-Custom [4]	154	(22)	132	283	4	287
All Other	(97)	—	(97)	(417)	—	(417)
Total operating income (loss)	$204	$ (77)	$127	$(372)	$ (1)	$(373)

(1) 2017 and 2016 Computing and Graphics revenue changes were due to a net drain (decrease in revenue) or net build (increase in revenue) in channel inventory.

(2) 2017 and 2016 Enterprise, Embedded and Semi-Custom revenue changes were due to a net drain (decrease in revenue) or net build (increase in revenue) in semi-custom product inventory.

(3) 2017 Computing and Graphics operating income decreased primarily due to the lower revenue from sales to distributors. In addition, 2017 is lower due to the absence of credits to research and development expenses recognized for a development and intellectual property licensing agreement under the "As Reported" standard, the entire amount of consideration was recognized as revenue in 2018 upon transfer of control of the IP license to the customer under the new standard. 2016 Computing and Graphics operating loss increased due to slightly higher operating expenses.

(4) 2017 Enterprise, Embedded and Semi-Custom operating income decreased primarily due to lower revenue from sales of semi-custom products. In addition, 2017 is lower due to the absence of credits to research and development expenses recognized for a certain development and intellectual property licensing agreement under the "As reported" standard, the entire amount of consideration was recognized as revenue in 2018 upon transfer of control of the IP license to the customer under the new standard. 2016 Enterprise, Embedded and Semi-Custom operating income increased due to higher revenue from sales of semi-custom products.

Stock Compensation. In May 2017, the FASB issued ASU 2017-09, Compensation-Stock Compensation (ASC 718): Scope of Modification Accounting (ASU 2017-09) to provide clarity and reduce both the (1) diversity in practice and (2) cost and complexity when changing the terms or conditions of share-based payment awards. Under ASU 2017-09, modification accounting is required to be applied unless all of the following criteria are the same immediately before and after the change:

1. The award's fair value (or calculated value or intrinsic value, if those measurement methods are used);
2. The award's vesting conditions; and

3. The award's classification as an equity or liability instrument.
ASU 2017-09 is effective for annual and interim periods beginning after December 15, 2017 on a prospective basis, and early adoption is permitted. The Company adopted this guidance in the first quarter of 2018 and the guidance did not have an impact on its consolidated financial statements.

Income Taxes. In October 2016, the FASB issued ASU 2016-16, Income Taxes (ASC 740): Intra-Entity Transfers of Assets Other Than Inventory (ASU 2016-16), which requires entities to recognize the income tax consequences of an intra-entity transfer

of an asset other than inventory when the transfer occurs. This amends current GAAP which prohibits recognition of current and deferred income taxes for all types of intra-entity asset transfers until the asset has been sold to an outside party. ASU 2016-16 is effective for fiscal years beginning after December 15, 2017, including interim periods therein. Upon adoption, the Company must apply a modified retrospective transition approach through a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption. The Company adopted this guidance in the first quarter of 2018 and the guidance did not have a material impact on its consolidated financial statements.

Statement of Cash Flows. In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows (ASC 230): Classification of Certain Cash Receipts and Cash Payments (ASU 2016-15), which is intended to reduce the existing diversity in practice in how certain cash receipts and cash payments are classified in the statement of cash flows. In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows, Restricted Cash (ASU 2016-18), which requires the inclusion of restricted cash with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-15 and ASU 2016-18 are effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years, provided that all of the amendments are adopted in the same period. The amendments will be applied using a retrospective transition method to each period presented. The Company adopted ASU 2016-18 in 2018, which resulted in the additional presentation of restricted cash on the statement of cash flows for each period presented. The Company adopted ASU 2016-15 in 2018, which resulted in the reclassification of certain cash receipts from operating activities to investing activities on the statement of cash flows for each period presented. The adoption of these standards had no material impact on the Company’s consolidated financial statements.

Financial Instruments. In January 2016, the FASB issued ASU 2016-01, Financial Instruments—Overall (ASC 825): Recognition and Measurement of Financial Assets and Financial Liabilities (ASU 2016-01), which requires that most equity investments be measured at fair value, with subsequent changes in fair value recognized in net income. The ASU also impacts financial liabilities under the fair value option and the presentation and disclosure requirements for financial instruments. In addition, the FASB clarified guidance related to the valuation allowance assessment when recognizing deferred tax assets resulting from unrealized losses on available-for-sale debt securities. Entities have to assess the realizability of such deferred tax assets in combination with the entities’ other deferred tax assets. ASU 2016-01 is effective for fiscal years beginning after December 15, 2017 and for interim periods within those fiscal years. The Company adopted this guidance in the first quarter of 2018 with no material impact on its consolidated financial statements.

Recently Issued Accounting Standards

Intangibles. In August 2018, the FASB issued ASU 2018-15, Intangibles—Goodwill and Other—Internal-Use Software (ASC 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract, which requires hosting arrangements that are service contracts to follow the guidance for internal-use software to determine which implementation costs can be capitalized. ASU 2018-15 is effective either prospectively or retrospectively for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years, with early adoption permitted. The Company is currently evaluating how to apply the new guidance.

Reporting Comprehensive Income. In February 2018, the FASB issued ASU 2018-02, Income Statement—Reporting Comprehensive Income (ASC 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income (AOCI), which gives entities the option to reclassify to retained earnings the tax effects resulting from the Tax Reform Act related to items in AOCI that the FASB refers to as having been stranded in AOCI. The new guidance may be applied retrospectively to each period in which the effect of the Tax Reform Act is recognized in the period of adoption. The Company must adopt this guidance for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted for periods for which financial statements have not yet been issued or made available for issuance, including the period the Tax Reform Act was enacted. The guidance, when adopted, will require new disclosures regarding a company’s accounting policy for releasing the tax effects in AOCI and permit the company the option to reclassify to retained earnings the tax effects resulting from the Tax Reform Act that are stranded in AOCI. The Company will adopt this guidance in the first quarter of 2019 and does not expect a material impact on its consolidated financial statements.

Derivatives and Hedging. In August 2017, the FASB issued ASU 2017-12, Derivatives and Hedging (ASC 815): Targeted Improvements to Accounting for Hedging Activities (ASU 2017-12), which amends and simplifies existing guidance in order to allow companies to more accurately present the economic effects of risk management activities in the financial statements. ASU 2017-12 is effective for fiscal years beginning after December 15, 2018, including interim periods therein with early adoption permitted. The Company will adopt this guidance in the first quarter of 2019 and does not expect a material impact on its consolidated financial statements.

Financial Instruments. In June 2016, the FASB issued ASU 2016-13, Financial Instruments—Credit Losses (ASC 326), Measurement of Credit Losses on Financial Instruments (ASU 2016-13). The standard changes the methodology for measuring

credit losses on financial instruments and the timing of when such losses are recorded. ASU 2016-13 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted for fiscal years, and interim periods within those years, beginning after December 15, 2018. The Company will adopt this guidance in the first quarter of 2020 and is currently evaluating the impact of this new standard on its consolidated financial statements.

Leases. In February 2016, the FASB issued ASU 2016-02, Leases (ASC 842), to increase transparency and comparability among organizations for lease recognition and disclosure. ASU 2016-02 requires lessees to recognize lease assets and lease liabilities on the balance sheet, while recognizing expenses on the income statements in a manner similar to current guidance. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years, with early adoption permitted. The Company did not early adopt this standard and therefore the standard will be effective for the Company in the first quarter of 2019. ASU 2016-02 requires that leases be recognized and measured as of the earliest period presented, using a modified retrospective approach, with all periods presented being adjusted and presented under the new standard. In July 2018, the FASB issued ASU 2018-11, Leases (ASC 842): Targeted Improvements, which provides companies an optional adoption method to ASU 2016-02 whereby a company does not have to adjust comparative period financial statements for the new standard. The Company will adopt the new standard using the optional adoption method and thereby not adjust comparative financial statements.

The Company is finalizing its implementation related to policies, processes and internal controls to comply with the guidance. The Company estimates that the right-of-use assets and lease liabilities for the lease portfolio as of December 29, 2018 to be recorded on its consolidated balance sheet, as of December 30, 2018 to be within the range of $225 million to $275 million, primarily relating to real estate. No impact is expected to its consolidated statements of operations or its consolidated statement of cash flows.

Although there are several other new accounting pronouncements issued or proposed by the FASB, which the Company has adopted or will adopt, as applicable, the Company does not believe any of these accounting pronouncements has had or will have a material impact on its consolidated financial position, operating results or statements of cash flows.

NOTE 3: GLOBALFOUNDRIES

Wafer Supply Agreement. The Company and GLOBALFOUNDRIES Inc. (GF) entered into a Wafer Supply Agreement (the WSA) in 2009, under which, among other terms, the Company would purchase wafers from GF. The WSA, which has been amended from time to time, governs the terms by which the Company purchases products manufactured by GF.

Sixth Amendment to Wafer Supply Agreement. On August 30, 2016, the Company entered into a sixth amendment to the WSA (the WSA Sixth Amendment). The WSA Sixth Amendment modified certain terms of the WSA applicable to wafers for the Company’s microprocessor, graphics processor and semi-custom products for a five-year period from January 1, 2016 to December 31, 2020. The Company and GF also agreed to establish a comprehensive framework for technology collaboration for the 7nm technology node.

The WSA Sixth Amendment also provides the Company a limited waiver with rights to contract with another wafer foundry with respect to certain products in the 14nm and 7nm technology nodes and gives the Company greater flexibility in sourcing foundry services across its product portfolio. In consideration for these rights, the Company agreed to pay GF $100 million, to be paid in a series of installments starting in the fourth quarter of 2016 through the third quarter of 2017. The Company paid these installments in compliance with the agreement. Starting in 2017 and continuing through 2020, the Company also agreed to make quarterly payments to GF based on the volume of certain wafers purchased from another wafer foundry.

Further, for each calendar year during the term of the WSA Sixth Amendment, the Company and GF agreed to annual wafer purchase targets that increase from 2016 through 2020. If the Company does not meet the annual wafer purchase target for any calendar year, the Company will be required to pay to GF a portion of the difference between the Company’s actual wafer purchases and the wafer purchase target for that year. The annual targets were established based on the Company’s business and market expectations and took into account the limited waiver it received for certain products. In 2018, 2017 and 2016, the Company met its respective annual wafer purchase targets.

The Company and GF also agreed on fixed pricing for wafers purchased during 2016 and established a framework to agree on annual wafer pricing for the years 2017 to 2020. In 2018 and 2017, the Company and GF had agreed on pricing for wafer purchases.

The Company’s total purchases from GF related to wafer manufacturing, research and development activities and other for 2018, 2017 and 2016 were $1.6 billion, $1.1 billion and $0.7 billion, respectively. Included in the total purchases for the year ended December 29, 2018 were amounts related to the volume of certain wafers purchased from another wafer foundry, as agreed by the Company and GF under the WSA Sixth Amendment. As of December 29, 2018 and December 30, 2017, the amount of prepayment and receivables related to GF was $18 million and $27 million, respectively, included in Prepayment and receivables

- related parties on the Company's consolidated balance sheets. As of December 29, 2018 and December 30, 2017, the amount of payable to GF was $326 million and $241 million, respectively, included in Payables to related parties on the Company's consolidated balance sheets.
Seventh Amendment to Wafer Supply Agreement. On January 28, 2019, the Company entered into a seventh amendment (the Seventh Amendment) to the Wafer Supply Agreement with GF. The Seventh Amendment modifies certain purchase commitments, pricing and other terms of the WSA applicable to wafer purchases at the 12 nm technology node and above by the Company for the period commencing on January 1, 2019 and continuing through March 1, 2024.

The Seventh Amendment also provides the Company with full flexibility to contract with any wafer foundry with respect to all products manufactured using 7nm and smaller technology nodes without any one-time payments or royalties by the Company to GF.

Further, the Company and GF agreed to modify the annual wafer purchase targets previously agreed to in the WSA Sixth Amendment for years 2019 and 2020. The parties also agreed to an annual wafer purchase target for 2021 and agreed to pricing for wafers purchased for years 2019, 2020 and 2021. If the Company does not meet the annual wafer purchase target for any of these years, the Company will be required to pay to GF a portion of the difference between the Company’s actual wafer purchases and the wafer purchase target for that year. The Company expects that its future purchases from GF will be material under the WSA, which is in place until March 1, 2024.
Warrant Agreement. Also on August 30, 2016, in consideration for the limited waiver and rights under the WSA Sixth Amendment, the Company entered into a warrant agreement (the Warrant Agreement) with WCH, a wholly-owned subsidiary of Mubadala. Under the Warrant Agreement, WCH and its permitted assigns are entitled to purchase 75 million shares of the Company’s common stock (the Warrant Shares) at a purchase price of $5.98 per share. The warrant is exercisable in whole or in part until February 29, 2020. Notwithstanding the foregoing, the Warrant Agreement will only be exercisable to the extent that Mubadala does not beneficially own, either directly or through any other entities directly and indirectly owned by Mubadala or its subsidiaries, an aggregate of more than 19.99% of the Company’s outstanding capital stock after any such exercise.
GF continues to be a related party of the Company because Mubadala and Mubadala Tech are affiliated with WCH, a significant stockholder of the Company. GF, WCH and Mubadala Tech are wholly-owned subsidiaries of Mubadala. On February 5, 2019, WCH notified the Company it would exercise its warrant to purchase 75 million shares of the Company’s common stock at a purchase price of $5.98 per share for a total amount of $448.5 million. The Company expects to receive proceeds of $448.5 million upon the exercise of the warrant and issue the 75 million shares of its common stock to WCH in accordance with the terms of the Warrant Agreement.

NOTE 4: Equity Interest Purchase Agreement - ATMP Joint Venture

In April 2016, the Company and certain of its subsidiaries completed the sale of a majority of the equity interests in Suzhou TF-AMD Semiconductor Co., Ltd. (formerly, AMD Technologies (China) Co., Ltd.), and TF AMD Microelectronics (Penang) Sdn. Bhd. (formerly, Advanced Micro Devices Export Sdn. Bhd.), to affiliates of Tongfu Microelectronics Co., Ltd. (formerly, Nantong Fujitsu Microelectronics Co., Ltd.) (TFME), a Chinese joint stock company, to form two joint ventures (collectively, the ATMP JV). As a result of the sale, TFME's affiliates own 85% of the equity interests in the ATMP JV while certain of the Company's subsidiaries own the remaining 15%. The Company has no obligation to fund the ATMP JV.

As a result of the transaction, the Company received approximately $342 million, including purchase price adjustments, in net cash proceeds for selling 85% of the equity interest in each of Suzhou TF-AMD Semiconductor Co., Ltd. and TF AMD Microelectronics (Penang) Sdn. Bhd. These proceeds, net of certain transaction costs, were included in investing activities on the Company's consolidated statements of cash flows for the year ended December 31, 2016.

The Company recognized a net pre-tax gain on the sale of its 85% equity interest in ATMP JV of $146 million for the year ended December 31, 2016, which was recognized in Other income (expense), net on the Company's consolidated statements of operations. The net pre-tax gain reflects the excess of the sum of net cash proceeds and fair value of the Company's retained 15% equity interests in the ATMP JV over the sum of the net book values of the Company's former subsidiaries and other closing costs directly attributed to the divestiture. The above gain includes $11 million in excess of fair value of the Company's retained interest over the corresponding net book values. During 2017, the Company recorded a $3 million pre-tax gain for final settlement related to the sale of 85% of the equity interest in ATMP facilities in Other income (expense), net on its consolidated statements of operations.

The Company accounts for its equity interests in the ATMP JV under the equity method of accounting due to its significant influence over the ATMP JV. As of December 29, 2018 and December 30, 2017, the carrying value of the Company's investment in the ATMP JV was approximately $58 million and $58 million, respectively. The ATMP JV is a related party of the Company. The ATMP JV provides assembly, test, mark and packaging (ATMP) services to the Company. The Company currently pays the ATMP JV for ATMP services on a cost-plus basis. The Company assists the ATMP JV in its management of certain raw material inventory. The purchases from and resales back to the ATMP JV of the inventory under inventory management is reported within purchases and resales with the ATMP JV and does not impact the Company's consolidated statement of operations.

The Company's total purchases from the ATMP JV during 2018 and 2017 amounted to approximately $574 million and $438 million, respectively. As of December 29, 2018 and December 30, 2017, the amount payable to the ATMP JV was $207 million and $171 million, respectively, included in Payables to related parties on the Company's consolidated balance sheets. The Company's resales back to the ATMP JV during 2018 and 2017 amounted to approximately $62 million and $3 million, respectively. As of December 29, 2018 and December 30, 2017, the Company had receivables from ATMP JV of $16 million and $3 million, respectively, included in Prepayment and receivables - related parties on the Company's consolidated balance sheets.

During 2018, 2017, and 2016, the Company recorded $2 million, $7 million and $10 million, respectively, in Equity loss in investee on its consolidated statements of operations, which included certain expenses incurred by the Company on behalf of the ATMP JV.

NOTE 5: Equity Joint Venture

In February 2016, the Company and Higon Information Technology Co., Ltd. (formerly, Tianjin Haiguang Advanced Technology Investment Co., Ltd.) (THATIC), a third-party Chinese entity (JV Partner), formed a joint venture comprised of two separate legal entities, China JV1 and China JV2 (collectively, the THATIC JV). The Company's equity share in China JV1 and China JV2 is a majority and minority interest, respectively, funded by the Company's

contribution of certain of its patents. The JV Partner is responsible for the initial and on-going financing of the THATIC JV's operations. The Company has no obligations to fund the THATIC JV.

The Company concluded the China JV1 and China JV2 are not operating joint ventures and are variable interest entities due to their reliance on on-going financing by the JV Partner. The Company determined that it is not the primary beneficiary of either China JV1 or China JV2, as the Company does not have unilateral power to direct selling and marketing, manufacturing and product development activities related to the THATIC JV's products. Accordingly, the Company does not consolidate either of these entities and therefore accounts for its investments in the THATIC JV under the equity method of accounting. The THATIC JV is a related party of the Company.

In February 2016, the Company licensed certain of its intellectual property (Licensed IP) to the THATIC JV for a total of approximately $293 million in license fees payable over several years contingent upon achievement of certain milestones. The Company also expects to receive a royalty based on the sales of the THATIC JV's products to be developed on the basis of such Licensed IP. The Company also provided certain engineering and technical support to the THATIC JV in connection with the product development. In March 2017, the Company entered into a development and intellectual property agreement (Development and IP) with THATIC JV, and also expects to receive a royalty based on the sales of the THATIC JV's products to be developed on the basis of such agreement. In addition, from time to time the Company enters into certain agreements with the THATIC JV to provide other services primarily related to research and development.

The Company recognized income related to the Licensed IP over the period commencing upon delivery of the first Licensed IP milestone through the date of the milestone that required the Company's continuing involvement in the product development process, which was completed at the end of the second quarter of 2017. Royalty payments will be recognized in income once earned. The Company classifies Licensed IP income and royalty income associated with the February 2016 agreement as licensing gain within other operating income.

During 2018, the Company recognized $86 million of IP-related revenue upon completion of all technology milestones under the Development and IP agreement. During 2017 and 2016, the Company recognized $52 million and $88 million, respectively, as licensing gain associated with the Licensed IP.

The Company's share in the net losses of the THATIC JV for 2018 was not material and is not recorded in the Company's consolidated statement of operations since the Company is not obligated to fund the THATIC JV's losses in excess of the Company's investment in the THATIC JV, which was zero as of December 29, 2018. The Company's receivable from the THATIC JV for these agreements was $18 million and $3 million as of December 29, 2018 and December 30, 2017, respectively, included in Prepayment and receivables - related parties on its consolidated balance sheets. As of December 29, 2018 and December 30, 2017, the total assets and liabilities of the THATIC JV were not material.

NOTE 6: Supplemental Balance Sheet Information

Accounts Receivable, net

As of December 29, 2018 and December 30, 2017, Accounts receivable, net included unbilled accounts receivable of $308 million and $75 million, respectively. Unbilled receivables primarily represent work completed on semi-custom products under non-cancellable purchase orders that have no alternative use to the Company at contract inception, for which revenue has been recognized but not yet invoiced to customers. All unbilled accounts receivables are expected to be billed and collected within 12 months.

Inventories, net

	December 29, 2018	December 30, 2017
	(In millions)	
Raw materials	$134	$ 34
Work in process	354	446
Finished goods	357	214
Total inventories, net	$845	$ 694

Property and Equipment, net

	December 29, 2018	December 30, 2017
	(In millions)	
Leasehold improvements	$179	$ 187
Equipment	798	758
Construction in progress	78	56
Property and equipment, gross	1,055	1,001
Accumulated depreciation and amortization	(707)	(740)

Total property and equipment, net	$348	$ 261

Depreciation expense for 2018, 2017 and 2016 was $94 million, $77 million and $71 million, respectively.

Other Assets

	December 29, 2018	December 30, 2017
	(In millions)	
Software and technology licenses, net	$226	$ 239
Other	95	71
Total other assets	$321	$ 310

During the fourth quarter of 2018, the Company recorded an impairment charge in Cost of sales of $45 million on technology licenses that are no longer being used.

Accrued Liabilities

	December 29, 2018	December 30, 2017
	(In millions)	
Accrued compensation and benefits	$236	$ 206
Marketing programs and advertising expenses	275	145
Software technology and licenses payable	28	41
Other accrued and current liabilities	224	163
Total accrued liabilities	$763	$ 555

Other Current Liabilities

	December 29, 2018	December 30, 2017
	(In millions)	
Unearned revenue	$11	$ 85
Other	13	7
Total other current liabilities	$24	$ 92

Unearned revenue represents consideration received or due from customers in advance of the Company satisfying its performance obligations. The unearned revenue is associated with any combination of development services, IP licensing and product revenue. Changes in unearned revenue were as follows:

	December 29, 2018	December 30, 2017
	(In millions)	
Beginning balance	$85	$ 22
Unearned revenue	132	104
Revenue recognized during the period	(186)	(41)
Other	(20)	—
Ending balance	$11	$ 85

Revenue allocated to remaining performance obligations that are unsatisfied (or partially unsatisfied) as of December 29, 2018 is $95 million, which may include amounts received from customer but not yet earned and amounts that will be invoiced and recognized as revenue in future periods associated with any combination of development services, IP licensing and product revenue. The Company expects to recognize $78 million in the next 12 months, and the remainder thereafter. As permitted under ASC 606, the Company has not disclosed the comparative

amounts as of December 30, 2017.

The revenue allocated to remaining performance obligations did not include amounts which have an original expected duration of less than one year.

NOTE 7: Goodwill

Goodwill

The carrying amount of goodwill as of both December 29, 2018 and December 30, 2017 was $289 million, which was fully allocated to the Company's Enterprise, Embedded and Semi-Custom segment.

In the fourth quarters of 2018 and 2017, the Company conducted its annual impairment tests of goodwill. The Company determined that the estimated fair value exceeded the carrying value of the reporting units, indicating that there was no goodwill impairment with respect to these reporting units.

NOTE 8: Financial Instruments

Cash, Cash Equivalents, and Marketable Securities

Cash and financial instruments measured and recorded at fair value on a recurring basis, which approximates amortized cost, as of December 29, 2018 and December 30, 2017 are summarized below:

	Total Fair Value	Cash and Cash Equivalents	Short-Term Marketable Securities
	(In millions)		
December 29, 2018			
Cash	$315	$ 315	$ —
Level 1[1] [2]			
Government money market funds	$275	$ 275	$ —
Total level 1	$275	$ 275	$ —
Level 2[1] [3]			
Commercial paper	$566	$ 488	$ 78
Total level 2	$566	$ 488	$ 78
Total	$1,156	$ 1,078	$ 78

	Total Fair Value	Cash and Cash Equivalents	Short-Term Marketable Securities
	(In millions)		
December 30, 2017			
Cash	$108	$ 108	$ —
Level 1[1] [2]			
Government money market funds	$395	$ 395	$ —
Total level 1	$395	$ 395	$ —
Level 2[1] [3]			
Commercial paper	$682	$ 682	$ —
Total level 2	$682	$ 682	$ —
Total	$1,185	$ 1,185	$ —

(1) The Company did not have any transfers between Level 1 and Level 2 during 2018 and 2017.

(2) The Company’s Level 1 assets are valued using quoted prices for identical instruments in active markets.

(3) The Company’s Level 2 assets are valued using broker reports that utilize quoted prices for identical instruments in markets that are not active or comparable instruments in active markets. Brokers gather observable inputs for all of the Company’s fixed income securities from a variety of industry data providers and other third-party sources.

In addition to those amounts presented above, as of December 29, 2018 and December 30, 2017, the Company had approximately $5 million and $2 million, respectively, of investments in money market funds used as collateral for letters of credit deposits which were included in Other current assets and Other assets, respectively, on the Company's consolidated balance sheets. These money market funds are classified within Level 1 because they are valued using quoted prices for identical instruments in active markets. Their amortized costs are the same as the fair value for all periods presented. The Company is restricted from accessing these deposits.

As of December 29, 2018 and December 30, 2017, the Company also had approximately $21 million and $18 million, respectively, of investments in mutual funds held in a Rabbi trust established for the Company's deferred compensation plan which were also included in Other assets on the Company's consolidated balance sheets. These mutual funds are classified within Level 1 because they are valued using quoted prices for identical instruments in active markets. Their amortized cost approximates the fair value for all periods presented. The Company is restricted from accessing these investments.

Financial Instruments Not Recorded at Fair Value on a Recurring Basis. The Company carries its financial instruments at fair value with the exception of its debt. Financial instruments that are not recorded at fair value are measured at fair value on a quarterly basis for disclosure purposes. The carrying amounts and estimated fair values of financial instruments not recorded at fair value are as follows:

	December 29, 2018		December 30, 2017	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
	(In millions)			
Short-term debt	$136	$ 136	$70	$ 70
Long-term debt, net[(1)]	$1,114	$ 2,428	$1,324	$ 2,103

(1) Carrying amounts of long-term debt are net of unamortized debt issuance costs of $16 million and $19 million as of December 29, 2018 and December 30, 2017, respectively, and net of $262 million and $286 million unamortized debt discount associated with the 2.125% Notes as of December 29, 2018 and December 30, 2017, respectively.

The Company's short-term and long-term debt, net are classified within Level 2. The fair value of the debt was estimated based on the quoted market prices for the same or similar issues or on the current rates offered to the Company for debt of the same remaining maturities.

The fair value of the Company's accounts receivable, accounts payable and other short-term obligations approximate their carrying value based on existing payment terms.

Hedging Transactions and Derivative Financial Instruments

Cash Flow Hedges and Foreign Currency Forward Contracts not Designated as Hedges

The following table shows the amount of gain (loss) included in accumulated other comprehensive income (loss), the amount of gain (loss) reclassified from accumulated other comprehensive income (loss) (OCI) and included in earnings related to the foreign currency forward contracts designated as cash flow hedges and the amount of gain (loss) included in other income (expense), net, related to contracts not designated as hedging instruments which was allocated in the consolidated statements of operations:

	Consolidated Statements of Operations and Statements of Comprehensive Income (Loss) Location	2018	2017
		(In millions)	
Foreign Currency Forward Contracts - gains (losses)			
Contracts designated as cash flow hedging instruments			
Other comprehensive income (loss)		$ (14)	$ 9
Gains (losses) reclassified from OCI into income	Research and development	(4)	7

Gains (losses) reclassified from OCI into income	Cost of sales; Marketing, general and administrative	(1)	1
Total Gains (losses) reclassified from OCI into income		(5)	8
Contracts not designated as hedging instruments			
Gains (losses) recognized in income	Other income (expense), net	$ (3)	$ (3)

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The Company's foreign currency derivative contracts are classified within Level 2 because the valuation inputs are based on quoted prices and market observable data of similar instruments in active markets such as currency spot and forward rates.

The following table shows the fair value amounts included in Other current assets should the foreign currency forward contracts be in a gain position or included in Other current liabilities should these contracts be in a loss position. These amounts were recorded in the Company's consolidated balance sheets as follows:

	December 29, 2018	December 30, 2017
	(In millions)	
Foreign Currency Forward Contracts - gains (losses)		
Contracts designated as cash flow hedging instruments	$ (7)	$ 7

For the foreign currency contracts designated as cash flow hedges, the ineffective portions of the hedging relationship and the amounts excluded from the assessment of hedge effectiveness were immaterial.

As of December 29, 2018 and December 30, 2017, the notional values of the Company's outstanding foreign currency forward contracts were $396 million and $300 million, respectively. All the contracts mature within 12 months and, upon maturity, the amounts recorded in accumulated other comprehensive income (loss) are expected to be reclassified into earnings. The Company hedges its exposure to the variability in future cash flows for forecasted transactions over a maximum of 12 months.

NOTE 9: Accumulated Other Comprehensive Income (Loss)

Unrealized holding gains or losses on the Company's available-for-sale securities and unrealized holding gains and losses on derivative financial instruments qualifying as cash flow hedges are included in other comprehensive income (loss).

The table below summarizes the changes in accumulated other comprehensive income (loss) by component for the years ended December 29, 2018 and December 30, 2017:

	Year Ended December 29, 2018			December 30, 2017		
	Unrealized gains (losses) on available-for-sale securities	Unrealized gains (losses) on cash flow hedges	Total	Unrealized gains (losses) on available-for-sale securities	Unrealized gains (losses) on cash flow hedges	Total
	(In millions)					
Beginning balance	$—	$ 6	$ 6	$ (1)	$ (4)	$ (5)
Unrealized gains (losses) arising during the period	—	(19)	(19)	1	17	18
Reclassification adjustment for gains realized and included in net income (loss)	—	5	5	—	(7)	(7)
Tax effect	—	—	—	—	—	—
Total other comprehensive income (loss)	—	(14)	(14)	1	10	11
Ending balance	$—	$ (8)	$ (8)	$ —	$ 6	$ 6

NOTE 10: Concentrations of Credit and Operation Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of investments in available-for-sale debt securities, trade receivables and derivative financial instruments used in hedging activities.

The Company places its investments with high credit quality financial institutions and, by policy, limits the amount of credit exposure with any one financial institution. The Company invests in time deposits and certificates of deposit from banks having combined capital, surplus and undistributed profits of not less than $200 million. At the time an

investment is made, investments in commercial paper of industrial firms and financial institutions are rated A1, P1 or better. The Company invests in tax-exempt securities including municipal notes and bonds and bonds that are rated A, A2 or better and repurchase agreements, each of which have securities of the type and quality listed above as collateral.

The Company believes that concentrations of credit risk with respect to trade receivables are limited because a large number of geographically diverse customers make up the Company's customer base, thus diluting the trade credit risk. Accounts receivable from the Company's top three customers accounted for approximately 16%, 12% and 7% of the total consolidated accounts

receivable balance as of December 29, 2018 and 15%, 13% and 11% of the total consolidated accounts receivable balance as of December 30, 2017. However, the Company does not believe the receivable balance from these customers represents a significant credit risk based on past collection experience and review of their current credit quality. The Company manages its exposure to customer credit risk through credit limits, credit lines, ongoing monitoring procedures and credit approvals. Furthermore, the Company performs in-depth credit evaluations of all new customers and, at intervals, for existing customers. From this, the Company may require letters of credit, bank or corporate guarantees or advance payments if deemed necessary.

The Company's existing derivative financial instruments are with large international financial institutions of investment grade credit rating. The Company does not believe that there is significant risk of nonperformance by these counter-parties because the Company monitors their credit rating on an ongoing basis. By using derivative instruments, the Company is subject to credit and market risk. If a counter-party fails to fulfill its performance obligations under a derivative contract, the Company's credit risk will equal the fair value of the derivative instrument. Generally, when the fair value of a derivative contract is positive, the counter-party owes the Company, thus creating a receivable risk for the Company. Based upon certain factors including a review of the credit default swap rates for the Company's counter-parties, the Company determined its counter-party credit risk to be immaterial. At December 29, 2018, the Company's obligations under the contracts exceeded counter-parties' obligations by $8 million.

The Company is dependent on certain equipment and materials from a limited number of suppliers and relies on a limited number of foreign companies to supply the majority of certain types of integrated circuit packages for back-end manufacturing operations. Similarly, certain non-proprietary materials or components such as memory, PCBs, substrates and capacitors used in the manufacture of the Company's graphics products are currently available from only a limited number of sources. Interruption of supply or increased demand in the industry could cause shortages and price increases in various essential materials. If the Company or its third-party manufacturing suppliers are unable to procure certain of these materials or its foundries are unable to procure materials for manufacturing its products, its business would be materially adversely affected.

NOTE 11: Income Taxes

The provision (benefit) for income taxes consists of:

	2018	2017 [1]	2016 [1]
	(In millions)		
Current:			
U.S. Federal	$12	$(3)	$(2)
U.S. State and Local	—	—	—
Foreign National and Local	(17)	37	21
Total	(5)	34	19
Deferred:			
U.S. Federal	—	(15)	(1)
Foreign National and Local	(4)	(1)	21
Total	(4)	(16)	20
Provision (benefit) for income taxes	$(9)	$18	$39

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

The income tax benefit in 2018 was primarily due to a $36 million refund of withholding tax from a foreign jurisdiction related to a legal settlement from 2010, offset by $13 million of U.S. income taxes resulting from the Tax Reform Act, $7 million tax provision in foreign locations and $7 million of withholding taxes on cross-border transactions.

The income tax provision in 2017 was primarily due to withholding taxes applicable to IP-related revenue and licensing gains from foreign locations.

The income tax provision in 2016 was primarily due to $41 million of foreign taxes in profitable locations including $27 million attributable to a gain on the sale of 85% of the ownership interest in the subsidiary operating a factory in Suzhou and $9 million of withholding taxes on cross-border transactions where no foreign tax credit is expected to be realizable, offset by $2 million of tax benefits for Canadian tax credits and the monetization of certain U.S. tax credits. Income (loss) before income taxes consists of the following:

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	2018	2017	2016
	(In millions)		
U.S.	$114	$53	$(609)
Foreign	214	(68)	150
Total pre-tax income (loss) including equity loss in investee	$328	$(15)	$(459)

Deferred income taxes reflect the net tax effects of tax carryovers and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the balances for income tax purposes. Significant components of the Company's deferred tax assets and liabilities as of December 29, 2018 and December 30, 2017 are as follows:

	December 29, 2018	December 30, 2017 [1]
	(In millions)	
Deferred tax assets:		
Net operating loss carryovers	$1,533	$ 1,551
Inventory valuation	25	20
Accrued expenses not currently deductible	98	61
Acquired intangibles	76	102
Tax deductible goodwill	25	56
Federal and state tax credit carryovers	527	546
Foreign research and development ITC credits	370	391
Other	89	62
Total deferred tax assets	2,743	2,789
Less: valuation allowance	(2,580)	(2,621)
Total deferred tax assets, net of valuation allowance	163	168
Deferred tax liabilities:		
Discount of convertible notes	(54)	(58)
Undistributed foreign earnings	(94)	(97)
Other	(11)	(13)
Total deferred tax liabilities	(159)	(168)
Net deferred tax assets	$4	$ —

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

The breakdown between deferred tax assets and deferred tax liabilities as of December 29, 2018 and December 30, 2017 is as follows:

	December 29, 2018	December 30, 2017 [1]
	(In millions)	
Deferred tax assets	$ 15	$ 11
Deferred tax liabilities	(11)	(11)
Net deferred tax assets	$ 4	$ —

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

Deferred tax assets are included in the caption Other assets on the consolidated balance sheets. Deferred tax liabilities are included in the caption Other long-term liabilities on the consolidated balance sheets.

In December 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017 (Tax Reform Act). The legislation significantly changes U.S. tax law by, among other things,

lowering corporate income tax rates, implementing a modified territorial tax system and imposing a transition tax on deemed repatriated earnings of foreign subsidiaries. The Tax Reform Act permanently reduces the U.S. corporate income tax rate from a maximum of 35% to a flat 21% rate, effective January 1, 2018. ASC 740: Income Taxes, requires companies to recognize the effect of the tax law changes

in the period of enactment. However, the SEC staff issued Staff Accounting Bulletin No. 118 (SAB 118) which allowed companies to record provisional amounts during a measurement period that is similar to the measurement period used when accounting for business combinations. As a result, in 2017, the Company provisionally adjusted its deferred tax assets and liabilities based on the reduction of the U.S. federal corporate tax rate from 35% to 21% and assessed the realizability of its deferred tax assets based upon the best available information at that time. In addition, the Company recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities in its consolidated financial statements for the year ended December 30, 2017. During 2018, the Company finalized its computation of the impact of the Tax Reform Act.

The Tax Reform Act also eliminated the corporate alternative minimum tax (AMT) for tax years commencing on or after January 1, 2018. As a result, AMT credit carryforwards may be utilized to reduce future income tax liabilities. In addition, excess AMT credits are refundable in any taxable year beginning after 2017 and before 2022 in an amount equal to 50% (100% in the case of taxable years beginning in 2021) of the excess of the minimum tax credit for the taxable year over the amount of the credit allowable for the year against regular tax liability. Accordingly, the Company recorded $16 million of AMT credit carry forwards as a tax receivable in 2017.

As of December 29, 2018, substantially all of the Company’s U.S. and foreign deferred tax assets, net of deferred tax liabilities, continued to be subject to a valuation allowance. The realization of these assets is dependent on substantial future taxable income which at December 29, 2018, in management’s estimate, is not more likely than not to be achieved. In 2018, the net valuation allowance decreased by $43 million primarily for decreases related to net operating loss carryovers, federal and state tax credit carryovers, acquired intangibles and goodwill. In 2017, gross deferred tax assets decreased by $1,018 million primarily for provisional decreases related to the remeasurement of deferred tax assets due to the 21% tax rate under the Tax Reform Act, as well as decreases related to acquired intangibles and goodwill, offset by a decrease in the gross deferred tax liability balance of $112 million primarily for provisional decreases related to the remeasurement of deferred tax liabilities due to the 21% tax rate under the Tax Reform Act, and a decrease in the gross valuation allowance of $905 million. In 2016, the net valuation allowance decreased by $143 million primarily for increases in deferred tax assets related to foreign capitalized research costs, acquired intangibles and goodwill.

The following is a summary of the Company’s various tax attribute carryforwards as of December 29, 2018.

Carryforward	Federal	State / Provincial	Expiration
	(In millions)		
U.S.-net operating loss carryovers	$7,140	$ 317	2018 to 2037
U.S.-credit carryovers	$372	$ 219	2018 to 2037
Canada-net operating loss carryovers	$17	$ 17	2027 to 2028
Canada-credit carryovers	$338	$ 28	2023 to 2037
Other foreign net operating loss carryovers	$44	N/A	various

Utilization of $6 million of the Company’s U.S. federal net operating loss carryforwards are subject to annual limitations as a result of the ATI Technologies ULC (ATI) acquisition.

The table below displays the reconciliation between statutory federal income taxes and the total provision (benefit) for income taxes.

	2018	2017	2016
	(In millions)		
Statutory federal income tax expense (benefit) at 21%, 35% and 35% rate	$69	$22	$(160)
State taxes, net of federal benefit	1	1	1
Foreign (income) expense at other than U.S. rates	2	—	(1)
U.S. valuation allowance generated (utilized)	(93)	15	201
Credit monetization	(1)	(20)	(2)
Tax Reform Act taxes	13	—	—
Provision (benefit) for income taxes	$(9)	$18	$39

As part of the transition from a world-wide tax system to a territorial (dividend exemption) system, the Tax Reform Act imposes a one-time transition tax on the cumulative undistributed post-1986 earnings and profits of certain foreign subsidiaries. The transition tax applies at a rate of 15.5% for earnings held as liquid assets and 8.0% for earnings held as illiquid assets by the foreign subsidiaries.

Because of the transition to a territorial system under the Tax Reform Act, the taxation of future dividend distributions by foreign subsidiaries is expected to be limited to withholding taxes which may apply based on the jurisdiction of the subsidiary. The Company has made no provision for taxes on approximately $142 million of cumulative undistributed earnings of certain foreign subsidiaries as of December 29, 2018, and on approximately $117 million as of December 30, 2017, based on the Company's intention to indefinitely reinvest such earnings. However, if such earnings were distributed, the Company would incur additional foreign withholding taxes.

A reconciliation of the Company's gross unrecognized tax benefits is as follows:

	2018	2017 [1]	2016 [1]
	(In millions)		
Balance at beginning of year	$49	$42	$38
Increases for tax positions taken in prior years	1	7	3
Decreases for tax positions taken in prior years	(1)	(2)	—
Increases for tax positions taken in the current year	3	3	2
Decreases for settlements with taxing authorities	(2)	—	—
Decreases for lapsing of the statute of limitations	(1)	(1)	(1)
Balance at end of year	$49	$49	$42

[1] Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2.

The amount of unrecognized tax benefits that would impact the effective tax rate was $9 million, $9 million and $4 million as of December 29, 2018, December 30, 2017 and December 31, 2016, respectively. The Company had no material amounts of accrued interest and accrued penalties related to unrecognized tax benefits as of December 29, 2018, December 30, 2017 and December 31, 2016.

The Company does not believe it is reasonably possible that its unrecognized tax benefits will materially change in the next 12 months. However, the resolutions and/or closure of open audits are highly uncertain. The Company and its subsidiaries have several foreign, foreign provincial, and U.S. state audits in process at any one point in time. The Company has provided for uncertain tax positions that require a liability under the adopted method to account for uncertainty in income taxes.

NOTE 12: Earnings (Loss) Per Share

Earnings (Loss) Per Share. Basic earnings (loss) per share is computed based on the weighted-average number of shares outstanding.

Diluted net income (loss) per share is computed based on the weighted-average number of shares outstanding plus potentially dilutive shares outstanding during the period. Potentially dilutive shares are determined by applying the treasury stock method to the assumed exercise of outstanding stock options, the assumed vesting of outstanding RSUs, the assumed issuance of common stock under the employee stock purchase plan (ESPP) and the assumed exercise of the warrant under the warrant agreement (the Warrant Agreement) with West Coast Hitech L.P. (WCH), a wholly-owned subsidiary of Mubadala Investment Company PJSC (Mubadala). Potentially dilutive shares issuable upon conversion of the 2.125% Convertible Senior Notes due 2026 (2.125% Notes) are calculated using the if-converted method.

The following table sets forth the components of basic and diluted earnings (loss) per share:

	2018	2017	2016
	(In millions, except per share amounts)		
Numerator—Net income (loss):			
Numerator for basic and diluted earnings (loss) per share	$ 337	$ (33)	$ (498)
Denominator—Weighted average shares:			
Denominator for basic earnings (loss) per share	982	952	835
Effect of potentially dilutive shares:			
Employee equity incentive plans and warrants	82	—	—
Denominator for diluted earnings (loss) per share	1,064	952	835
Earnings (loss) per share:			
Basic	$ 0.34	$ (0.03)	$ (0.60)
Diluted	$ 0.32	$ (0.03)	$ (0.60)

Potential shares from employee equity incentive plans and the conversion of the 2.125% Notes totaling 105 million shares for 2018 and potential shares from employee equity incentive plans, the conversion of the 2.125% Notes and the warrants under the Warrants Agreement totaling 189 million and 231 million shares for 2017 and 2016, respectively, were not included in the diluted earnings (loss) per share calculation as their inclusion would have been anti-dilutive.

NOTE 13: Debt and Secured Revolving Line of Credit

Debt

The Company's total debt as of December 29, 2018 and December 30, 2017 consisted of:

	December 29, 2018	December 30, 2017
	(In millions)	
6.75% Notes	$66	$ 166
7.50% Notes	337	347
7.00% Notes	250	311
2.125% Notes	805	805
Secured Revolving Line of Credit	70	70
Total debt (principal amount)	1,528	1,699
Unamortized debt discount associated with 2.125% Notes	(262)	(286)
Unamortized debt issuance costs	(16)	(19)
Other	—	1
Total debt (net)	1,250	1,395
Less: current portion	(136)	(70)
Total debt, less current portion	$1,114	$ 1,325

2.125% Convertible Senior Notes Due 2026

In September 2016, the Company issued $805 million in aggregate principal amount of 2.125% Convertible Senior Notes due 2026 (2.125% Notes). The 2.125% Notes are general unsecured senior obligations of the Company. The interest is payable semi-annually in March and September of each year, commencing in March 2017. As of December 29, 2018, the Company had $805 million principal amount outstanding.

The 2.125% Notes mature on September 1, 2026. However, as outlined in the indenture governing the 2.125% Notes, holders of the 2.125% Notes may convert them at their option during certain time periods and upon the occurrence of one of the following circumstances:

(1) during any calendar quarter commencing after the calendar quarter ending on September 30, 2016 (and only during such calendar quarter), if the last reported sale price of the Company's common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar

quarter is greater than or equal to 130% of the conversion price on each applicable trading day (equivalent to an initial conversion price of approximately $8.00 per share of common stock);
(2) during the five business day period after any ten consecutive trading day period (the "measurement period") in which the trading price per $1,000 principal amount of notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on each such trading day; or
(3) upon the occurrence of specified corporate events.
On or after June 1, 2026 and until the close of business on the business day immediately preceding the maturity date, holders may convert their notes at any time regardless of the foregoing circumstances. Upon conversion, the Company will pay or deliver, as the case may be, cash, shares of the Company's common stock or a combination of cash and shares of the Company's common stock at the Company's election.
The first event described in (1) above was met during the fourth quarter of 2018 and, as a result, the 2.125% Notes are convertible at the option of the holder from January 1, 2019 and remain convertible until March 31, 2019.
The Company's current intent is to deliver shares of its common stock upon conversion of the 2.125% Notes. As such, no sinking fund is provided for the 2.125% Notes and the Company continued to classify the carrying value of the liability component of the 2.125% Notes as long-term debt and the equity component of the 2.125% Notes as permanent equity on its condensed consolidated balance sheet as of December 29, 2018.
The determination of whether or not the 2.125% Notes are convertible is performed on a calendar-quarter basis.
The 2.125% Notes consisted of the following:

	December 29, 2018	December 30, 2017
	(In millions)	
Principal amounts:		
Principal	$ 805	$ 805
Unamortized debt discount[1]	(262)	(286)
Unamortized debt issuance costs	(11)	(12)
Net carrying amount	$ 532	$ 507
Carrying amount of the equity component, net[2]	$ 305	$ 305

(1) Included in the consolidated balance sheets within Long-term debt, net and amortized over the remaining life of the notes using the effective interest rate method.
(2) Included in the consolidated balance sheets within additional paid-in capital, net of $9 million in equity issuance costs.

As of December 29, 2018, the remaining life of the 2.125% Notes was approximately 93 months.
Based on the closing price of the Company's common stock of $17.82 on December 28, 2018, the last trading day of 2018, the if-converted value of the 2.125% Notes exceeded its principal amount by approximately $988 million.
The effective interest rate of the liability component of the 2.125% Notes is 8%. This interest rate was based on the interest rates of similar liabilities at the time of issuance that did not have associated conversion features. The following table sets forth total interest expense recognized related to the 2.125% Notes for the year ended December 29, 2018:

	December 29, 2018	December 30, 2017
	(In millions)	
Contractual interest expense	$ 17	$ 17
Interest cost related to amortization of debt issuance costs	1	2
Interest cost related to amortization of the debt discount	$ 24	$ 22

6.75% Senior Notes Due 2019

On February 26, 2014, the Company issued $600 million of its 6.75% Senior Notes due 2019 (6.75% Notes). The 6.75% Notes are general unsecured senior obligations of the Company. Interest is payable on March 1 and September 1 of each year beginning September 1, 2014 until the maturity date of March 1, 2019. The 6.75% Notes are governed by the terms of an indenture (the 6.75% Indenture) dated February 26, 2014 between the Company and Wells Fargo Bank, N.A., as trustee.

In 2016, the Company repurchased $404 million in aggregate principal amount of its 6.75% Notes pursuant to a partial tender offer for $442 million. In 2017, the Company settled $30 million in aggregate principal amount of its 6.75% Notes, of which $26 million was settled in cash and $5 million was settled in treasury stock.

During 2018, the Company settled $101 million in aggregate principal amount of its 6.75% Notes for $14 million in cash and $87 million in treasury stock at a weighted-average cost of $9.04 per share. As of December 29, 2018, the outstanding aggregate principal amount of the 6.75% Notes was $66 million.

At any time before March 1, 2019, the Company may redeem some or all of the 6.75% Notes at a price equal to 100% of the principal amount, plus accrued and unpaid interest and a "make whole" premium (as set forth in the 6.75% Indenture).

Holders have the right to require the Company to repurchase all or a portion of the 6.75% Notes in the event that the Company undergoes a change of control, as defined in the 6.75% Indenture, at a price of 101% of the principal amount plus accrued and unpaid interest. Additionally, an event of default (as defined in the 6.75% Indenture) may result in the acceleration of the maturity of the 6.75% Notes.

The 6.75% Indenture contains certain covenants that limit, among other things, the Company's ability and the ability of its subsidiaries, to:

- incur additional indebtedness, except specified permitted debt;
- pay dividends and make other restricted payments;
- make certain investments if an event of a default exists, or if specified financial conditions are not satisfied;
- create or permit certain liens;
- create or permit restrictions on the ability of its subsidiaries to pay dividends or make other distributions to the Company;
- use the proceeds from sales of assets;
- enter into certain types of transactions with affiliates; and
- consolidate, merge or sell its assets as entirety or substantially as an entirety.

7.50% Senior Notes Due 2022

On August 15, 2012, the Company issued $500 million of its 7.50% Senior Notes due 2022 (7.50% Notes). The 7.50% Notes are general unsecured senior obligations of the Company. Interest is payable on February 15 and August 15 of each year beginning February 15, 2013 until the maturity date of August 15, 2022. The 7.50% Notes are governed by the terms of an indenture (the 7.50% Indenture) dated August 15, 2012 between the Company and Wells Fargo Bank, N.A., as trustee.

In 2014, the Company repurchased $25 million in aggregate principal amount of its 7.50% Notes in open market transactions for $24 million. In 2016, the Company repurchased $125 million in aggregate principal amount of its 7.50% Notes pursuant to a partial tender offer for $135 million. In 2017, the Company settled $3 million in aggregate principal amount of its 7.50% Notes in treasury stock.

During 2018, the Company settled $10 million in aggregate principal amount of its 7.50% Notes in treasury stock at a weighted-average cost of $9.01 per share. As of December 29, 2018, the outstanding aggregate principal amount of the 7.50% Notes was $337 million.

Prior to August 15, 2022, the Company may redeem some or all of the 7.50% Notes at a price equal to 100% of the principal amount plus accrued and unpaid interest and a "make whole" premium (as defined in the 7.50% Indenture).

Holders have the right to require the Company to repurchase all or a portion of the 7.50% Notes in the event that the Company undergoes a change of control as defined in the 7.50% Indenture, at a repurchase price of 101% of the principal amount plus accrued and unpaid interest. Additionally, an event of default (as defined in the 7.50% Indenture) may result in the acceleration of the maturity of the 7.50% Notes.

The 7.50% Indenture contains certain covenants that limit, among other things, the Company's ability and the ability of its subsidiaries, to:

- incur additional indebtedness, except specified permitted debt;
- pay dividends and make other restricted payments;
- make certain investments if an event of a default exists, or if specified financial conditions are not satisfied;
- create or permit certain liens;
- create or permit restrictions on the ability of its subsidiaries to pay dividends or make other distributions to the Company;
- use the proceeds from sales of assets;
- enter into certain types of transactions with affiliates; and
- consolidate, merge or sell its assets as entirety or substantially as an entirety.

7.00% Senior Notes Due 2024

On June 16, 2014, the Company issued $500 million of its 7.00% Senior Notes due 2024 (7.00% Notes). The 7.00% Notes are general unsecured senior obligations of the Company. Interest is payable on January 1 and July 1 of each year beginning January 1, 2015 until the maturity date of July 1, 2024. The 7.00% Notes are governed by the terms of an indenture (the 7.00% Indenture) dated June 16, 2014 between the Company and Wells Fargo Bank, N.A., as trustee.

In 2016, the Company settled $84 million in aggregate principal amount of its 7.00% Notes for $77 million in cash and $8 million in treasury stock. In 2017, the Company settled $105 million in aggregate principal amount of its 7.00% Notes for $84 million in cash and $26 million in treasury stock.

During 2018, the Company settled $61 million in aggregate principal amount of its 7.00% Notes for $26 million in cash and $35 million in treasury stock at a weighted-average cost of $9.42 per share. As of December 29, 2018, the outstanding aggregate principal amount of the 7.00% Notes was $250 million.

Prior to July 1, 2019, the Company may redeem some or all of the 7.00% Notes at a price equal to 100% of the principal amount plus accrued and unpaid interest and a "make whole" premium (as set forth in the 7.00% Indenture). Starting July 1, 2019, the Company may redeem the 7.00% Notes for cash at the following specified prices plus accrued and unpaid interest:

Period	Price as Percentage of Principal Amount	
Beginning on July 1, 2019 through June 30, 2020	103.500	%
Beginning on July 1, 2020 through June 30, 2021	102.333	%
Beginning on July 1, 2021 through June 30, 2022	101.167	%
On July 1, 2022 and thereafter	100.000	%

Holders have the right to require the Company to repurchase all or a portion of the 7.00% Notes in the event that the Company undergoes a change of control as defined in the 7.00% Indenture at a repurchase price of 101% of the principal amount plus accrued and unpaid interest. Additionally, an event of default (as defined in the 7.00% Indenture) may result in the acceleration of the maturity of the 7.00% Notes.

The 7.00% Indenture contains certain covenants that limit, among other things, the Company's ability and the ability of its subsidiaries, to:

- incur additional indebtedness, except specified permitted debt;
- pay dividends and make other restricted payments;
- make certain investments if an event of a default exists, or if specified financial conditions are not satisfied;
- create or permit certain liens;
- create or permit restrictions on the ability of its subsidiaries to pay dividends or make other distributions to the Company;
- use the proceeds from sales of assets;

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- enter into certain types of transactions with affiliates; and
- consolidate, merge or sell its assets as entirety or substantially as an entirety.

The 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes rank equally with the Company's existing and future senior debt and are senior to all of the Company's future subordinated debt. The 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes rank junior to all of the Company's future senior secured debt to the extent of the collateral securing such debt and are structurally subordinated to all existing and future debt and liabilities of the Company's subsidiaries.

The Company calculated the cost of reissued shares from treasury stock based on weighted-average cost of the treasury stock. During 2018, the Company recorded $12 million of aggregate losses from the extinguishment of debt noted above in Other Income & Expense, net on its consolidated statements of operations.

Potential Repurchase of Outstanding Notes

The Company may elect to purchase or otherwise retire the 6.75% Notes, 7.50% Notes, 7.00% Notes and 2.125% Notes with cash, stock or other assets from time to time in open market or privately negotiated transactions either directly or through intermediaries or by tender offer when the Company believes the market conditions are favorable to do so.

Secured Revolving Line of Credit

On April 14, 2015, the Company and its subsidiary, AMD International Sales & Service, Ltd. (together, the Borrowers), ATI Technologies ULC (collectively with the Borrowers, the Loan Parties), a group of lenders and Bank of America N.A., acting as the agent for the lenders, entered into an amended and restated loan and security agreement, as amended (the Agreement). The Agreement provides for a secured revolving line of credit (the Secured Revolving Line of Credit) that allows the Borrowers to borrow, repay and re-borrow amounts from time to time up to $500 million with up to $45 million available for issuance of letters of credit, subject to certain conditions. Borrowings are limited up to a certain amount of eligible accounts receivable, as determined in accordance with the Agreement. The size of the commitment under the Secured Revolving Line of Credit may be increased by up to an aggregate amount of $200 million. The commitments under the Secured Revolving Line of Credit are available through March 21, 2022. The Borrowers are subject to commitment fees and letter of credit facility fees. The Loan Parties are required to comply with certain covenants under the Agreement.

The Secured Revolving Line of Credit bears interest, at the option of the Borrowers, either at (a) a customary London Interbank Offered Rate (LIBOR) plus an applicable margin (as determined in accordance with the agreement), or (b) (i) the greatest of (x) the bank's prime rate, (y) the federal funds rate as published by the Federal Reserve Bank of New York plus 0.50%, and (z) LIBOR for a one-month period plus 1.00%, plus (ii) an applicable margin.

As of December 29, 2018 and December 30, 2017, the Secured Revolving Line of Credit had an outstanding loan balance of $70 million at an interest rate of 6.00% and 4.75%, respectively. As of December 29, 2018, the Secured Revolving Line of Credit had $26 million related to outstanding letters of credit and up to $175 million available for future borrowings. The Company reports its intra-period changes in its revolving credit balance on a net basis in its condensed consolidated statement of cash flows as the Company intends the period of the borrowings to be brief, repaying borrowed amounts within 90 days. As of December 29, 2018, the Company was in compliance with all required covenants stated in the Loan Agreement.

The agreements governing the 6.75% Notes, 7.50% Notes, 7.00% Notes, 2.125% Notes and the Secured Revolving Line of Credit contain cross-default provisions whereby a default under one agreement would likely result in cross defaults under agreements covering other borrowings. The occurrence of a default under any of these borrowing arrangements would permit the applicable note holders or the lenders under the Secured Revolving Line of Credit to declare all amounts outstanding under those borrowing arrangements to be immediately due and payable.

Future Payments on Total Debt

As of December 29, 2018, the Company's future debt payment obligations for the respective fiscal years were as follows:

	Term Debt (Principal only)
	(In millions)
2019	$ 66
2020	—
2021	—
2022	337
2023	—
2024 and thereafter	1,055
Total	$ 1,458

NOTE 14: Other Income (Expense), Net

The following table summarizes the components of Other income (expense), net:

	2018	2017	2016
	(In millions)		
Interest income	$18	$6	$2
Gain on sale of 85% ATMP JV	—	3	146
Loss on debt redemption	(12)	(12)	(68)
Other	(6)	(6)	—
Other income (expense), net	$—	$(9)	$80

NOTE 15: Segment Reporting

Management, including the Chief Operating Decision Maker, who is the Company's Chief Executive Officer, reviews and assesses operating performance using segment net revenue and operating income (loss) before interest, other income (expense), net, income taxes and equity loss of investee. These performance measures include the allocation of expenses to the operating segments based on management's judgment. The Company has the following two reportable segments:

- the Computing and Graphics segment, which primarily includes desktop and notebook processors and chipsets, discrete and integrated graphics processing units (GPUs), professional GPUs and licensing portions of its IP portfolio; and
- the Enterprise, Embedded and Semi-Custom segment, which primarily includes server and embedded processors, semi-custom System-on-Chip (SoC) products, development services, technology for game consoles and licensing portions of its IP portfolio.

In addition to these reportable segments, the Company has an All Other category, which is not a reportable segment. This category primarily includes certain expenses and credits that are not allocated to any of the reportable segments because management does not consider these expenses and credits in evaluating the performance of the reportable segments. Also included in this category are employee stock-based compensation expense, the charge related to the WSA Sixth Amendment and restructuring and other special charges, net. The Company also reported the results of former businesses in the All Other category because the operating results were not material.

The following table provides a summary of net revenue and operating income (loss) by segment for 2018, 2017 and 2016.

	2018	2017	2016
	(In millions)		
Net revenue:			
Computing and Graphics	$4,125	$2,977	$1,988
Enterprise, Embedded and Semi-Custom	2,350	2,276	2,331
Total net revenue	$6,475	$5,253	$4,319
Operating income (loss):			
Computing and Graphics	$470	$92	$(243)
Enterprise, Embedded and Semi-Custom	163	132	287
All Other	(182)	(97)	(417)
Total operating income (loss)	$451	$127	$(373)

The following table provides major items included in All Other category:

	2018	2017	2016
	(In millions)		
Operating loss:			
Stock-based compensation expense	$(137)	$(97)	$(86)
Restructuring and other special charges, net	—	—	10
Impairment of technology licenses	(45)	—	—
Charge related to the WSA Sixth Amendment	—	—	(340)
Other	—	—	(1)
Total operating loss	$(182)	$(97)	$(417)

The Company does not discretely allocate assets to its operating segments, nor does management evaluate operating segments using discrete asset information.

The Company’s operations outside the United States include research and development activities and sales, marketing and administrative activities. The Company conducts product and system research and development activities for its products in the United States with additional design and development engineering teams located in China, Canada, India, Singapore, Australia and Taiwan. The Company’s ATMP facilities located in Malaysia and China were sold in the second quarter of 2016 (see Note 4: Equity Interest Agreement - ATMP Joint Venture). The Company’s material sales and marketing offices are located in the United States, Latin America, Europe and Asia.

The following table summarizes sales to external customers by geographic regions based on billing location of the customer:

	2018	2017	2016
	(In millions)		
United States	$1,327	$1,360	$922
Europe	470	263	154
China (including Taiwan)	2,516	1,712	1,153
Singapore	728	550	569
Japan	1,225	1,215	1,456
Other countries	209	153	65
Total sales to external customers	$6,475	$5,253	$4,319

The following table summarizes long-lived assets by geographic areas:

	2018	2017
	(In millions)	
United States	$232	$200
Malaysia	3	5
China	17	7
Singapore	29	22
Other countries	67	27
Total long-lived assets	$348	$261

The following table summarizes sales to major customers that accounted for at least 10% of the Company’s consolidated net revenue for the respective years:

	2018	2017	2016
Customer A	19%	23%	33%
Customer B	11%	15%	16%
Customer C	7 %	6 %	10%

Sales to customers A and B consisted of products from the Company's Enterprise, Embedded and Semi-Custom segment and sales to customer C consisted primarily of products from the Company's Computing and Graphics segment.

NOTE 16: Common Stock and Stock-Based Incentive Compensation Plans

Common Stock

During the third quarter of 2016, the Company completed its registered underwritten public offering of 115 million shares of the Company’s common stock, par value $0.01 per share, at a public offering price of $6.00 per share pursuant to an underwriting agreement with J.P. Morgan Securities LLC, Barclays Capital Inc. and Credit Suisse Securities (USA) LLC as representatives of the several underwriters named therein. The resulting aggregate net proceeds to the Company from the common stock offering were approximately $667 million, after deducting underwriting discounts and offering expenses totaling approximately $23 million.

Stock-Based Incentive Compensation Plans

The Company’s stock-based incentive programs are intended to attract, retain and motivate highly qualified employees. On April 29, 2004, the Company’s stockholders approved the 2004 Equity Incentive Plan (the 2004 Plan).

Under the 2004 Plan, stock options generally vest and become exercisable over a three-year period from the date of grant and expire within ten years after the grant date. Unvested shares that are reacquired by the Company from forfeited outstanding equity awards become available for grant and may be reissued as new awards.
Under the 2004 Plan, the Company can grant fair market value awards or full value awards. Fair market value awards are awards granted at or above the fair market value of the Company's common stock on the date of grant. Full value awards are awards granted at less than the fair market value of the Company's common stock on the date of grant. Awards can consist of (i) stock options granted at the fair market value of the Company's common stock on the date of grant and (ii) restricted stock units as full value awards. The following is a description of the material terms of the awards that may be granted under the 2004 Plan.
Stock Options. A stock option is the right to purchase shares of the Company's common stock at a fixed exercise price for a fixed period of time. Under the 2004 Plan, nonstatutory and incentive stock options may be granted. The exercise price of the shares subject to each nonstatutory stock option and incentive stock option cannot be less than 100% of the fair market value of the Company's common stock on the date of the grant. The exercise price of each option granted under the 2004 Plan must be paid in full at the time of the exercise.
Restricted Stock Units. Restricted stock units (RSUs) are awards that can be granted to any employee, director or consultant and that obligate the Company to issue a specific number of shares of the Company's common stock in the future if the vesting terms and conditions are satisfied. The purchase price for the shares is $0.00 per share.
Performance-based Restricted Stock Units. Performance-based Restricted Stock Units (PRSUs) can be granted to certain of the Company's senior executives. The performance metrics can be financial performance, non-financial performance and/or market condition. Each PRSU award reflects a target number of shares (Target Shares) that may be issued to an award recipient before adjusting based on the Company's financial performance, non-financial performance and/or market conditions. The actual number of shares that a grant recipient receives at the end of the period may range from 0% to 250% of the Target Shares granted, depending upon the degree of achievement of the performance target designated by each individual award.
Employee Stock Purchase Plan. The Company has introduced the Employee Stock Purchase Plan (ESPP) in the fourth quarter of 2017. Under the ESPP, eligible employees who participate in an offering period may have up to 10% of their earnings withheld, up to certain limitations, to purchase shares of common stock at 85% of the lower of the fair market value on the first or the last business day of the six-month offering period. The offering periods commence in November and May each year.
As of December 29, 2018, the Company had 40 million shares of common stock that were available for future grants and 38 million shares reserved for issuance upon the exercise of outstanding stock options or the vesting of unvested restricted stock units. In addition, the Company had 45 million shares of common stock that were available for issuance under the ESPP.
Valuation and Expense
Stock-based compensation expense related to employee stock options, restricted stock units, including PRSUs and the ESPP, was allocated in the consolidated statements of operations as follows:

	2018	2017	2016
	(In millions)		
Cost of sales	$4	$ 2	$ 2
Research and development	91	57	49
Marketing, general, and administrative	42	38	35
Total stock-based compensation expense, net of tax of $0	$137	$ 97	$ 86

During 2018, 2017 and 2016, the Company did not realize any excess tax benefits related to stock-based compensation and therefore the Company did not record any related financing cash flows.

Stock Options. The Company uses the lattice-binomial model in determining the fair value of the stock options. The weighted-average estimated fair value of employee stock options granted for the years ended December 29, 2018, December 30, 2017 and December 31, 2016 was $7.62, $5.46 and $3.10 per share, respectively, using the following assumptions:

	2018	2017	2016
Expected volatility	51.51% - 60.46%	57.26%	62.33%
Risk-free interest rate	2.20% - 2.83%	1.68 %	1.02 %
Expected dividends	— %	— %	— %
Expected life (in years)	3.92 - 3.94	3.92	3.98

The Company uses a combination of the historical volatility of its common stock and the implied volatility for publicly traded options on the Company's common stock as the expected volatility assumption required by the lattice-binomial model. The risk-free interest rate is based on the rate for a U.S. Treasury zero-coupon yield curve with a term that approximates the expected life of the option grant at the date closest to the option grant date. The expected dividend yield is zero as the Company does not expect to pay dividends in the future. The expected term of employee stock options represents the weighted-average period the stock options are expected to remain outstanding and is a derived output of the lattice-binomial model.

The following table summarizes stock option activity and related information:

	Outstanding Number of Shares	Weighted-Average Exercise Price	Aggregate Intrinsic Value	Weighted-Average Remaining Contractual Life (in years)
	(In millions, except share price)			
Balance as of December 30, 2017	17	$ 4.32	$ 104	3.75
Granted	1	$ 18.35		
Canceled	—	$ 8.93		
Exercised	(5)	$ 4.65		
Balance as of December 29, 2018	13	$ 5.33	$ 152	3.49
Exercisable December 29, 2018	11	$ 3.64	$ 145	3.15

The total intrinsic value of stock options exercised for 2018, 2017 and 2016 was $67 million, $27 million and $10 million, respectively.

As of December 29, 2018, the Company had $9 million of total unrecognized compensation expense related to stock options that will be recognized over the weighted-average period of 1.89 years.

RSUs. The Company uses the fair value of the Company's common stock on the date of the grant in determining the fair value of the RSUs. The weighted-average grant date fair values of RSUs granted during 2018, 2017 and 2016 were $14.81, $11.63 and $4.72 per share, respectively.

The following table summarizes RSU activity, including PRSU activity, and related information:

	Number of Shares	Weighted-Average Fair Value
	(In millions except share price)	
Unvested shares as of December 30, 2017	35	$ 6.60
Granted	15	$ 14.81
Forfeited	(2)	$ 8.74
Vested	(22)	$ 4.46
Unvested shares as of December 29, 2018	26	$ 13.14

The total fair value of RSUs vested during 2018, 2017 and 2016 was $399 million, $328 million and $151 million, respectively.

As of December 29, 2018, the Company had $267 million of total unrecognized compensation expense related to RSUs that will be recognized over the weighted-average period of 1.75 years.

PRSUs. The Company uses the Monte Carlo simulation model on the date of grant in determining the fair value of the PRSUs with a market condition. The weighted-average grant date fair values of PRSUs granted during 2018, 2017 and 2016 were $21.67, $17.18 and $9.00, respectively, using the following assumptions:

	2018	2017	2016
Stock price at valuation date	$12.02 - $32.72	$12.83	$5.14
Expected volatility	63.77% - 67.97%	64.39%	57.83%
Risk-free interest rate	2.06% - 2.82%	1.50 %	0.88 %
Expected dividends	— %	— %	— %
Expected term (in years)	2.48 - 3.00	3.00	3.07

The following table summarizes PRSU activity and related information:

	(Shares in millions)
Unvested shares as of December 30, 2017	3
Granted	3
Forfeited	—
Vested	(4)
Unvested shares as of December 29, 2018	2

ESPP. The Company uses the Black-Scholes model in determining the fair value of the ESPP. The weighted-average grant date fair value for the ESPP during 2018 and 2017 was within a range from $3.42 to $6.43 and $3.46 per share, respectively, using the following assumptions:

	2018	2017
Expected volatility	45.88% - 66.66%	56.07%
Risk-free interest rate	2.05% - 2.52%	1.36 %
Expected dividends	— %	— %
Expected term (in years)	0.49 - 0.50	0.49

During 2018, 2.2 million and 2.5 million shares of common stock were purchased in each of the two six-month offering periods under the ESPP at a purchase price of $9.57 and $10.31 per share, respectively, resulting in aggregate cash proceeds of $47 million. As of December 29, 2018, the Company had $9 million of total unrecognized compensation expense related to the ESPP that will be recognized over the weighted-average period of 0.36 years.

NOTE 17: Retirement Benefit Plans

The Company provides retirement benefit plans in the United States and certain foreign countries. The Company has a 401(k) retirement plan that allows participating employees in the United States to contribute as defined by the plan and subject to Internal Revenue Service limitations. The Company matches 75% of employees' contributions up to 6% of their compensation. The Company’s contributions to the 401(k) plan for 2018, 2017 and 2016 were approximately $21 million, $18 million and $16 million, respectively.

NOTE 18: Commitments and Guarantees

Operating Leases

The Company leases certain of its facilities and in some jurisdictions the Company leases the land on which these facilities are built under non-cancellable lease agreements that expire at various dates through 2028. The Company also leases certain manufacturing and office equipment for terms ranging from one to five years.

As of December 29, 2018, the Company’s future non-cancellable operating lease commitments were as follows:

Year	Operating leases (In millions)
2019	$ 54
2020	48
2021	43
2022	40
2023	35
2024 and thereafter	102
Total non-cancellable operating lease commitments	$ 322

Rent expense for 2018, 2017 and 2016 was $53 million, $44 million and $39 million, respectively.

During the second quarter of 2018, the Company entered into a 10-year operating lease to occupy approximately 270,000 square feet of office space in China. Base rent payments commenced in October 2018. As of December 29, 2018, the total estimated base rent payments over the life of the lease were approximately $68 million. In addition to the base rent payments, the Company is obligated to pay certain customary amounts for its share of operating expenses and tax obligations. The Company will also incur costs for capital projects for the new office space.

The Company leases 220,000 square feet of office space in Santa Clara for 10 years. The base rent obligation commenced in August 2017. As of December 29, 2018, the total estimate of future base rent payments over the life of the lease was approximately $94 million. In addition to the base rent payments, the Company will be obligated to pay certain customary amounts for its share of operating expenses and tax obligation. The Company has the option to extend the term of the lease for two additional five-year periods.

Certain other operating leases contain provisions for escalating lease payments subject to changes in the consumer price index.

Purchase and Other Contractual Obligations

The Company’s purchase obligations primarily include the Company’s obligations to purchase wafers and substrates from third parties. As of December 29, 2018, total non-cancellable purchase obligations excluding the Company’s wafer purchase commitments to GF under the WSA were $337 million.

The Company also had other contractual obligations, primarily included in Other long-term liabilities and Accrued liabilities on its consolidated balance sheet, which primarily consisted of $161 million of payments due under certain software and technology licenses and IP licenses that will be paid through 2022.

Future unconditional purchase obligations as of December 29, 2018 were as follows:

Year	Unconditional purchase obligations (In millions)
2019	$ 335
2020	70
2021	54
2022	37
2023	2
2024 and thereafter	—
Total unconditional purchase commitments	$ 498

Obligations to GF

As of December 29, 2018, the Company's minimum purchase obligations for wafer purchases for the years 2019 through 2021 are approximately $2.4 billion.

Warranties and Indemnities

Changes in the Company’s estimated liability for product warranty during the years ended December 29, 2018 and December 30, 2017 are as follows:

	December 29, 2018	December 30, 2017
	(In millions)	
Beginning balance	$ 12	$ 12
New warranties issued during the period	27	25
Settlements during the period	(28)	(21)
Changes in liability for pre-existing warranties during the period, including expirations	2	(4)
Ending balance	$ 13	$ 12

In addition to product warranties, the Company from time to time in its normal course of business indemnifies other parties with whom it enters into contractual relationships, including customers, lessors and parties to other transactions with the Company, with respect to certain matters. In these limited matters, the Company has agreed to hold certain third parties harmless against specific types of claims or losses such as those arising from a breach of representations or covenants, third-party claims that the Company’s products when used for their intended purpose(s) and under specific conditions infringe the intellectual property rights of a third party, or other specified claims made against the indemnified party. It is not possible to determine the maximum potential amount of liability under these indemnification obligations due to the unique facts and circumstances that are likely to be involved in each particular claim and indemnification provision. Historically, payments made by the Company under these obligations have not been material.

NOTE 19: Contingencies

Shareholder Derivative Lawsuits (Wessels, Hamilton and Ha)

On March 20, 2014, a purported shareholder derivative lawsuit captioned Wessels v. Read, et al., Case No. 1:14 cv-262486 (Wessels) was filed against the Company (as a nominal defendant only) and certain of its directors and officers in the Santa Clara County Superior Court of the State of California. The complaint purports to assert claims against the Company and certain individual directors and officers for breach of fiduciary duty, waste of corporate assets and unjust enrichment. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by the Company and the individual directors and officers regarding its 32nm technology and "Llano" product, which statements and omissions, the plaintiffs claim, allegedly operated to artificially inflate the price paid for the Company's common stock during the period. On April 27, 2015, a similar purported shareholder derivative lawsuit captioned Christopher Hamilton and David Hamilton v. Barnes, et al., Case No. 5:15-cv-01890 (Hamilton) was filed against the Company (as a nominal defendant only) and certain of its directors and officers in the United States District Court for the Northern District of California.

On September 29, 2015, a similar purported shareholder derivative lawsuit captioned Jake Ha v Caldwell, et al., Case No. 3:15-cv-04485 (Ha) was filed against the Company (as a nominal defendant only) and certain of its directors and officers in the United States District Court for the Northern District of California. The lawsuit also seeks a court order voiding the stockholder vote on the Company's 2015 proxy. The case was transferred to the judge handling the Hamilton Lawsuit and is now Case No. 4:15-cv-04485. The Wessels, Hamilton and Ha shareholder derivative lawsuits were stayed pending resolution of a class action lawsuit captioned Hatamian v. AMD, et al., C.A. No. 3:14-cv-00226 filed against the Company in the United States District Court for the Northern District of California (the Hatamian Lawsuit). The Hatamian Lawsuit asserted claims against the Company and certain of its officers for alleged violations of Section 10(b) of the Exchange Act of 1934, as amended (the Exchange Act), and SEC Rule 10b-5 concerning certain statements regarding its 32nm technology and "Llano" products. On October 9, 2017, the parties signed a definitive settlement agreement resolving the Hatamian Lawsuit and submitted it to the Court for approval. Under the terms of this agreement, the settlement was funded entirely by certain of the Company's insurance carriers and the defendants continued to deny any liability or wrongdoing. On March 2, 2018, the court approved the settlement and entered a final judgment in the Hatamian Lawsuit.

On January 30, 2018, the Wessels and Hamilton plaintiffs amended their complaints. On February 2, 2018, the Ha plaintiff also filed an amended complaint. On February 22, 2018, the Company filed motions to dismiss the Hamilton and Ha plaintiffs' amended complaints. On April 2, 2018, the Company filed a demurrer seeking to dismiss the Wessels amended complaint. On July 23, 2018, the Santa Clara Superior Court sustained the Company's demurrer in the Wessels case, dismissing all claims in that matter with prejudice. The Wessels plaintiff filed a Notice of Appeal on September 27, 2018. On October 4, 2018, the Federal Court issued an order dismissing the Hamilton and Ha amended complaints. The Hamilton plaintiffs filed a Notice of Appeal on October 8, 2018, and the Ha plaintiffs filed a Notice of Appeal on October 15, 2018.

The Wessels, Hamilton, and Ha appeals are currently pending; the plaintiffs have not yet filed their opening briefs in any of the three matters. On November 19, 2018, the Hamilton and Ha plaintiffs filed a motion seeking summary reversal of the order dismissing their claims. The Company opposed this motion on December 13, 2018, and it remains pending.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Kim Securities Litigation

On January 16, 2018, a putative class action lawsuit captioned Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 was filed against the Company in the United States District Court for the Northern District of California. The complaint purports to assert claims against the Company and certain individual officers for alleged violations of Sections 10(b) and 20(a) of the Exchange Act, and Rule 10b-5 of the Exchange Act. The plaintiff seeks to represent a proposed class of all persons who purchased or otherwise acquired the Company's common stock during the period February 21, 2017 through January 11, 2018. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by the Company and the individual officers regarding a security vulnerability

(Spectre), which statements and omissions, the plaintiff claims, allegedly caused the Company's common stock price to be artificially inflated during the purported class period. The complaint seeks unspecified compensatory damages, attorneys’ fees and costs. On August 3, 2018, plaintiffs filed an amended complaint with similar allegations and shortening the class period to June 29, 2017 through January 11, 2018. The Company filed a motion to dismiss plaintiffs’ claims on September 25, 2018, and plaintiffs filed an opposition to the Company's motion to dismiss on November 14, 2018.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Hauck et al. Litigation

Since January 19, 2018, three putative class action complaints have been filed against the Company in the United States District Court for the Northern District of California: (1) Diana Hauck et al. v. AMD, Inc., Case No. 5:18-cv-0047, filed on January 19, 2018; (2) Brian Speck et al. v. AMD, Inc., Case No. 5:18-cv-0744, filed on February 4, 2018; and (3) Nathan Barnes and Jonathan Caskey-Medina, et al. v. AMD, Inc., Case No. 5:18-cv-00883, filed on February 9, 2018. On April 9, 2018, the court consolidated these cases and ordered that Diana Hauck et al. v. AMD, Inc. serve as the lead case. On June 13, 2018, six plaintiffs (from California, Louisiana, Florida, and Massachusetts) filed a consolidated amended complaint alleging that the Company failed to disclose its processors' alleged vulnerability to Spectre. Plaintiffs further allege that the Company's processors cannot perform at their advertised processing speeds without exposing consumers to Spectre, and that any "patches" to remedy this security vulnerability will result in degradation of processor performance. The plaintiffs seek damages under several causes of action on behalf of a nationwide class and four state subclasses (California, Florida, Massachusetts, Louisiana) of consumers who purchased the Company's processors and/or devices containing AMD processors. The plaintiffs also seek attorneys' fees, equitable relief, and restitution. Pursuant to the court's order directing the parties to litigate only eight of the causes of action in the consolidated amended complaint initially, the Company filed a motion to dismiss on July 13, 2018. On October 29, 2018, after the plaintiffs voluntarily dismissed one of their claims, the court granted the Company's motion and dismissed six causes of action with leave to amend. The plaintiffs filed their amended consolidated complaint on December 6, 2018. On January 3, 2019, the Company again moved to dismiss the subset of claims currently at issue.

Based upon information presently known to management, The Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Quarterhill Inc. Litigation

On July 2, 2018, three entities named Aquila Innovations, Inc. (Aquila), Collabo Innovations, Inc. (Collabo), and Polaris Innovations, Ltd. (Polaris), filed separate patent infringement complaints against the Company in the United States District Court for the Western District of Texas. Aquila alleges that the Company infringes two patents (6,239,614 and 6,895,519) relating to power management; Collabo alleges that the Company infringes one patent (7,930,575) related to power management; and Polaris alleges that the Company infringes two patents (6,728,144 and 8,117,526) relating to control or use of dynamic random-access memory, or DRAM. Each of the three complaints seeks unspecified monetary damages, interest, fees, expenses, and costs against the Company; Aquila and Collabo also seek enhanced damages. Aquila, Collabo, and Polaris each appear to be related to a patent assertion entity named Quarterhill Inc. (formerly WiLAN Inc.). On November 16, 2018, AMD filed answers in the Collabo and Aquila cases and filed a motion to dismiss in the Polaris case. On January 25, 2019, the Company filed amended answers and counterclaims in the Collabo and Aquila cases.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Zeng Shareholder Derivative Lawsuit

On March 8, 2018, a purported shareholder derivative lawsuit captioned Zeng v. Su, et al., Case No. 18CIV01192 was filed against the Company (as a nominal defendant only) and certain of its directors and officers in the San Mateo County Superior Court of the State of California. The complaint purports to assert claims against the Company and certain individual directors and officers for breach of fiduciary duty, unjust enrichment, abuse of control, gross mismanagement and waste of corporate assets. The complaint seeks damages allegedly caused by alleged materially misleading statements and/or material omissions by the Company and the individual directors and officers regarding Spectre, which statements and omissions, the plaintiffs claim, allegedly operated to artificially inflate the price paid for the Company's common stock during the period. On April 26, 2018, the lawsuit was transferred to Santa Clara County and assigned a new case number, 18CV327692. On August 14, 2018, the Court stayed this lawsuit pending a decision on the motion to dismiss in Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 filed against the Company in the United States District Court for the Northern District of California.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

In re Advanced Micro Devices, Inc. Shareholder Derivative Litigation
Two purported shareholder derivative lawsuits were filed against the Company (as a nominal defendant only) and certain of its directors and officers in the United States District Court, Northern District of California: (1) Jacqueline Dolby, derivatively on behalf of AMD, Inc. v. Su et al., Case No. 5:18-cv-03575, filed on June 14, 2018; and (2) Gusinsky Trust, derivatively on behalf of AMD, Inc. v. Su et al., Case No. 5:18-cv-03811, filed on June 26, 2018. The complaints purport to assert claims against the Company and certain individual directors and officers for violation of Section 14(a) of the Exchange Act and SEC Rule 14a-9,

breach of fiduciary duty, waste of corporate assets, and unjust enrichment. The complaints seek damages purportedly caused by alleged materially misleading statements and/or material omissions by the Company and the individual directors and officers regarding Spectre. The plaintiffs allege that these statements and omissions operated to artificially inflate the price paid for the Company's common stock during the period. On July 12, 2018, the court consolidated the Dolby and Gusinsky Trust shareholder derivative lawsuits under the caption In re Advanced Micro Devices, Inc. Shareholder Derivative Litigation. On August 10, 2018, the Court stayed this lawsuit pending a decision on the motion to dismiss in Kim et al. v. AMD, et al., Case No. 3:18-cv-00321 filed against the Company in the United States District Court for the Northern District of California.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Dickey Litigation

On October 26, 2015, a putative class action complaint captioned Dickey et al. v. AMD, No. 15-cv-04922 was filed against the Company in the United States District Court for the Northern District of California. Plaintiffs allege that the Company misled consumers by using the term “eight cores” in connection with the marketing of certain AMD FX CPUs that are based on the Company’s “Bulldozer” core architecture. The plaintiffs allege these products cannot perform eight calculations simultaneously, without restriction. The plaintiffs seek to obtain damages under several causes of action for a nationwide class of consumers who allegedly were deceived into purchasing certain Bulldozer-based CPUs that were marketed as containing eight cores. The plaintiffs also seek attorneys’ fees. On December 21, 2015, the Company filed a motion to dismiss the complaint, which was granted on April 7, 2016. The plaintiffs then filed an amended complaint with a narrowed putative class definition, which the Court dismissed upon the Company’s motion on October 31, 2016. The plaintiffs subsequently filed a second amended complaint, and the Company filed a motion to dismiss the second amended complaint. On June 14, 2017, the Court issued an order granting in part and denying in part the Company’s motion to dismiss, and allowing the plaintiffs to move forward with a portion of their complaint. On March 27, 2018, plaintiffs filed their motion for class certification. On January 17, 2019, the Court granted plaintiffs’ motion for class certification. The class definition does not encompass the Company’s Ryzen™ or EPYC™ processors. On January 31, 2019, the Company filed a petition in the Ninth Circuit Court of Appeals, seeking review of certain aspects of the January 17, 2019 class certification order.

Based upon information presently known to management, the Company believes that the potential liability, if any, will not have a material adverse effect on its financial condition, cash flows or results of operations.

Environmental Matters

The Company is named as a responsible party on Superfund clean-up orders for three sites in Sunnyvale, California that are on the National Priorities List. Since 1981, the Company has discovered hazardous material releases to the groundwater from former underground tanks and proceeded to investigate and conduct remediation at these three sites. The chemicals released into the groundwater were commonly used in the semiconductor industry in the United States in the wafer fabrication process prior to 1979.

In 1991, the Company received Final Site Clean-up Requirements Orders from the California Regional Water Quality Control Board relating to the three sites. The Company has entered into settlement agreements with other responsible parties on two of the orders. During the term of such agreements, other parties have agreed to assume most of the foreseeable costs as well as the primary role in conducting remediation activities under the orders. The Company remains responsible for additional costs beyond the scope of the agreements as well as all remaining costs in the event that the other parties do not fulfill their obligations under the settlement agreements.

To address anticipated future remediation costs under the orders, the Company has computed and recorded an estimated environmental liability of approximately $3 million and has not recorded any potential insurance recoveries in determining the estimated costs of the cleanup. The progress of future remediation efforts cannot be predicted with certainty and these costs may change. The Company believes that any amount in addition to what has already been accrued would not be material.

Other Legal Matters

The Company is a defendant or plaintiff in various actions that arose in the normal course of business. With respect to these matters, based on the management’s current knowledge, the Company believes that the amount or range of

reasonably possible loss, if any, will not, either individually or in the aggregate, have a material adverse effect on the Company’s financial position, results of operations, or cash flows.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Advanced Micro Devices, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Advanced Micro Devices, Inc. (the Company) as of December 29, 2018 and December 30, 2017, the related consolidated statements of operations, comprehensive income (loss), stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 29, 2018, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 29, 2018 and December 30, 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 29, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 29, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 8, 2019 expressed an unqualified opinion thereon.

Adoption of New Accounting Standard

As discussed in Note 2 to the consolidated financial statements, the Company changed its method for recognizing revenue as a result of the adoption of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the amendments effective December 31, 2017 under the full retrospective method.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1970.

San Jose, California
February 8, 2019

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Advanced Micro Devices, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Advanced Micro Devices, Inc.'s internal control over financial reporting as of December 29, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Advanced Micro Devices, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 29, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 29, 2018 and December 30, 2017 , the related consolidated statements of operations, comprehensive income (loss), stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 29, 2018, and the related notes and our report dated February 8, 2019 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

San Jose, California
February 8, 2019

Supplementary Financial Information (unaudited) [1]

The Company uses a 52 or 53 week fiscal year ending on the last Saturday in December. All quarters of 2018 and 2017 consisted of 13 weeks.

	(In millions, except per share amounts)							
	2018				2017			
	Dec. 29	Sep. 29	June 30	Mar. 31	Dec. 30	Sep. 30	July 1	April 1
Net revenue	$1,419	$1,653	$1,756	$1,647	$1,340	$1,584	$1,151	$1,178
Cost of sales	882	992	1,104	1,050	888	1,013	765	800
Gross margin	537	661	652	597	452	571	386	378
Research and development	371	363	357	343	320	320	285	271
Marketing, general and administrative	138	148	142	134	134	132	127	123
Licensing gain	—	—	—	—	—	—	(25)	(27)
Operating income (loss)	28	150	153	120	(2)	119	(1)	11
Interest expense	(29)	(30)	(31)	(31)	(31)	(31)	(32)	(32)
Other income (expense), net	4	(6)	1	1	2	(3)	(3)	(5)
Income (loss) before income taxes	3	114	123	90	(31)	85	(36)	(26)
Provision (benefit) for income taxes	(35)	12	6	8	(12)	22	3	5
Equity loss in investee	—	—	(1)	(1)	—	(2)	(3)	(2)
Net income (loss)	38	102	116	81	(19)	61	(42)	(33)
Earnings (loss) per share								
Basic	$0.04	$0.10	$0.12	$0.08	$(0.02)	$0.06	$(0.04)	$(0.04)
Diluted	$0.04	$0.09	$0.11	$0.08	$(0.02)	$0.06	$(0.04)	$(0.04)
Shares used in per share calculation								
Basic	1,002	987	972	968	965	957	945	939
Diluted	1,079	1,076	1,147	1,039	965	1,042	945	939

(1) Prior year amounts adjusted to reflect the retrospective application of ASU 2014-09, Revenue from Contracts with Customers. Refer to Note 2 Summary of Significant Accounting Policies.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed with the objective of providing reasonable assurance that information required to be disclosed in our reports filed under the Exchange Act, such as this Annual Report on Form 10-K is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and our management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As of December 29, 2018, the end of the period covered by this report, we carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Exchange Act Rules 13a-15(e) and 15d-15(e). This type of evaluation is performed on a quarterly basis so that conclusions of management, including our Chief Executive Officer and Chief Financial Officer, concerning the effectiveness of the disclosure controls can be reported in our periodic reports on Form 10-Q and Form 10-K. The overall goals of these evaluation activities are to monitor our disclosure controls and to modify them as necessary. We intend to maintain the disclosure controls as dynamic systems that we adjust as circumstances merit. Based on the foregoing, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of the end of the period covered by this report.

Management's Report on Internal Control over Financial Reporting

Internal control over financial reporting refers to the process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, and effected by our Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles, and includes those policies and procedures that:

(1) Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;

(2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and

(3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Internal control over financial reporting cannot provide absolute assurance of achieving financial reporting objectives because of its inherent limitations. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting also can be circumvented by collusion or improper management override. Because of such limitations, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk. Management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company.

Management has used the 2013 framework set forth in the report entitled "Internal Control—Integrated Framework" published by the Committee of Sponsoring Organizations of the Treadway Commission to evaluate the effectiveness of the Company's internal control over financial reporting. Management has concluded that the Company's internal

control over financial reporting was effective as of December 29, 2018 at the reasonable assurance level. Our independent registered public accounting firm, Ernst & Young LLP, has issued an attestation report on the Company's internal control over financial reporting as of December 29, 2018, which is included in Part II, Item 8, above.

Changes in Internal Control over Financial Reporting

There has been no change in our internal controls over financial reporting during our most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal controls over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information under the captions “Item 1—Election of Directors” (including “Consideration of Stockholder Nominees for Director”), “Corporate Governance,” “Meetings and Committees of the Board of Directors,” “Executive Officers” and “Section 16(a) Beneficial Ownership Reporting Compliance” in our proxy statement for our 2019 annual meeting of stockholders (our 2019 Proxy Statement) is incorporated herein by reference. There were no material changes to the procedures by which stockholders may recommend nominees to our board of directors. See also, “Part 1, Item 1-Website Access to Company Reports and Corporate Governance Documents,” above.

ITEM 11. EXECUTIVE COMPENSATION

The information under the captions “Directors’ Compensation and Benefits” (including “2018 Non-Employee Director Compensation”), “Compensation Discussion and Analysis,” “Compensation Policies and Practices,” “Executive Compensation” (including “2018 Summary Compensation Table,” “2018 Nonqualified Deferred Compensation,” “Outstanding Equity Awards at 2018 Fiscal Year-End,” “Grants of Plan-Based Awards in 2018” and “Option Exercises and Stock Vested in 2018”) and “Severance and Change in Control Arrangements” in our 2019 Proxy Statement is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information under the captions “Principal Stockholders,” “Security Ownership of Directors and Executive Officers” and “Equity Compensation Plan Information” in our 2019 Proxy Statement is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information under the captions “Corporate Governance—Independence of Directors” and “Certain Relationships and Related Transactions” in our 2019 Proxy Statement is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information under the captions “Item 2—Ratification of Appointment of Independent Registered Public Accounting Firm—Independent Registered Public Accounting Firm’s Fees” in our 2019 Proxy Statement is incorporated herein by reference.

With the exception of the information specifically incorporated by reference in Part III of this Annual Report on Form 10-K from our 2019 Proxy Statement, our 2019 Proxy Statement will not be deemed to be filed as part of this report. Without limiting the foregoing, the information under the captions “Compensation Committee Report” and “Audit Committee Report” in our 2019 Proxy Statement is not incorporated by reference in this Annual Report on Form 10-K.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

1. Financial Statements

The financial statements of AMD are set forth in Item 8 of this Annual Report on Form 10-K.

All schedules have been omitted because the required information is not present or is not present in amounts sufficient to require submission of the schedules or because the information required is included in the Consolidated Financial Statements or related notes.

2. Exhibits

The exhibits listed in the accompanying Index to Exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K. The following is a list of such Exhibits:

Exhibit	Description of Exhibits
3.1	Amended and Restated Certificate of Incorporation of Advanced Micro Devices, Inc., dated May 2, 2018, filed as Exhibit 3.1 to AMD’s Quarterly Report on Form 10-Q for the period ended June 30, 2018, is hereby incorporated by reference.
3.2	Advanced Micro Devices, Inc. Amended and Restated Bylaws, as amended on July 30, 2009, filed as Exhibit 3.1 to AMD’s Current Report on Form 8-K dated July 30, 2009, are hereby incorporated by reference.
4.1	AMD hereby agrees to file on request of the SEC a copy of all instruments not otherwise filed with respect to AMD’s long-term debt or any of its subsidiaries for which the total amount of securities authorized under such instruments does not exceed 10 percent of the total assets of AMD and its subsidiaries on a consolidated basis.
4.2	Indenture governing 6.00% Convertible Senior Notes due 2015, including the Form of 6.00% Senior Note due 2015, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A., dated April 27, 2007, filed as Exhibit 4.1 to AMD’s Current Report on Form 8-K dated April 24, 2007, is hereby incorporated by reference.
4.3	Indenture governing 7.75% Senior Notes due 2020, including the Form of 7.75% Note, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A., dated August 4, 2010, filed as Exhibit 4.1 to AMD’s Current Report on Form 8-K dated August 4, 2010, is hereby incorporated by reference.
4.4	Indenture governing 7.50% Senior Notes due 2022, including the Form of 7.50% Note, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A., dated as of August 15, 2012, filed as Exhibit 4.1 to AMD’s Current Report on Form 8-K dated August 15, 2012, is hereby incorporated by reference.
4.5	Indenture governing the 6.75% Senior Notes due 2019, including the form of the 6.75% Note, between Advanced Micro Devices, Inc. and Wells Fargo, N.A., as Trustee, dated February 26, 2014, filed as Exhibit 4.1 to AMD’s Current Report on Form 8-K dated February 26, 2014 is hereby incorporated by reference.
4.6	Indenture governing 7.00% Senior Notes due 2024, including the Form of 7.00% Senior Note due 2024, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A., dated June 16, 2014, filed as Exhibit 4.1 to AMD’s Current Report on Form 8-K dated June 16, 2014, is hereby incorporated by reference.
4.7	

	First Supplemental Indenture by and among Advanced Micro Devices, Inc. and Wells Fargo Bank N.A., dated June 20, 2014, filed as Exhibit 4.1 to AMD's Current Report on Form 8-K dated June 23, 2014, is hereby incorporated by reference.
4.8	Amendment to Indenture governing 6.75% Senior Notes due 2019, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A., dated September 22, 2014, filed as Exhibit 4.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 27, 2014, is hereby incorporated by reference.

4.9	Indenture by and among Advanced Micro Devices, Inc. and Wells Fargo Bank N.A., dated September 14, 2016, filed as Exhibit 4.1 to AMD's Current Report on Form 8-K dated September 14, 2016, is hereby incorporated by reference.
4.10	First Supplemental Indenture governing 2.125% Convertible Senior Notes due 2026, including Form of 2.125% Note, between Advanced Micro Devices, Inc. and Wells Fargo Bank, N.A. dated September 14, 2016, filed as Exhibit 4.2 to AMD's Current Report on Form 8-K dated September 14, 2016, is hereby incorporated by reference.
4.11	First Supplemental Indenture by and among Advanced Micro Devices, Inc. and Wells Fargo Bank N.A., dated September 23, 2016, filed as Exhibit 4.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 24, 2016, is hereby incorporated by reference.
*10.1	1996 Stock Incentive Plan, as amended, filed as Exhibit 10.58 to AMD’s Quarterly Report on Form 10-Q for the period ended June 29, 2003, is hereby incorporated by reference.
*10.2	1998 Stock Incentive Plan, as amended, filed as Exhibit 10.32 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended June 29, 2003, is hereby incorporated by reference.
*10.3	2000 Stock Incentive Plan, as amended, filed as Exhibit 10.12 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended June 29, 2003, is hereby incorporated by reference
*10.4	2004 Equity Incentive Plan, as amended and restated, filed as Exhibit 10.1 to AMD’s Registration Statement on Form S-8 filed with the SEC on May 15, 2014, is hereby incorporated by reference
*10.5	2011 Executive Incentive Plan, filed as Exhibit 10.2 to AMD’s Quarterly Report on Form 10-Q for the period ended April 2, 2011, is hereby incorporated by reference.
*10.6	1995 Stock Plan of NexGen, Inc., as amended, filed as Exhibit 10.37 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 1996, is hereby incorporated by reference.
*10.7	ATI Technologies Inc. Share Option Plan, as amended effective January 25, 2005, filed as Exhibit 99.3 to AMD’s Registration Statement on Form S-8 filed with the SEC on October 30, 2006, is hereby incorporated by reference.
*10.8	SeaMicro, Inc. Amended and Restated 2007 Equity Incentive Plan, filed as Exhibit 10.1 on AMD’s Registration Statement on Form S-8, filed with the SEC on March 23, 2012, is hereby incorporated by reference.
*10.9	AMD’s U.S. Stock Option Program for Options Granted after April 25, 2000, filed as Exhibit 10.14 to AMD’s Annual Report on Form 10-K for the fiscal year ended December 31, 2000, is hereby incorporated by reference.
*10.10	AMD’s Stock Option Program for Employees Outside the U.S. for Options Granted after April 25, 2000, filed as Exhibit 10.24 to AMD’s Annual Report on Form 10-K for the fiscal year ended December 31, 2000, is hereby incorporated by reference.
*10.11	

	AMD's U.S. Stock Option Program for Options Granted after April 24, 2001, filed as Exhibit 10.23(a) to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2001, is hereby incorporated by reference.
*10.12	Form of Stock Option Agreement (U.S.) under the 2004 Equity Incentive Plan, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended June 27, 2009, is hereby incorporated by reference.
*10.13	Form of Stock Option Agreement (Non-U.S.) under the 2004 Equity Incentive Plan, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the period ended June 27, 2009, is hereby incorporated by reference.
*10.14	Form of Stock Option Agreement (U.S. Senior Vice Presidents and Above) under the 2004 Equity Incentive Plan, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended June 26, 2010, is hereby incorporated by reference.

*10.15	Form of Stock Option Agreement (Non-U.S. Senior Vice Presidents and Above) under the 2004 Equity Incentive Plan, filed as Exhibit 10.2 to AMD’s Quarterly Report on Form 10-Q for the period ended June 26, 2010, is hereby incorporated by reference.
*10.16	Form of Restricted Stock Unit Agreement (U.S.) under the 2004 Equity Incentive Plan, filed as Exhibit 10.4 to AMD’s Quarterly Report on Form 10-Q for the period ended October 1, 2006, is hereby incorporated by reference.
*10.17	Form of Restricted Stock Unit Agreement (Non-U.S.) under the 2004 Equity Incentive Plan, filed as Exhibit 10.3 to AMD’s Quarterly Report on Form 10-Q for the period ended June 27, 2009, is hereby incorporated by reference.
*10.18	Form of Restricted Stock Unit Agreement (U.S. Senior Vice Presidents and Above) under the 2004 Equity Plan, filed as Exhibit 10.3 to AMD’s Quarterly Report on Form 10-Q for the period ended June 26, 2010, is hereby incorporated by reference.
*10.19	Form of Restricted Stock Unit Agreement (Non-U.S. Senior Vice Presidents and Above) under the 2004 Equity Plan, filed as Exhibit 10.4 to AMD’s Quarterly Report on Form 10-Q for the period ended June 26, 2010, is hereby incorporated by reference.
*10.20	Outside Director Equity Compensation Policy, amended and restated as of May 8, 2014, filed as Exhibit 10.1 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended June 28, 2014, is hereby incorporated by reference.
*10.21	AMD Executive Severance Plan and Summary Plan Description for Senior Vice Presidents, effective June 1, 2013, filed as Exhibit 10.1 to AMD’s Current Report on Form 8-K dated June 7, 2013, is hereby incorporated by reference.
*10.22	Guidelines for Business Aircraft Usage And Commercial Travel By Personal Guests, revised as of May 16, 2013, filed as Exhibit 10.1 to AMD’s Quarterly Report on Form 10-Q for the period ended June 29, 2013, is hereby incorporated by reference.
*10.23	AMD Deferred Income Account Plan, as amended and restated, effective January 1, 2008, filed as Exhibit 10.18 to AMD’s Annual Report on Form 10-K for the fiscal year ended December 29, 2007, is hereby incorporated by reference.
*10.24	Amendment No. 1 to the AMD Deferred Income Account Plan, as amended and restated, effective July 1, 2012, filed as Exhibit 10.16(a) to AMD’s Annual Report on Form 10-K for the period ended December 29, 2012, is hereby incorporated by reference.
*10.25	Form of Indemnity Agreement, between Advanced Micro Devices, Inc. and its officers and directors, filed as Exhibit 10.1 to AMD’s Current Report on Form 8-K dated October 6, 2008, is hereby incorporated by reference.
*10.26	Form of Management Continuity Agreement, as amended and restated, filed as Exhibit 10.13(b) to AMD’s Annual Report on Form 10-K for the fiscal year ended December 29, 2007, is hereby incorporated by reference.
*10.27	

	Form of Change in Control Agreement, filed as Exhibit 10.11 to AMD's Annual Report on Form 10-K for the fiscal year ended December 26, 2009, is hereby incorporated by reference.
*10.28	Amended and Restated Management Continuity Agreement, between Advanced Micro Devices, Inc. and Devinder Kumar, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the period ended September 29, 2012, is hereby incorporated by reference.
*10.29	Executive Resignation Agreement and General Release, between Advanced Micro Devices, Inc., its subsidiaries, joint ventures or other affiliates and Emilio Ghilardi, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K/A dated April 30, 2012, is hereby incorporated by reference.
*10.30	Employment Agreement, between Rory P. Read and Advanced Micro Devices, Inc., effective August 25, 2011, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated August 25, 2011, is hereby incorporated by reference.
*10.31	Relocation Expenses Agreement, between Advanced Micro Devices, Inc. and Rory P. Read, dated September 8, 2011, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.

*10.32	Sign-On Restricted Stock Unit Grant Notice, between Advanced Micro Devices, Inc. and Rory P. Read, dated August 25, 2011, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.
*10.33	Sign-On Performance Restricted Stock Unit Grant Notice, between Advanced Micro Devices, Inc. and Rory P. Read, dated August 25, 2011, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.
*10.34	Special Sign-On Restricted Stock Unit Grant Notice, between Advanced Micro Devices, Inc. and Rory P. Read, dated August 25, 2011, filed as Exhibit 10.4 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.
*10.35	Sign-On Stock Option Grant Notice, between Advanced Micro Devices, Inc. and Rory P. Read, dated August 25, 2011, filed as Exhibit 10.5 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.
*10.36	Sign-On Performance Stock Option Grant Notice, between Advanced Micro Devices, Inc. and Rory P. Read, dated August 25, 2011 filed, as Exhibit 10.6 to AMD's Quarterly Report on Form 10-Q for the period ended October 1, 2011, is hereby incorporated by reference.
*10.37	Sign-On Bonus Agreement, between Advanced Micro Devices, Inc. and Mark D. Papermaster, dated October 7, 2011, filed as Exhibit 10.62 to AMD's Annual Report on Form 10-K for the period ended December 31, 2011, is hereby incorporated by reference.
*10.38	Offer Letter, between Advanced Micro Devices, Inc. and Mark D. Papermaster, dated October 7, 2011, filed as Exhibit 10.63 to AMD's Annual Report on Form 10-K for the period ended December 31, 2011, is hereby incorporated by reference.
*10.39	Sign-On Bonus Agreement, between Advanced Micro Devices, Inc. and Dr. Lisa Su, dated December 14, 2011, filed as Exhibit 10.64 to AMD's Annual Report on Form 10-K for the period ended December 31, 2011, is hereby incorporated by reference.
*10.40	Offer Letter, between Advanced Micro Devices, Inc. and Dr. Lisa Su, dated December 14, 2011, filed as Exhibit 10.65 to AMD's Annual Report on Form 10-K for the period ended December 31, 2011, is hereby incorporated by reference.
*10.41	Summary of Terms for John Byrne, Senior Vice President, Chief Sales Officer, dated August 6, 2012, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended September 29, 2012, is hereby incorporated by reference.
*10.42	Special Retention Bonus Award to John Byrne, dated October 25, 2011, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the period ended September 29, 2012, is hereby incorporated by reference.
10.43	Stock Purchase Agreement, between West Coast Hitech L.P. and Advanced Micro Devices, Inc., dated as of November 15, 2007, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated November 15, 2007, is hereby incorporated by reference.
10.44	

	Master Transaction Agreement, among Advanced Micro Devices, Inc., Advanced Technology Investment Company LLC and West Coast Hitech L.P., dated October 6, 2008, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated October 16, 2008, is hereby incorporated by reference.
10.45	Amendment to Master Transaction Agreement, among Advanced Micro Devices, Inc., Advanced Technology Investment Company LLC and West Coast Hitech L.P., dated December 5, 2008, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated December 5, 2008, is hereby incorporated by reference.
**10.46	Wafer Supply Agreement, among Advanced Micro Devices, Inc., The Foundry Company and AMD Fab Technologies US, Inc., dated March 2, 2009, filed as Exhibit 10.5 to AMD's Current Report on Form 8-K dated March 2, 2009, is hereby incorporated by reference.
**10.47	Wafer Supply Agreement Amendment No. 1, among Advanced Micro Devices, Inc., GLOBALFOUNDRIES Inc., GLOBALFOUNDRIES U.S. Inc. and GLOBALFOUNDRIES Singapore. Pte. Ltd., dated March 29, 2011, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q/A for the period ended April 2, 2011, is hereby incorporated by reference.

**10.48	Wafer Supply Agreement Amendment No. 2, among Advanced Micro Devices, Inc., GLOBALFOUNDRIES Inc., GLOBALFOUNDRIES U.S. Inc., Advanced Technology Investment Company LLC and ATIC International Investment Company LLC, dated March 4, 2012, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended March 31, 2012, is hereby incorporated by reference.
**10.49	Wafer Supply Agreement Amendment No. 3, among Advanced Micro Devices, Inc., GlOBALFOUNDRIES Inc. and GLOBALFOUNDRIES U.S. Inc., dated December 6, 2012, filed as Exhibit 10.34(c) to AMD's Annual Report on Form 10-K for the period ended December 29, 2012, is hereby incorporated by reference.
10.50	Settlement Agreement, between Advanced Micro Devices, Inc. and Intel Corporation, dated November 11, 2009, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated November 11, 2009, is hereby incorporated by reference.
**10.51	Patent Cross License Agreement, between Advanced Micro Devices, Inc. and Intel Corporation filed, dated November 11, 2009, as Exhibit 10.2 to AMD's Current Report on Form 8-K dated November 17, 2009, is hereby incorporated by reference.
10.52	Loan and Security Agreement, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., the financial institutions party thereto from time to time as lenders and Bank of America, N.A., dated November 12, 2013, filed as Exhibit 1.01 to AMD's Current Report on Form 8-K dated November 12, 2013, is hereby incorporated by reference.
10.53	Lease Agreement, between AMD and Delaware Chip LLC, dated December 22, 1998, filed as Exhibit 10.27 to AMD's Annual Report on Form 10-K for the fiscal year ended December 27, 1998, is hereby incorporated by reference.
10.54	Agreement of Purchase and Sale, between Advanced Micro Devices, Inc. and 7171 Southwest Parkway Holdings, LP, effective March 11, 2013, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the period ended March 30, 2013, is hereby incorporated by reference.
10.55	Sublease Agreement, between Lantana HP, LTD and Advanced Micro Devices, Inc., dated March 26, 2013, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the period ended March 30, 2013, is hereby incorporated by reference.
10.56	Master Landlord's Consent to Sublease, between 7171 Southwest Parkway Holdings, L.P., Lantana HP, Ltd. and Advanced Micro Devices, Inc., dated March 26, 2013, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the period ended March 30, 2013, is hereby incorporated by reference.
10.57	Lease Agreement, between 7171 Southwest Parkway Holdings, L.P. and Lantana HP, Ltd., dated March 26, 2013, filed as Exhibit 10.4 to AMD's Quarterly Report on Form 10-Q for the period ended March 30, 2013, is hereby incorporated by reference.
**10.58	Wafer Supply Agreement Amendment No. 4, among Advanced Micro Devices, Inc., GLOBALFOUNDRIES Inc. and GLOBALFOUNDRIES U.S. Inc., dated March 30, 2014, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q/A for the fiscal quarter ended March 29, 2014, is hereby incorporated by reference.
*10.59	

	Transition, Separation Agreement and Release by and between Rory P. Read and Advanced Micro Devices, Inc. effective October 8, 2014, filed as Exhibit 10.1 to AMD's Current Report on Form 8-K/A dated October 14, 2014, is hereby incorporated by reference.
*10.60	Employment Agreement by and between Lisa T. Su and Advanced Micro Devices, Inc. effective October 8, 2014, filed as Exhibit 10.2 to AMD's Current Report on Form 8-K/A dated October 14, 2014, is hereby incorporated by reference.
*10.61	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 27, 2014, is hereby incorporated by reference.
*10.62	Form of Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 27, 2014, is hereby incorporated by reference.

*10.63	Form of Performance-Based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 27, 2014, is hereby incorporated by reference.
10.64	First Amendment to Loan and Security Agreement, dated as of December 11, 2014, by and among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., the financial institutions party thereto as lenders and Bank of America, N.A., filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated December 11, 2014, is hereby incorporated by reference.
*10.65	Offer Letter, between Advanced Micro Devices, Inc. and Forrest E. Norrod, dated October 20, 2014, filed as Exhibit 10.66 to AMD's Annual Report on Form 10-K for the fiscal year ended December 27, 2014, is hereby incorporated by reference.
*10.66	Sign-On Bonus Agreement, between Advanced Micro Devices, Inc. and Forrest E. Norrod, dated October 20, 2014, filed as Exhibit 10.67 to AMD's Annual Report on Form 10-K for the fiscal year ended December 27, 2014, is hereby incorporated by reference.
*10.67	Advanced Micro Devices, Inc. Executive Severance Plan and Summary Plan Description for Senior Vice Presidents effective December 31, 2014, filed as Exhibit 10.68 to AMD's Annual Report on Form 10-K for the fiscal year ended December 27, 2014, is hereby incorporated by reference.
10.68	Amended and Restated Loan and Security Agreement dated as of April 14, 2015, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated April 14, 2015, is hereby incorporated by reference.
10.69	First Amendment to Amended and Restated Loan and Security Agreement dated as of June 10, 2015, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended June 27, 2015, is hereby incorporated by reference.
*10.70	Offer Letter between Advanced Micro Devices, Inc. and Jim R. Anderson, dated April 17, 2015, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended June 27, 2015, is hereby incorporated by reference.
*10.71	Sign-on Bonus Letter between Advanced Micro Devices, Inc. and Jim R. Anderson, dated May 27, 2015, filed as Exhibit 10.4 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended June 27, 2015, is hereby incorporated by reference.
*10.72	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 26, 2015, is hereby incorporated by reference.
*10.73	Form of Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 26, 2015, is hereby incorporated by reference.
*10.74	Form of Performance-Based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the fiscal

	quarter ended September 26, 2015, is hereby incorporated by reference.
10.75	Equity Interest Purchase Agreement by and between Advanced Micro Devices, Inc. and Nantong Fujitsu Microelectronics Co., Ltd. dated as of October 15, 2015, filed as Exhibit 10.1 to AMD’s Current Report on Form 8-K dated October 15, 2015, is hereby incorporated by reference.
**10.76	Wafer Supply Agreement Amendment No. 5, among Advanced Micro Devices, Inc., GLOBALFOUNDRIES Inc. and GLOBALFOUNDRIES U.S. Inc., dated as of April 16, 2015, filed as Exhibit 10.1 to AMD’s Quarterly Report on Form 10-Q/A for the fiscal quarter ended June 27, 2015, is hereby incorporated by reference.
*10.77	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.78 to AMD's Annual Report on Form 10-K for the fiscal year ended December 26, 2015, is hereby incorporated by reference.

*10.78	Form of Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.79 to AMD's Annual Report on Form 10-K for the fiscal year ended December 26, 2015, is hereby incorporated by reference.
*10.79	Form of Performance-Based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.80 to AMD's Annual Report on Form 10-K for the fiscal year ended December 26, 2015, is hereby incorporated by reference.
10.80	Second Amendment to Amended and Restated Loan and Security Agreement, dated as of April 29, 2016, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended June 25, 2016, is hereby incorporated by reference.
10.81	Third Amendment to Amended and Restated Loan and Security Agreement, dated as of June 21, 2016, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended June 25, 2016, is hereby incorporated by reference.
10.82	Warrant to Purchase Shares of Common Stock, dated August 30, 2016, between Advanced Micro Devices, Inc. and West Coast Hitech L.P., filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated August 31, 2016, is hereby incorporated by reference.
10.83	First Amended and Restated Registration Rights Agreement, dated as of August 30, 2016, between Advanced Micro Devices, Inc. and West Coast Hitech L.P., filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 24, 2016, is hereby incorporated by reference.
10.84	Fourth Amendment to Amended and Restated Loan and Security Agreement, dated as of September 7, 2016, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 24, 2016, is hereby incorporated by reference.
**10.85	Wafer Supply Agreement Amendment No. 6, among Advanced Micro Devices, Inc., GLOBALFOUNDRIES, Inc. and GLOBALFOUNDRIES U.S., Inc., dated August 30, 2016, filed as Exhibit 10.3 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 24, 2016, is hereby incorporated by reference.
10.86	Amendment to Master Transaction Agreement dated as of August 30, 2016 among Advanced Micro Devices, Inc., Advanced Technology Investment Company LLC and West Coast Hitech L.P., filed as Exhibit 10.4 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 24, 2016, is hereby incorporated by reference.
*10.87	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.88 to AMD’s Annual Report on Form 10-K for the fiscal year ended December 31, 2016, is hereby incorporated by reference.
*10.88	Form of Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Plan, filed as Exhibit 10.89 to AMD’s Annual Report on Form 10-K for the fiscal year ended December 31, 2016, is hereby incorporated by reference.

*10.89	Form of Performance-Based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.90 to AMD's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, is hereby incorporated by reference.
10.90	Fifth Amendment to Amended and Restated Loan and Security Agreement, dated as of March 21, 2017, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.1 to AMD's Current Report on Form 8-K dated March 21, 2017, is hereby incorporated by reference.
*10.91	Outside Director Equity Compensation Policy, amended and restated as of April 26, 2017, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017, is hereby incorporated by reference.
*10.92	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.2 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2017, is hereby incorporated by reference.

*10.93	2004 Equity Incentive Plan, as amended and restated, filed as Exhibit 10.1 to AMD’s Registration Statement on Form S-8 filed with the SEC on May 8, 2017, is hereby incorporated by reference.
*10.94	Amended and Restated 2017 Employee Stock Purchase Plan dated August 23, 2018, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended September 29, 2018, is hereby incorporated by reference.
10.95	Sixth Amendment to Amended and Restated Loan and Security Agreement, dated as of September 19, 2017, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.1 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2017, is hereby incorporated by reference.
10.96	Outside Director Equity Compensation Policy, amended and restated as of October 31, 2017, filed as Exhibit 10.2 to AMD’s Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2017, is hereby incorporated by reference.
10.97	Seventh Amendment to Amended and Restated Loan and Security Agreement, dated as of November 14, 2017, among Advanced Micro Devices, Inc., AMD International Sales & Service, Ltd., ATI Technologies ULC, and Bank of America, N.A., filed as Exhibit 10.97 to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2017, is hereby incorporated by reference.
*10.98	2017 Employee Stock Purchase Plan, as amended and restated October 12, 2017, filed as Exhibit 10.98 to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2017, is hereby incorporated by reference.
*10.99	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.99 to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2017, is hereby incorporated by reference.
*10.100	Form of Restricted Stock Unit Award Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan, filed as Exhibit 10.100 to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2017, is hereby incorporated by reference.
*10.101	Form of Performance-Based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan filed as Exhibit 10.101 to AMD's Annual Report on Form 10-K for the fiscal year ended December 30, 2017, is hereby incorporated by reference.
*10.102	Amendment to Advanced Micro Devices, Inc. Executive Incentive Plan dated as of February 8, 2018, filed as Exhibit 10.1 to AMD's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018, is hereby incorporated by reference.
*10.103	Form of Stock Option Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive plan.
*10.104	Form of Performance-based Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan.
*10.105	Form of Restricted Stock Unit Agreement for Senior Vice Presidents and Above under the 2004 Equity Incentive Plan.

21	List of AMD subsidiaries.
23	Consent of Independent Registered Public Accounting Firm
24	Power of Attorney.
31.1	Certification of the Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of the Principal Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of the Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* Management contracts and compensatory plans or arrangements.
** Portions of this exhibit have been omitted pursuant to a request for confidential treatment, which has been granted. These portions have been filed separately with the SEC.
AMD will furnish a copy of any exhibit on request and payment of AMD’s reasonable expenses of furnishing such exhibit.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

February 8, 2019 ADVANCED MICRO DEVICES, INC.

By: /s/Devinder Kumar
Devinder Kumar
Senior Vice President, Chief Financial Officer, and Treasurer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons, on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/Lisa T. Su Lisa T. Su	President and Chief Executive Officer (Principal Executive Officer), Director	February 8, 2019
/s/Devinder Kumar Devinder Kumar	Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer)	February 8, 2019
/s/Darla Smith Darla Smith	Corporate Vice President, Chief Accounting Officer (Principal Accounting Officer)	February 8, 2019
* John E. Caldwell	Director, Chairman of the Board	February 8, 2019
* Nora M. Denzel	Director	February 8, 2019
* Mark Durcan	Director	February 8, 2019
* Joseph A. Householder	Director	February 8, 2019
* Michael J. Inglis	Director	February 8, 2019
* John W. Marren	Director	February 8, 2019
* Abhi Y. Talwalkar	Director	February 8, 2019
* Ahmed Yahia	Director	February 8, 2019

*By: /s/Devinder Kumar
Devinder Kumar, Attorney-in-Fact