Table of Contents

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

FORM 10-K

(Mark One)

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
FOR THE FISCAL YEAR ENDED DECEMBER 28, 2019

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: 000-18032

LATTICE SEMICONDUCTOR CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**93-0835214**
(State of Incorporation)	(I.R.S. Employer Identification Number)
5555 NE Moore Court, Hillsboro, Oregon	**97124-6421**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (**503**) **268-8000**

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

(Title of Class)	(Trading Symbol)	(Name of each exchange on which registered)
Common Stock, $.01 par value	LSCC	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 ☐ No ☑

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

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 ☑ 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

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

Large accelerated filer ☑	Accelerated filer ☐	Non-accelerated filer ☐
Smaller reporting company ☐	Emerging growth 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 in Rule 12b-2 of the Act). Yes ☐ No ☑

Aggregate market value of voting stock held by non-affiliates of the registrant as of June 29, 2019	$	1,242,396,539
Number of shares of common stock outstanding as of February 20, 2020		134,318,226

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this Report, to the extent not set forth herein, is incorporated herein by reference from the registrant's definitive proxy statement relating to the 2020 Annual Meeting of Stockholders, which definitive proxy statement shall be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this Report relates.

LATTICE SEMICONDUCTOR CORPORATION
ANNUAL REPORT ON FORM 10-K
TABLE OF CONTENTS

Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These involve estimates, assumptions, risks and uncertainties. Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. We use words or phrases such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “plan,” "possible," “predict,” “projects,” “may,” “will,” “should,” “continue,” “ongoing,” “future,” “potential” and similar words or phrases to identify forward-looking statements.

Forward-looking statements include, but are not limited to, statements about: our target or expected financial performance and our ability to achieve those results; future financial results or accounting treatments; our use of cash; our gross margin growth and our strategies to achieve gross margin growth and other financial results; our opportunities to increase our addressable market; our expectations and strategies regarding market trends and opportunities, including market segment drivers such as 5G infrastructure deployments, cloud and enterprise servers, client computing platforms, industrial Internet of Things, factory automation, automotive electronics, smart homes and prosumers; our judgments involved in accounting matters; our expectations regarding product offerings; our expectations regarding our customer base; our future investments in research and development and our research and development expense efficiency; our anticipated reductions in expenses; our expectations regarding our restructuring plans; our sharing of anticipated HDMI royalty revenues; our expectations regarding taxes, including unrecognized tax benefits, and tax adjustments and allowances; our beliefs regarding the adequacy of our liquidity, capital resources and facilities; and our beliefs regarding legal proceedings.

These forward-looking statements are based on estimates and assumptions that are subject to risks and uncertainties that could cause actual results to differ materially from those statements expressed in the forward-looking statements. The key factors, among others, that could cause our actual results to differ materially from the forward-looking statements included global economic conditions and uncertainty, including as a result of trade related restrictions or tariffs, the concentration of our sales in certain end markets, particularly as it relates to the concentration of our sales in the Asia Pacific region, market acceptance and demand for our existing and new products, market and technology trends, our ability to license or sell our intellectual property, any disruption of our distribution channels, the impact of competitive products and pricing, the effect of any downturn in the economy on capital markets and credit markets, unanticipated taxation requirements or positions of the U.S. Internal Revenue Service or other taxing authority, unanticipated effects of tax reform, or unexpected impacts of accounting guidance. In addition, actual results are subject to other risks and uncertainties that relate more broadly to our overall business, including those more fully described herein and that are otherwise described from time to time in our filings with the Securities and Exchange Commission, including but not limited to the items discussed in “Risk Factors” in Item 1A of Part I of this Annual Report on Form 10-K.

You should not unduly rely on forward-looking statements because our actual results could differ materially from those expressed by us. In addition, any forward-looking statement applies only as of the date of this filing. We do not plan to, and undertake no obligation to, update any forward-looking statements to reflect new information or new events, circumstances or developments, or otherwise.

PART I

Item 1. Business

Overview

Lattice Semiconductor Corporation and its subsidiaries (“Lattice,” the “Company,” “we,” “us,” or “our”) develop technologies that we monetize through differentiated programmable logic semiconductor products, system solutions, design services, and licenses. Lattice is the low power programmable leader. We solve customer problems across the network, from the Edge to the Cloud, in growing communications, computing, industrial, automotive, and consumer markets. Our technology, long-standing relationships, and commitment to world-class support enable our customers to create a smart, secure, and connected world.

Our field programmable gate array ("FPGA") devices provide us with a strong, growing base of control, connect, and compute technologies. We believe there are multiple growth areas that will allow us to increase our addressable market. In particular, we believe there are several emerging trends in servers, infrastructure, and smart devices that are opportunities for Lattice:

- With the growth of hyperscale data centers, our “processor agnostic” solutions are ideal for control and connect functions in enterprise and data center server applications.
- With the expected continued communications infrastructure build-out from 5G deployment, Lattice solutions are being adopted to control and connect a variety of functions in critical systems.
- With the increase in electrification and the proliferation of sensors in smart factories, smart homes, and automobiles, our low power, small form factor solutions are ideal for everything from battery powered systems and sensor applications to embedded video.
- With the increase in artificial intelligence, machine learning, and a multitude of applications at the network edge, Lattice has the capabilities to provide solutions. These applications often act independently and need to make instantaneous decisions. As such, they need their own computing and learning capabilities to perform functions like face detection, image recognition, and video analytics.
- With the demand for more hardware security in the communications, computing, industrial, automotive, and consumer markets, our hardware root of trust devices provide platform firmware resilience. This provides a secure boot for systems that are dependent on processors.

To serve these emerging needs, customer systems require low power, memory bandwidth, processing power, and the ability to integrate complex functionality into a highly compact footprint. These requirements align to the capabilities of our FPGA devices. Our flexible, low power, small form factor, easy to use FPGAs put us in a unique position to meet these growing market needs.

Our Markets and Customers

We sell our products globally in three end market groups: Communications and Computing, Industrial and Automotive, and Consumer. We also provide Intellectual Property ("IP") licensing and services to these end markets, although licensing and services revenue is reported as a separate end market as it has characteristics that differ from other categories.

In the **Communications and Computing Market**, our solutions play key roles in computing systems such as servers and clients, 5G wireless infrastructure, switches / routers, and other related applications.

Our Communications and Computing customers need to manage control functions in their systems.

- As compute devices become smaller and power costs become more dominant, there is a need for small form factor devices with power efficiency.
- Additionally, these customers need simplified control logic, enhanced hardware platform security, system status monitoring, and rigorous power and thermal management.
- Networks typically require progressively higher bandwidth and increased reliability as more data is demanded by consumer and other connected devices. Bandwidth demands are also driven by the rapid transition to cloud-based infrastructure.
- As wireless cells become more compact without fans, there is a growing requirement for smaller form factors optimized for low power consumption.

Lattice FPGAs solve these customer problems. Our FPGAs are optimized for I/O expansion, low cost per look-up table, hardware acceleration, and hardware management. Our FPGAs consume power at very low rates, which reduces operating costs. Their small form factor enables higher functional density in less space. Finally, our FPGAs are I/O rich, which allows for more connections with system application specific integrated circuits ("ASICs") and application specific standard products ("ASSPs").

Examples of our products enabling intelligent automation in the **Industrial and Automotive Market** include industrial IoT, machine vision, robotics, factory automation, driver assistance, and automotive infotainment.

Our Industrial and Automotive customers face numerous challenges:

- As smart factories develop, sensors are proliferating and machine vision is becoming higher definition, in turn requiring increasing amounts of data to be gathered, connected, and processed.
- Cars, trucks, and trains are also becoming smarter and more connected. Drivers and passengers are demanding better in-cabin experiences including entertainment, diagnostics, and enhanced safety — often involving multiple displays, cameras, and sensors.
- As factories and automotive manufacturers continue their evolution of computerization, power reduction, faster time to design in and market, lower costs are becoming increasingly normal.

Our product portfolio helps solve these challenges. Our small-sized, low-power FPGAs not only provide the I/O expansion, bridging, connectivity, and processing inherent in FPGAs, but they also form the backbone of several integrated solutions, including complete HD camera and DVR solutions on a single FPGA device and Human-Machine Interfaces ("HMI") on a chip.

In the **Consumer Market**, you can find our solutions making products smarter and thinner, including: smart home devices, prosumer devices, sound bars, high end projectors, Augmented Reality ("AR") / Virtual Reality ("VR"), and wearables.

Our Consumer customers are driven by the need to deliver richer and more responsive experiences. They typically require:
- More intelligence and computing power. Products need to be "always-on" and "always-aware."
- Longer battery lives for handheld devices and reduced energy consumption for plugged-in devices.
- Real-time transmission of higher resolution video content on larger screen sizes.
- Fast design cycles. Products must be quickly and easily differentiated.
- Smaller form factors. Products need to lay flatter on the wall or fit more easily in people's pockets.
- Various levels of video processing and analytics.

Lattice FPGAs bring multiple benefits to these customers. An FPGA's parallel architecture enables faster processing than competing devices, such as microcontrollers, allowing for a user experience with shorter pauses and fewer delays. Our FPGAs are among the lowest power consumption in the industry, enabling the application processor and other high-power components to remain dormant longer, resulting in longer battery life. Finally, with some of the industry's smallest packages, we enable thinner end products.

Our proprietary solutions help our customers get their products to market faster than typical development cycles. With re-programmability and flexibility, our FPGAs inherently allow our customers to have quicker product development. The time-to-market advantages of Lattice's solutions are critical given the shorter product life cycles and higher competition in our customers' end markets.

Our Products, Services, and Competition

We are focused on delivering FPGAs and related solutions to help solve our customers' problems. We also serve our customers with IP licensing and various other services.

Field Programmable Gate Arrays ("FPGAs")

FPGAs are regular arrays of logic that can be custom-configured by the user through software. This programmability allows our customers flexibility and reduced time to market while allowing us to offer the chips to many different customers in many different markets. Five product families anchor our FPGA offerings:
- The ECP families are our "General Purpose FPGAs" and address a broad range of applications across multiple markets. They offer customers the optimal cost per gate, Digital Signal Processing ("DSP") capability, and Serialize-Deserialize ("SerDes") connectivity. ECP devices are optimized for the Communications and Computing market but also find significant use in the Industrial, Automotive, and Consumer markets.
- The MachXO families are known as "Control & Security FPGAs" and are optimized for platform management and security applications. They are control oriented and offer the most optimized cost per I/O, along with the lowest cost per look-up table. MachXO families are widely used across our three primary target markets: Communications and Computing, Industrial and Automotive, and Consumer. Our latest generation enables users with hardware system security. The MachX03D provides systems with the platform firmware resilience they need to protect their processors during boot-up.
- iCE40 families are known as "Ultra Low Power FPGAs." Their small size and ultra-low power make them the optimal products for each of our core segments where small form factor and customizing is required. The latest member of the family, iCE40 UltraPlus, is focused on Internet of Things ("IoT") edge devices with its Artificial Intelligence ("AI") capabilities, low power, and small form factor.
- Our CrossLink families are "Video Connectivity FPGAs" and are optimized for high speed video and sensor applications. CrossLink combines the power and speed benefits of hardened video camera and display bridging cores with the flexibility of FPGA fabric. CrossLinkPlus provides users with instant-on capabilities for video display. CrossLink-NX, built on the new Lattice Nexus platform, provides the lowest power in the smallest packages in its class, higher performance, and high reliability. These products are designed for computing, industrial, automotive, and consumer markets, but also find use in communications.

To enable our customers to get to market faster we support the FPGAs with intellectual property cores, reference designs, development kits, and design software. We are investing in our design software to deliver best-in-class tools that enable predictable design convergence and unparalleled ease of use. Further, we have developed integrated system-level solution stacks, such as Lattice sensAI. We combine all of these elements to solve specific customer problems such as the need to quickly implement low power AI inferencing in Edge applications.

Depending on the application, we may compete with other FPGAs vendors, as well as producers of ASICs, ASSPs, and microcontrollers. We believe that Lattice has developed products and solutions with differentiated advantages.

Legacy Semiconductor Products

We also sell Video Connectivity ASSPs, although we are not developing new products in this area and their support requirements are minimal.

Intellectual Property (IP) Licensing and Services

Lattice has a broad set of technological capabilities and many U.S. and international patents. We generate revenue from our technology portfolio via upfront fees and on-going royalty payments through the following activities:
- Standard IP Licensing - these activities include our participation in two consortia for the licensing of HDMI and MHL technologies to customers who adopt the technology into their products and voluntarily report their usage and royalties. The royalties are split between consortium members, including us.
- IP Core Licensing - some customers need Lattice's technology for specific functions or features, but for various reasons are not able to use our silicon solutions. In those cases, we may license our IP cores, which they can integrate into their own ASICs. In contrast to the use of consortia, these licensing activities are generally performed internally.
- Patent Monetization - we sell certain patents from our portfolio generally for technology that we are no longer actively developing. The revenue from these sales generally consists of upfront payments and potential future royalties.
- IP Services - projects and design services for customers who wish to develop specific solutions that harness our proven technology and expertise.

Research and Development

We place a substantial emphasis on new product development, where return on investment is the key driver, and believe that continued investment in research and development is required to maintain and improve our competitive position. Our product development activities are focused on new proprietary products, advanced packaging, existing product enhancements, software development tools, soft IP and application focused solutions. Research and development activities occur primarily in Hillsboro, Oregon; San Jose, California; Shanghai, China; and Muntinlupa City, Philippines.

We believe that a continued commitment to research and development is essential to maintaining product leadership and providing an increased cadence of innovative new product offerings and, therefore, we expect to continue to make significant future investments in research and development.

Operations

We do not manufacture our own silicon products. We maintain strategic relationships with large, established semiconductor foundries to source our finished silicon wafers. This strategy allows us to focus our internal resources on product and market development, and eliminates the fixed cost of owning and operating semiconductor manufacturing facilities. We are able to take advantage of the ongoing advanced process technology development efforts of semiconductor foundries, and to choose to apply those technologies when they become most economically beneficial to us and to our customers.

Lattice partners with Samsung Semiconductor ("Samsung") to manufacture the first low-power FPGA on 28nm FDS technology, which is used in our latest Nexus FPGA platform of products. We partner with United Microelectronics Corporation ("UMC") and its subsidiary United Semiconductor Japan Corporation ("USJC") to manufacture our products on its 130nm, 90nm, 65nm & 40nm CMOS process technologies, as well as embedded flash memory in these technical nodes. Taiwan Semiconductor Manufacturing Company Ltd. (“TSMC”) manufactures our acquired SiliconBlue and Silicon Image products. Seiko Epson ("Epson") manufactures our 500nm, 350nm, 250nm and 180nm products.

All of our assembly and volume test operations are performed by outside suppliers. We perform certain test operations as well as reliability and quality assurance processes internally. We have achieved and maintained ISO9001:2015 Quality Management Systems Certification and released a line of products qualified to the AEC-Q100 Reliability Standard in support of Automotive product offerings.

We rely on third party vendors to provide cost-effective and efficient supply chain services. Among other activities, these outsourced services relate to direct sales logistics, including order fulfillment, inventory management and warehousing, and shipment of inventory to third party distributors.

Wafer Fabrication

We source silicon wafers from our foundry partners, Samsung, UMC, USJC, Epson, TSMC, pursuant to agreements with each company and their respective affiliates. We negotiate wafer volumes, prices and other terms with our foundry partners and their respective affiliates on a periodic basis.

Assembly

After wafer fabrication and initial testing, we ship wafers to independent subcontractors for assembly. During assembly, wafers are separated into individual die and encapsulated in plastic packages. We have qualified two major assembly partners, Advanced Semiconductor Engineering ("ASE") and Amkor Technology ("Amkor') and are second sourced where volume and customer requirements are necessary. All ASE and Amkor manufacturing of our products is in Asia. We negotiate assembly prices, volumes and other terms with our assembly partners and their respective affiliates on a periodic basis.

We currently offer an extensive list of standard products in lead (Pb) free packaging. Our lead-free products meet the European Parliament Directive entitled "Restrictions on the use of Hazardous Substances" ("RoHS"). A select and growing subset of our ROHS compliant products are also offered with a "Halogen Free" material set.

Testing (Sort and Final Test)

We electrically sort test the die on most wafers prior to shipment for assembly. Wafer sort testing is primarily performed by Amkor in Japan and our second source King Yuan Electronics Co. (“KYEC”) in Taiwan.

Following assembly, but prior to customer shipment, each product undergoes final testing and quality assurance procedures. Final testing is performed by ASE and Amkor, our assembly partners in Asia.

Sales and Revenue

We generate revenue by monetizing our technology and patents through product and technology sales. This involves the direct and channel sales of silicon-based products, as well as the licensing or sale of intellectual property that we have developed or acquired, some of which we use in our products, and certain design services that we may provide.

Sales and Customers

We primarily sell our products to end customers from Lattice Semiconductor Corporation or our wholly-owned subsidiary, Lattice SG Pte. Ltd. We sell both directly and through a network of independent manufacturers' representatives. Additionally, a substantial portion of our sales are made through independent distributors. We also employ a direct sales management and field applications engineering organization to support our end customers and indirect sales resources. Our end customers are primarily OEMs in the Communications and Computing, Industrial and

Automotive, and Consumer end markets. Our sales team uses our position in OEMs to drive multi-generation design wins and leverages distribution to grow our broad customer base.

We provide global technical support to our end customers with engineering staff based at our headquarters, product development centers and selected field sales offices. We maintain numerous domestic and international field sales offices in major metropolitan areas.

In fiscal years 2019, 2018, and 2017, resale of product by distributors accounted for approximately 82%, 83%, and 77%, respectively, of our net revenue. We depend on our distributors to sell our products to end customers, complete order fulfillment, and maintain sufficient inventory of our products. Our distributors also provide technical support and other value-added services to our end customers. We have two global distributors. We also have regional distribution in Asia, Japan, Israel, and North America, and we sell through three major on-line distributors. In fiscal years 2019, 2018, and 2017, no individual end customer accounted for more than 10% of our total revenue.

Revenue from foreign sales as a percentage of total revenue was 89%, 90%, and 87%, for fiscal 2019, 2018, and 2017, respectively. We assign revenue to geographies based on ship-to location of the end customer, where available, and based upon the location of the distributor to which the product was shipped otherwise. Both foreign and domestic sales are denominated in U.S. dollars.

Backlog

Our backlog consists of orders from distributors and certain Original Equipment Manufacturers ("OEMs") that require delivery within the next year. Historically, our backlog has not been a predictor of future sales or customer demand for the following reasons:

- Purchase orders, consistent with common industry practices, can generally be revised or canceled up to 30 days before the scheduled delivery date without significant penalty.
- Our backlog for distributors is valued at list price, which in most cases is substantially higher than the prices ultimately recognized as revenue.
- A sizable portion of our revenue comes from our "turns business," where the product is ordered and delivered within the same quarter.

Seasonality

We may periodically experience variability in our sales volumes and financial results due to seasonal trends in the end markets we serve, the cyclical nature of the semiconductor industry, and general economic conditions.

Intellectual Property, Patents, and Licensing

We seek to protect our products, technologies, and intellectual property primarily through patents, trade secrets, copyrights, trademark registrations, licensing restrictions, confidentiality agreements, and other approaches designed to protect proprietary information. We hold numerous United States and international patents and have patent applications pending in the United States and internationally. In addition to protecting innovations designed into our products, our ownership and maintenance of patents is an important factor in the determination of our share of the royalties for the HDMI standard. Our current patents will expire at various times between 2020 and 2038, subject to our payment of periodic maintenance fees. We believe that our patents have value, and we expect to file future patent applications in both the United States and abroad on significant inventions, as we deem appropriate. We have acquired various licenses from third parties to certain technologies that are implemented in IP cores or embedded in our products. These licenses support our continuing ability to make and sell these products to our customers. While our various IP rights are important to our success, we believe our business as a whole is not materially dependent on any particular patent or license, or any particular group of patents or licenses.

Our Team

As of December 28, 2019, we had 747 employees worldwide. We believe that our future success will depend, in part, on our ability to continue to attract and retain highly skilled technical, sales, and management personnel. None of our employees are represented by a collective bargaining agreement. We have never experienced any work stoppages and consider our employee relations to be good.

Corporate Background

Lattice was incorporated in Oregon in 1983 and reincorporated in Delaware in 1985. Our corporate headquarters are located at 5555 NE Moore Court, Hillsboro, Oregon 97124, and our website is www.latticesemi.com. Information contained or referenced on our website is not incorporated by reference into, and does not form a part of, this Annual Report on Form 10-K. Our common stock trades on the NASDAQ Global Select Market under the symbol LSCC.

Available Information

We make available, free of charge through the Investor Relations section of our website at www.latticesemi.com, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and amendments to those reports and statements as soon as reasonably practicable after such materials are electronically filed with, or furnished to, the SEC. You may also obtain free copies of these materials by contacting our Investor Relations Department at 5555 NE Moore Court, Hillsboro, Oregon 97124, telephone (503) 268-8000. Our SEC filings are also available at the SEC's website at www.sec.gov. The content on any website referred to in this filing is not incorporated by reference into this filing unless expressly noted otherwise.

ITEM 1A. Risk Factors

The following risk factors and other information included in this Annual Report should be carefully considered before making an investment decision relating to our common stock. If any of the risks described below occur, our business, financial condition, operating results and cash flows could be materially adversely affected. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations and financial results.

We rely on a concentrated number of subcontractors to supply and fabricate silicon wafers for our semiconductor products. If they are unable to do so on a timely and cost-effective basis in sufficient quantities and using competitive technologies, we may incur significant costs or delays.

We rely on a concentrated number of independent foundries in Asia to supply and fabricate silicon wafers for our semiconductor products, including Samsung Semiconductor, United Microelectronics Corporation, Taiwan Semiconductor Manufacturing, and Seiko Epson. Our success is dependent upon our ability to successfully partner with our foundry partners and their ability to produce wafers with competitive performance attributes and prices, including smaller process geometries. Establishing, maintaining and managing multiple foundry relationships requires the investment of management resources and costs. If we fail to maintain our foundry relationships, if our foundry partners do not provide facilities and support for our development efforts, if our foundry partners are insolvent or experience financial difficulty, or if we elect or are required to change foundries, we may incur significant costs and delays. If our foundry partners are unable to, or do not, manufacture sufficient quantities of our products at acceptable yields, we may be required to allocate the affected products among our customers, prematurely limit or discontinue the sales of certain products, or incur significant costs to transfer products to other foundries, which could adversely affect our customer relationships and operating results.

Our revenues depend on our relationships with our distributors and on a concentrated group of end customers. An adverse change in the relationships with, or performance of, our distributors, or any reduction in the use of our products by our end customers, could harm our sales and significantly decrease our revenue.

We depend on a concentrated group of distributors to sell our products to end customers, complete order fulfillment, maintain sufficient inventory of our products and provide services to our end customers. In fiscal 2019, revenue attributable to distributors accounted for 82% of our total revenue, with two distributors accounting for 55% of total revenue. In fiscal 2018, distributors accounted for 83% of our total revenue with two distributors accounting for 54% of total revenue. We have significant outstanding receivables with our top distributors, and expect our distributors to generate a significant portion of our revenue in the future. Any adverse change to our relationships or agreements with our distributors or a failure by one or more of our distributors to perform its obligations to us could have a material impact on our business, including a reduction in our access to certain end customers or our ability to sell our products.

While a significant portion of our revenue depends on sales to a concentrated number of customers, no individual end customer accounted for more than 10% of our total revenue in either fiscal 2019 or 2018. If our relationships with any material customers were to diminish, if these customers were to develop their own solutions or adopt alternative solutions or competitors' solutions, if any one or more of our concentrated groups of customers were to experience significantly adverse financial conditions, or if as a result of trade disputes or sanctions these customers were restricted from purchasing our products, our results could be adversely affected.

In addition, the inability of customers to obtain credit, the insolvency of one or more customers, or tariffs applicable to our customers' products, could impact our sales. Any of these effects could impact our ability to effectively manage inventory levels and collect receivables, require additional restructuring actions, and decrease our revenue and profitability.

Our global business operations expose us to various economic, legal, regulatory, political, and business risks, which could impact our business, operating results and financial condition.

We have significant domestic and international operations. Our international operations include foreign sales offices to support our international customers and distributors, which account for the majority of our revenue, and operational and research and development sites in China, the Philippines, and other Asian locations. In addition, we purchase our wafers from foreign foundries; have our commercial products assembled, packaged, and tested by subcontractors located outside of the United States; and rely on an international service provider for inventory management, order fulfillment, and direct sales logistics.

Our domestic and international business activities are subject to economic, political and regulatory risks, including volatility in the financial markets; fluctuations in consumer liquidity; changes in interest rates; price increases for materials and components; trade barriers or changes in trade policies; political instability; acts of war or terrorism; natural disasters; economic sanctions; weak economic conditions, environmental regulations; labor regulations; import and export regulations; tax or freight rates; duties; trade restrictions; interruptions in transportation or infrastructure; anti-corruption laws; domestic and foreign governmental regulations; potential vulnerability of and reduced protection for intellectual property; disruptions or delays in production or shipments; and instability or fluctuations in currency exchange rates, any of which could lead to decreased demand for our products or a change in our results of operation. Uncertainty about future political and economic conditions makes it difficult for us to forecast operating results and to make decisions about future investments. Any or all of these factors could adversely affect our financial condition and results of operations in the future.

If we fail to comply with the many laws and regulations to which we are subject, both within the United States and internationally, we may be subject to significant fines, penalties or liabilities for noncompliance, which could harm our business and financial results. For example, effective May 2018, the European Union adopted the General Data Protection Regulation ("GDPR"), which established new requirements regarding the handling of personal data and non-compliance monetary penalties of up to the higher of 20 million Euros or 4% of worldwide revenue. California also recently adopted the California Consumer Privacy Act ("CCPA"), which imposes significant fines and penalties for violations. Any inability or perceived inability to adequately comply with applicable laws or regulations, including GDPR or CCPA, could result in additional cost and liability to our business and could adversely affect our financial condition and results of operations.

Beginning in late 2019, the media has reported a public health epidemic originating in China, prompting precautionary government-imposed closures of certain travel and business. The operations of customers and the Company in China and elsewhere may be affected by this and similar public health matters. Although our supply chain does not appear to be affected by this epidemic, it may lead to events outside of our control which could have a material adverse impact on our business, operating results and financial condition.

The semiconductor industry routinely experiences cyclical market patterns and our products are used across different end markets. A significant downturn in the industry or in any of these end markets could cause a meaningful reduction in demand for our products and adversely affect our operating results.

Our revenue and gross margin can fluctuate significantly due to downturns in the highly cyclical semiconductor industry. These downturns can be severe and prolonged and can result in price erosion and weak demand for our products. Weak demand for our products resulting from general economic conditions affecting the end markets we serve or the semiconductor industry specifically and reduced spending by our customers can result, and in the past has resulted, in diminished product demand, high inventory levels, erosion of average prices, excess and obsolete inventories and corresponding inventory write-downs. Our expense levels are based, in part, on our expectations of future sales. Many of our expenses, particularly those relating to facilities, capital equipment, and other overhead, are relatively fixed. We might be unable to reduce spending quickly enough to compensate for reductions in sales. Accordingly, shortfalls in sales could adversely affect our operating results. Furthermore, any significant upturn in the semiconductor industry could result in increased competition for access to raw materials and third-party service providers.

Additionally, our products are used across different end markets, and demand for our products is difficult to predict and may vary within or among our Industrial and Automotive, Communications and Computing, and Consumer end markets. Our target markets may not grow or develop as we currently expect, and demand may increase or change in one or more of our end markets, and changes in demand may reduce our revenue, lower our gross margin and effect our operating results. We have experienced concentrations of revenue at certain customers and within certain end markets, and we regularly compete for design opportunities at these customers and within these markets. Any deterioration in these end markets, reductions in the magnitude of revenue streams, our inability to meet design and pricing requirements, or volatility in demand for our products could lead to a reduction in our revenue and adversely affect our operating results. Our success in our end markets depends on many factors, including the strength or financial performance of the customers in our end markets, our ability to timely meet rapidly changing product requirements, market needs, and our ability to maintain design wins across different markets and customers to dampen the effects of market volatility. The dynamics of the markets in which we operate make prediction of and timely reaction to such events difficult.

Due to these and other factors, our past results may not be reliable predictors of our future results. If we are unable to accomplish any of the foregoing, or to offset the volatility of cyclical changes in the semiconductor industry or our end markets through diversification into other markets, could materially and adversely affect our business, financial condition, and operating results.

Our business could suffer as a result of tariffs and trade sanctions or similar actions.

The imposition by the United States of tariffs, sanctions or other restrictions on goods imported from outside of the United States or countermeasures imposed in response to such government actions could adversely affect our operations or our ability to sell our products globally, which could adversely affect our operating results and financial condition. The materials subject to these tariffs may impact the cost of raw materials used by our suppliers or in our customers’ products. The imposition of further tariffs by the United States on a broader range of imports, or further retaliatory trade measures taken in response to additional tariffs, could increase costs in our supply chain or reduce demand of our customers’ products, either of which could adversely affect our results of operations.

Our customers or suppliers could also become subject to U.S. regulatory scrutiny or export restrictions. For example, the United States Department of Commerce imposed sanctions on one of our customers in China in 2018, which prevented us from doing business with them until the sanctions were lifted. The U.S. Justice Department filed criminal charges against another of our customers in China and imposed sanctions on this customer in May 2019, which has limited our ability to do business with this customer. Revenue from distributors and end customers in China represented approximately 51% of our total revenue in 2019. Future sanctions similar to those imposed in the past could adversely affect our ability to earn revenue from these and similar customers. In addition, the imposition of sanctions on customers in China may cause those customers to seek domestic alternatives to our products and those of other United States semiconductor companies. We cannot predict what impact these and future actions, sanctions or criminal charges could have on our customers or suppliers, and therefore our business. If any of our other customers or suppliers become subject to sanctions or other regulatory scrutiny, or if our customers are affected by tariffs or other government trade restrictions, our business and financial condition could be adversely affected.

Our success and future revenue depends on our ability to develop and introduce new products that achieve customer and market acceptance.

We compete in a dynamic environment characterized by rapid technology and product evolution, generally followed by a relatively longer process of ramping up to volume production on advanced technologies. Our end customers’ continued use of our products is frequently reevaluated, as certain of our customers' product life cycles are relatively short and they continually develop new products. The selection process for our products to be included in our customers' new products is highly competitive. There are no guarantees that our products will be included in the next generation of products introduced by these. Additionally, our markets are also characterized by evolving industry standards and increased demand for higher levels of integration and smaller process geometry. Our competitive position and success depend on our ability to innovate, develop, and introduce new products that compete effectively on the basis of price, density, functionality, power consumption, form factor, and performance, and our addressing the evolving needs of the markets we serve, among other things. With increased introduction of new products, we expect revenue related to mature products to decline over time in a normal product life cycle. As a result, we may be increasingly dependent on revenue derived from our newer products.

Our future growth and the success of new product introductions depend upon numerous factors, including:

- timely completion and introduction of new product designs;
- ability to generate new design opportunities and design wins, including those which result in sales of significant volume;
- achievement of necessary volume of production to achieve acceptable cost;
- availability of specialized field application engineering resources supporting demand creation and customer adoption of new products;
- ability to utilize advanced manufacturing process technologies;
- achieving acceptable yields and obtaining adequate production capacity from our wafer foundries and assembly and test subcontractors;
- ability to obtain advanced packaging;
- availability of supporting software design tools;
- utilization of predefined IP logic;
- customer acceptance of advanced features in our new products; and
- market acceptance of our customers' products.

The failure of any of these factors, among others, could adversely affect our product innovation, development and introduction efforts and our financial condition and results of operations.

Our business depends on the proper functioning of internal processes and information technology systems. A failure of these processes and systems, data breaches, cyber-attacks, or cyber-fraud may cause business disruptions, compromise our intellectual property or other sensitive information, or result in losses.

We rely on various information technology ("IT") networks and systems to manage our operations, including financial reporting, and we regularly make changes to improve them as necessary by periodically implementing new, or upgrading or enhancing existing, operational and IT systems, procedures, and controls. These systems are supported by subcontractors, and they may also be subject to power and telecommunication outages or other general system failures. The legal, regulatory and contractual environment surrounding information security and data privacy is complex and evolving. We continue to commit significant resources to implementing new systems to standardize our processes worldwide and adopt best-in-class capabilities. We are focused on realizing the full analytical functionality of these conversions, which can be extremely complex, in part, because of the wide range of legacy systems and processes that must be integrated.

In the normal course of business, we may implement new or updated IT systems and, as a result, we may experience delays or disruptions in the integration of these systems, or the related procedures or controls. The policies and security measures established with our IT systems may be vulnerable to data breaches, cyber-attacks or fraud. We may also encounter errors in data, an inability to accurately process or record transactions, and security or technical reliability issues. All of these could harm our ability to conduct core operating functions such as processing invoices, shipping and receiving, recording and reporting financial and management information on a timely and accurate basis, and could impact our internal control compliance efforts. If the technical solution or end user training are inadequate, it could limit our ability to manufacture and ship products as planned. We have various systems that remain that may be nearing the end of their useful life or vendor support, which will ultimately need to be replaced.

We maintain sensitive data on our networks and the networks of our business partners and third-party providers, including proprietary and confidential information relating to our intellectual property, personnel, and business, and that of our customers and third-party providers. Companies have been increasingly subject to a wide variety of security incidents, cyber-attacks, hacking, phishing, and other attempts to gain unauthorized access or engage in fraudulent behavior. Cyber-attacks have become more prevalent, sophisticated and much harder to detect and defend against and it is often difficult to anticipate or detect such incidents and to assess the damage caused by them. Our policies and security measures cannot guarantee security, and our information technology infrastructure, including our networks and systems, may be vulnerable to data breaches, cyber-attacks or fraud. In the past, third parties have attempted to penetrate and/or infect our network and systems with malicious software and phishing attacks in an effort to gain access to our network and systems. In addition, we are subject to the risk of third parties falsifying invoices and similar fraud, frequently by obtaining unauthorized access to our vendors’ and business partners’ networks.

In some circumstances, we may partner with third-party providers and provide them with certain sensitive data. If these third parties fail to adopt or adhere to adequate data security practices, or in the event of a breach of their networks, this sensitive data may be improperly accessed, used or disclosed. These data breaches and any unauthorized access or disclosure of sensitive data could compromise our intellectual property, expose sensitive business information and subject us to third party claims.

The increase in cyber-attacks has resulted in an increased focus on cybersecurity by certain government agencies. Cyber-attacks or any investigation or enforcement action related to cybersecurity could 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. In addition, we may incur loss as a result of cyber-fraud, such as those experienced by other companies by making unauthorized payments irrespective of robust internal controls.

Failure of our IT systems or difficulties or delays in maintaining, managing, and integrating them could adversely affect the Company’s controls and procedures and could impact the Company's ability to perform necessary operations, which could materially adversely affect our business. Furthermore, our reputation, brand, and business could be significantly harmed, and we could be subject to third-party claims or governmental penalties in the event of a security breach.

The intellectual property licensing component of our business strategy increases our business risk and fluctuation of our revenue and margins.

Our business strategy includes licensing our intellectual property to companies that incorporate it into their technologies that address multiple markets, including markets where we participate and compete. Our Licensing and services revenue may be impacted by the introduction of new technologies by customers in place of the technologies we license, changes in the law that may weaken our ability to prevent the use of our patented technology by others, the expiration of our patents, and changes of demand or selling prices for products using licensed patents. We cannot assure that our licensing customers will continue to license our technology on commercially favorable terms or at all, or that these customers will introduce and sell products incorporating our technology, accurately report royalties owed to us, pay agreed upon royalties, honor agreed upon market restrictions, or maintain the confidentiality of our proprietary information, or will not infringe upon or misappropriate our intellectual property. Our intellectual property licensing agreements are complex and may depend upon many factors that require significant judgments, including completion of milestones, allocation of values to delivered items and customer acceptance.

Our sale of patents and intermittent significant licensing transactions can cause material fluctuations in our revenue and gross margins.

We have generated revenue from the sale of certain patents from our portfolio, generally for non-core technology that we are no longer actively developing. While we plan to continue to monetize our patent portfolio through sales of non-core patents, we may not be able to realize adequate interest or prices for those patents. Accordingly, we cannot provide assurance that we will continue to generate revenue from these sales. In addition, although we seek to be strategic in our decisions to sell patents, we might incur reputational harm if a purchaser of our patents sues one of our customers for infringement of the purchased patent, and we might later decide to enter a space that requires the use of one or more of the patents we sold. In addition, as we sell groups of patents, we no longer have the opportunity to further sell or to license those patents and receive a continuing royalty stream.

Our Licensing and services revenue fluctuates, sometimes significantly, from period to period because it is heavily dependent on a few key transactions being completed in a given period, the timing of which is difficult to predict and may not match our expectations. Licensing and services revenue may include revenue from the sales of patents, which sales may be difficult to complete and which may have complex terms for the payment which affect revenue recognition. Because of its high margin, the Licensing and services revenue portion of our overall revenue can have a disproportionate impact on gross profit and profitability. In addition, generating revenue from patent sales and intellectual property licenses is a lengthy and complex process that may last beyond the period in which our efforts begin, and the accounting rules governing the recognition of revenue from patent sales and intellectual property licensing transactions are increasingly complex and require significant judgment. As a result, the amount of license revenue recognized in any period may differ significantly from our expectations.

Our margins are dependent on our achieving continued yield improvement.

We rely on obtaining yield improvements and corresponding cost reductions in the manufacture of existing products and on introducing new products that incorporate advanced features and other price/performance factors that enable us to increase revenues while maintaining acceptable margins. To the extent such cost reductions and new product introductions do not occur in a timely manner, or that our products do not achieve market acceptance or market acceptance at acceptable pricing, our forecasts of future revenue, financial condition, and operating results could be materially adversely affected.

Shortages in, or increased costs of, wafers and materials could adversely impact our gross margins and lead to reduced revenues.

Worldwide manufacturing capacity for silicon wafers is relatively inelastic. If the demand for silicon wafers or assembly material exceeds market supply, our supply of silicon wafers or assembly material could quickly become limited or prohibitively expensive. We typically have short-term wafer supply agreements that do not ensure long-term supply or allocation commitments. A shortage in manufacturing capacity could hinder our ability to meet product demand and therefore reduce our revenue. In addition, silicon wafers constitute a material portion of our product cost. If we are unable to purchase wafers at favorable prices, our financial condition and results of operations will be adversely affected.

The nature of our business and length of our sales cycle makes our revenue, gross margin and net income subject to fluctuation and difficult to accurately predict.

A number of factors, including how products are manufactured to support end markets, yield, wafer pricing, cost of packaging raw materials, product mix, market acceptance of our new products, competitive pricing dynamics, product quality, geographic and/or end market mix, and pricing strategies, can cause our revenue, gross margins and net income to fluctuate significantly either positively or negatively from period to period.

We have limited visibility into the demand for our products, particularly new products, because demand for our products depends upon our products being designed into our end customers' products and those products achieving market acceptance. During our sales cycle, our customers typically test and evaluate our products prior to deciding to include our products into the design of their own products, and then require additional time to begin volume production of their products. This lengthy sales cycle may cause us to incur significant expenses, experience significant production delays and to incur additional inventory costs before we receive a customer order that may be delayed or never get placed. A key strategic customer may demand certain design or production resources to meet their requirements or work on a specific solution, which could cause delays in our normal development schedule and result in significant investment of our resources or missed opportunities with other potential customers. We may incur these expenses without generating revenue from our products to offset the expenses.

While our sales cycles are typically long, our average product life cycles tend to be short as a result of the rapidly changing technology environment in which we operate. Our inventory levels may be higher than historical norms, from time to time, due to inventory build decisions aimed at meeting expected demand from a single large customer, reducing direct material cost or enabling responsiveness to expected demand. In the event the expected demand does not materialize, or if our short sales cycle does not generate sufficient revenue, we may be subject to incremental excess and obsolescence costs.

These factors make it difficult for us to accurately forecast future sales and project quarterly revenues. The difficulty in forecasting future sales weakens our ability to project our inventory requirements, which could result, and in the past has resulted, in inventory write-downs or failure to meet customer product demands in a timely manner. While we may give guidance, the difficulty in forecasting revenues as well as the relative customer and product mix of those revenues limits our ability to provide accurate forward-looking revenue and gross margin guidance.

We compete against companies that have significantly greater resources than us and numerous other product solutions.

The semiconductor industry is highly competitive and many of our direct and indirect competitors have substantially greater financial, technological, manufacturing, marketing, and sales resources. Consolidation in our industry may increasingly mean that our competitors have greater consolidated resources, or other synergies, that could put us at a competitive disadvantage. We currently compete directly with companies that have licensed our technology or have developed similar products, as well as numerous semiconductor companies that offer products based on alternative solutions, such as applications processor, application specific standard product, microcontroller, analog, and digital signal processing technologies. Competition from these semiconductor companies may intensify as we offer more products in any of our end markets. These competitors include established, multinational semiconductor companies, as well as emerging companies.

Acquisitions, divestitures, strategic investments and strategic partnerships could disrupt our business and adversely affect our financial condition and operating results.

We may pursue growth opportunities by acquiring complementary businesses, solutions or technologies through strategic transactions, investments or partnerships. The identification of suitable acquisition, strategic investment or strategic partnership candidates can be costly and time consuming and can distract our management team from our current operations. If such strategic transactions 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, and such transaction may adversely affect our liquidity and capital structure. We may also choose to divest certain non-core assets, which divestitures could lead to charges against earnings and may expose us to additional liabilities and risks. Any strategic transaction might not strengthen our competitive position, may increase some of our risks, and may be viewed negatively by our customers, partners or investors. Even if we successfully complete a strategic transaction, we may not be able to effectively integrate the acquired business, technology, systems, control environment, solutions, personnel or operations into our business or global tax structure. We may experience unexpected changes in how we are required to account for strategic transactions pursuant to U.S. GAAP and may not achieve the anticipated benefits of any strategic transaction. We may incur unexpected costs, claims or liabilities that we incur during the strategic transaction or that we assume from the acquired company, or we may discover adverse conditions post acquisition for which we have limited or no recourse.

We regularly test for goodwill and other impairments as required under U.S. GAAP, and we may incur future impairments.

We are required under U.S. GAAP to test goodwill for possible impairment on an annual basis and to test goodwill and long-lived assets, including amortizable intangible assets, for impairment at any other time that circumstances arise indicating the carrying value may not be recoverable. For purposes of testing goodwill for impairment, the Company currently operates as one reporting unit: the core Lattice ("Core") business, which includes intellectual property and semiconductor devices. We had no impairment charges in fiscal 2019. Impairment charges related to amortizable intangible assets from the Silicon Image acquisition totaled approximately $12.5 million and $32.4 million in fiscal years 2018 and 2017, respectively. There is no assurance that future impairment tests will indicate that goodwill or amortizable intangible assets will be deemed recoverable. As we continue to review our business operations and test for impairment or in connection with possible sales of assets, we may have impairment charges in the future, which may be material.

We depend on independent contractors and third parties to provide key services in our product development and operations, and any disruption of their services, or an increase in cost of these services, could negatively impact our financial condition and results of operations.

We depend on subcontractors to provide cost effective and efficient services in our product development and supply chain functions, including test and assembly services, software and hardware development, support of intellectual property cores, inventory management, order fulfillment and direct sales logistics.

Our operations and operating results may be adversely affected if we experience problems with our subcontractors that impact the delivery of product to our customers. These problems may include: delays in software or hardware development timelines, prolonged inability to obtain wafers or packaging materials with competitive performance and cost attributes; inability to achieve adequate yields or timely delivery; inability to meet customer timelines or demands, disruption or defects in assembly, test, or shipping services; or delays in stabilizing manufacturing processes or ramping up volume for new products. If our third-party supply chain providers were to reduce or discontinue services for us or their operations are disrupted as a result of a fire, earthquake, act of terrorism, political unrest, governmental uncertainty, war, disease, or other natural disaster or catastrophic event, weak economic conditions, or any other reason, our financial condition and results of operations could be adversely affected.

Litigation and unfavorable results of legal proceedings could adversely affect our financial condition and operating results.

From time to time we are subject to various legal proceedings and claims that arise out of the ordinary conduct of our business. Certain claims may not yet be resolved, including but not limited to any that are discussed under Item 3. Legal Proceedings and "Note 13 - Contingencies" contained in the Notes to Consolidated Financial Statements, and additional claims may arise in the future. Results of legal proceedings cannot be predicted with certainty. Regardless of merit or outcome, claims or litigation may be both time-consuming and disruptive to our operations and cause significant expense and diversion of management attention and we may enter into material settlements to avoid these risks. Should we fail to prevail in certain matters or enter into a material settlement, we may be faced with significant monetary damages or injunctive relief against us that could materially and adversely affect our financial condition and operating results and certain portions of our business.

Changes to financial accounting standards may affect our results of operations and could cause us to change our business practices.

We prepare our consolidated financial statements to conform to generally accepted accounting principles in the United States, or U.S. GAAP. These accounting principles are subject to interpretation by the American Institute of Certified Public Accountants, the SEC and various bodies formed to interpret and create accounting rules and regulations. Changes in these rules, such as the adoption of *ASC 606 - Revenue from Contracts with Customers* in fiscal 2018 or *ASC 842 - Leases* in fiscal 2019, or in the guidance relating to interpretation and adoption of the rules could have a significant effect on our financial results and could affect portions of our business differently.

Accounting requirements related to sales through our distribution channel could result in our reporting revenue in excess of demand.

Revenue recognition standards require recognition of revenue based on estimates and may require us to book revenue from distributors that is in excess of actual end customer demand. Since we have limited ability to forecast inventory levels of our end customers, we depend on the timeliness and accuracy of resale reports from our distributors. Late or inaccurate resale reports could mask significant build-up of inventories in our distribution channel, have a detrimental effect on our ability to properly recognize revenue, and impact our ability to forecast future sales. An inventory build-up in our distribution channel could result in a slowdown in orders, requests for returns from customers, or requests to move out planned shipments. If our distributors do not ultimately sell the inventory and our estimates change, we could be required to materially correct our recognized revenue in a future period, depending on actual results. Any failure to manage these challenges could disrupt or reduce sales of our products and unfavorably impact our financial results.

Our participation in the HDMI standard is evolving. We no longer act as agent for the HDMI standard, and our share of adopter fees and royalties for the HDMI standard is subject to variability.

We acted as agent of the HDMI consortium until December 31, 2016 and were responsible for promoting and administering the specification. We received all of the adopter fees paid by adopters of the HDMI specification in connection with our role as agent. In September 2016, the Founders of the HDMI consortium, of which we are a member, amended the Founders Agreement resulting in changes to our role as agent for the HDMI consortium and to the model for sharing adopter fee revenues. Under the terms of the agreement, our role as the agent was terminated effective January 1, 2017 and a new independent entity was appointed to act as the new HDMI licensing agent with responsibility for licensing and the distribution of royalties among Founders. As a result of the amended model for sharing adopter fee revenue, we are entitled to a share of the adopter fees paid by parties adopting the HDMI standard.

We share HDMI royalties with the other HDMI Founders based on an allocation formula, which is reviewed generally every three years. In the fourth quarter of fiscal 2019, the HDMI Founders adopted a new agreement covering the five-year period beginning January 1, 2018. The amount of our portion of the royalty allocation is dependent on the royalties generated by adopter sales of royalty-bearing HDMI technology.

Changes in effective tax rates, tax laws and our global organizational structure and operations could expose us to unanticipated tax consequences.

We are subject to taxation in the United States and other countries. We have a global tax structure that aligns our corporate structure with our global business operations, and we currently operate legal entities in multiple countries. In some countries, we maintain multiple entities for tax or other purposes. We may choose to consolidate or integrate certain of these entities, and these integration activities, changes in tax laws, rates, regulations, future jurisdictional profitability of the Company, and related regulatory interpretations in the countries in which we operate may impact the taxes we pay or tax provision we record, which could adversely affect our results of operations. In addition, future effective tax rates could be affected by changes in the composition of our earnings in countries with differing tax rates, and by changes in the valuation of deferred tax assets and liabilities. We make no assurance as to what taxes we pay or the ability to estimate our future effective tax rate because of, among other things, uncertainty regarding the tax policies of the jurisdictions where we operate, or the potential impact of releasing our valuation allowance.

We may be subject to warranty claims and other costs related to our products.

In general, we warrant our products for varying lengths of time against non-conformance to our specifications and certain other defects. Because our products, including hardware, software, and intellectual property cores, are highly complex and increasingly incorporate advanced technology, our quality assurance programs may not detect all defects, whether these are specific manufacturing defects affecting individual products or these are systematic defects that could affect numerous shipments. Inability to detect a defect could result in a diversion of our engineering resources from product development efforts, increased engineering expenses to remediate the defect, and increased costs due to customer accommodation or inventory impairment charges. On occasion, we have also repaired or replaced certain components, made software fixes, or refunded the purchase price or license fee paid by our customers due to product or software defects. Our insurance may be unavailable or inadequate to protect against these issues. If there are significant product defects, the costs to remediate such defects, net of reimbursed amounts from our vendors, if any, or to resolve warranty claims may adversely affect our financial condition and results of operations and may harm our reputation.

If we are unable to adequately protect our new and existing intellectual property rights, our financial results and our ability to compete effectively may suffer.

Our success depends in part on our proprietary technology and we rely upon patent, copyright, trade secret, mask work, and trademark laws to protect our intellectual property. We intend to continue to protect our proprietary technology, however, we may be unsuccessful in asserting our intellectual property rights or such rights may be invalidated, violated, circumvented, or challenged. From time to time, third parties, including our competitors, have asserted against us patent, copyright, and other intellectual property rights to technologies that are important to us. Third parties may attempt to misappropriate our intellectual property through electronic or other means or assert infringement claims against us in the future. Such assertions by third parties may result in costly litigation, indemnity claims, or other legal actions, and we may not prevail in such matters or be able to license any valid and infringed patents from third parties on commercially reasonable terms. This could result in the loss of our ability to import and sell our products or require us to pay costly royalties to third parties in connection with sales of our products. Any infringement claim, indemnification claim, or impairment or loss of use of our intellectual property could materially adversely affect our financial condition and results of operations.

Weakness in our internal control over financial reporting could adversely affect our business and financial results.

We are required to maintain internal controls over financial reporting. We review these controls regularly and deficiencies may be identified from time to time. During the quarter ended December 28, 2019, we evaluated and remediated certain deficiencies in our information technology controls over system access and no material weakness existed at the end of the period. We previously disclosed a material weakness in 2017 related to our risk assessment involving significant unusual transactions that was remediated in 2018. In the future, we may identify material weaknesses in our internal controls over financial reporting. Any failure to maintain an effective system of internal controls over financial reporting could limit our ability to report our financial results accurately and timely, which could adversely affect our business, financial results, and stock price.

We compete with others to attract and retain key personnel, and any loss of, or inability to attract, such personnel could adversely affect our ability to compete effectively.

We depend on the efforts and abilities of certain key members of management and other technical personnel. Our future success depends, in part, upon our ability to retain such personnel and attract and retain other highly qualified personnel, particularly product engineers who can respond to market demands and required product innovation. Competition for such personnel is intense and we may not be successful in hiring or retaining new or existing qualified personnel. If we lose existing qualified personnel or are unable to hire new qualified personnel, as needed, we could have difficulty competing in our highly-competitive and innovative environment.

Our outstanding indebtedness could reduce our strategic flexibility and liquidity and may have other adverse effects on our results of operations.

As of December 28, 2019, we had approximately $148.1 million outstanding under a Credit Agreement, dated May 17, 2019 (the “Current Credit Agreement”). Our obligations under the Current Credit Agreement are guaranteed by our U.S. subsidiaries, and include a requirement to pay quarterly installments of approximately $4.4 million with the remaining balance due upon maturity in May 2024. Our ability to meet our debt service obligations depends upon our operating and financial performance, which is subject to general economic and competitive conditions and to financial, business and other factors affecting our operations, many of which are beyond our control. If we are unable to service our debt, we may need to sell material assets, restructure or refinance our debt, or seek additional equity capital. Prevailing economic conditions and global credit markets could adversely impact our ability to sell material assets, restructure or refinance our debt on terms acceptable to us, or at all, or we may not be able to restructure or refinance our debt without incurring significant additional fees and expenses.

The Current Credit Agreement contains customary affirmative and negative covenants, including covenants limiting the ability of the Company to, among other things, incur debt, grant liens, undergo certain fundamental changes, make investments, make certain restricted payments, dispose of assets, enter into transactions with affiliates, and enter into burdensome agreements, in each case, subject to limitations and exceptions set forth in the Current Credit Agreement. We are also required to maintain compliance with a total leverage ratio and an interest coverage ratio, in each case, determined in accordance with the terms of the Current Credit Agreement.

The amount and terms of our indebtedness, as well as our credit rating, could have important consequences, including the following:

- we may be more vulnerable to economic downturns, less able to withstand competitive pressures, and less flexible in responding to changing business and economic conditions;
- our cash flow from operations may be allocated to the payment of outstanding indebtedness, and not to research and development, operations or business growth;
- we might not generate sufficient cash flow from operations or other sources to enable us to meet our payment obligations under the facility and to fund other liquidity needs;
- our ability to make distributions to our stockholders in a sale or liquidation may be limited until any balance on the facility is repaid in full; and
- our ability to incur additional debt, including for working capital, acquisitions, or other needs, is more limited.

If we breach a loan covenant, the lenders could accelerate the repayment of the facility. We might not have sufficient assets to repay our indebtedness upon acceleration. If we are unable to repay or refinance the indebtedness upon acceleration or at maturity, the lenders could initiate a bankruptcy proceeding against us or collection proceedings with respect to our assets and subsidiaries securing the facility, which could materially decrease the value of our common stock.

A material change in the agreements governing encryption keys we use could place additional restrictions on us, or our distributors or contract manufacturers, which could restrict product shipment or significantly increase the cost to track products throughout the distribution chain.

Certain components in our products contain encryption keys used in connection with High Definition Content Protection ("HDCP"). The regulation and distribution of these encryption keys are controlled through license agreements with Digital Content Protection ("DCP"), a wholly owned subsidiary of Intel Corporation. These license agreements have been modified by DCP from time to time, and such changes could impact us, our distributors, and our customers. An important element of HDMI is the ability to implement link protection for high definition ("HD"), and more recently, 4K UltraHD, content. We implement various aspects of the HDCP link protection within certain parts we sell. We also, for the benefit of our customers, include the necessary HDCP encryption keys in parts we ship to customers. These encryption keys are provided to us from DCP. We have a specific process for tracking and handling these encryption keys. If DCP changes any of the tracking or handling requirements associated with HDCP encryption keys, we may be required to change our manufacturing and distribution processes, which could adversely affect our manufacturing and distribution costs associated with these products. If we cannot satisfy new requirements for the handling and tracking of encryption keys, we may have to cease shipping or manufacturing certain products.

We may have failed to adequately insure against certain risks, and, as a result, our financial condition and results may be adversely affected.

We carry insurance customary for companies in our industry, including, but not limited to, liability, property, and casualty; workers' compensation; and business interruption insurance. We also insure our employees for basic medical expenses. In addition, we have insurance contracts that provide director and officer liability coverage for our directors and officers. Other than the specific areas mentioned above, we are self-insured with respect to most other risks and exposures, and the insurance we carry in many cases is subject to a significant policy deductible or other limitation before coverage applies. Based on management's assessment and judgment, we have determined that it is more cost effective to self-insure against certain risks than to incur the insurance premium costs. The risks and exposures for which we self-insure include, but are not limited to, certain natural disasters, certain product defects, certain matters for which we indemnify third parties, political risk, certain theft, patent infringement, and employment practice matters. Should there be a catastrophic loss due to an uninsured event (such as an earthquake) or a loss due to adverse occurrences in any area in which we are self-insured, our financial condition or operating results could be adversely affected.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We lease a 47,800 square foot of space in Hillsboro, Oregon as our corporate headquarters and a research and development facility through November 2022. In San Jose, California, we have 98,874 square feet under lease through September 2026, of which we use 49,579 square feet as a research and development facility, while we vacated 49,295 square feet during the fourth quarter of 2018 and intend to sublease the vacated space. During 2019, we vacated a 23,680 square foot office space in Portland, Oregon, which we have subleased through the end of the lease in March 2025.

In Muntinlupa City, Philippines, we lease a total of 48,565 square feet through May 2025 and 1,938 square feet through June 2025 for research and development and operations facilities. In this location, we also leased another 2,856 square feet through April 2018 as storage space that has been consolidated into other facilities.

In Shanghai, China, we lease 68,027 square feet through May 2021 for research and development operations. We also owned an 18,869 square foot research and development facility in Shanghai, China, which we sold in August 2017.

We also lease office facilities in multiple other metropolitan locations for our domestic and international sales staff. We believe that our existing facilities are suitable and adequate for our current and foreseeable future needs.

Item 3. Legal Proceedings

On or about December 19, 2018, Steven A.W. De Jaray, Perienne De Jaray and Darrell R. Oswald (collectively, the “Plaintiffs”) commenced an action against the Company and several unnamed defendants in the Multnomah County Circuit Court of the State of Oregon, in connection with the sale of certain products by the Company to the Plaintiffs in or around 2008. The Plaintiffs allege that we violated The Lanham Act, engaged in negligence and fraud by failing to disclose to the Plaintiffs the export-controlled status of the subject parts. The Plaintiffs seek damages of $138 million, treble damages, and other remedies. In January 2019, we removed the action to the United States District Court for the District of Oregon. At this stage of the proceedings, we do not have an estimate of the likelihood or the amount of any potential exposure to the Company; however, we believe that these claims are without merit and intend to vigorously defend the action. See “Litigation and unfavorable results of legal proceedings could adversely affect our financial condition and operating results” in “Risk Factors” in Item 1A of Part I of this Annual Report on Form 10-K.

From time to time, we are exposed to certain asserted and unasserted potential claims. Periodically, we review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and a range of possible losses can be estimated, we then accrue a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based only on the best information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation and may revise estimates.

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

Market Information

Our common stock is traded on the NASDAQ Global Select Market under the symbol "LSCC".

Holders

As of February 20, 2020, we had approximately 216 stockholders of record.

Dividends

The payment of dividends on our common stock is within the discretion of our Board of Directors. We intend to retain earnings to finance our business. We have never paid cash dividends.

Recent Sales of Unregistered Securities

None.

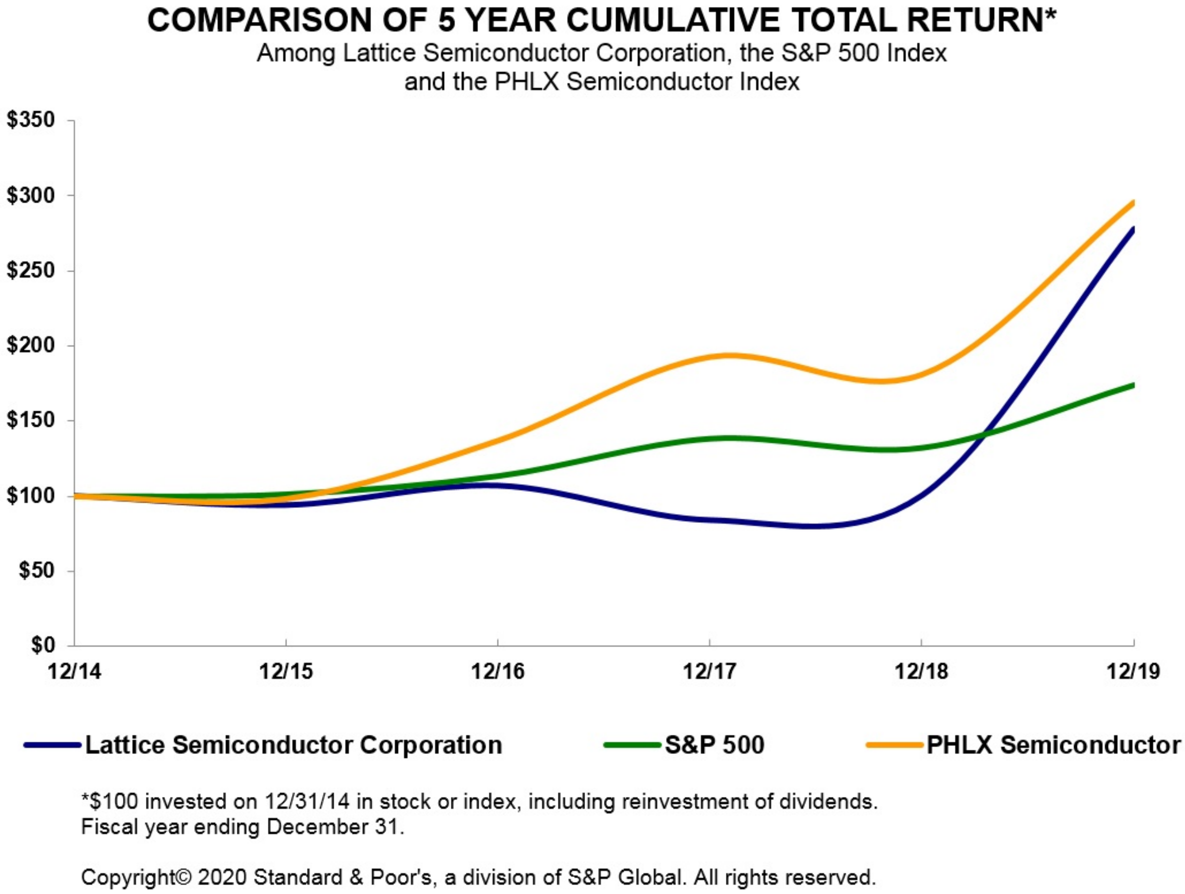
Issuer Purchases of Equity Securities

None.

Comparison of Total Cumulative Stockholder Return

The following graph shows the five-year comparison of cumulative stockholder return on our common stock, the Standard and Poor's (“S&P”) 500 Index and the Philadelphia Semiconductor Index (“PHLX”) from December 2014 through December 2019. Cumulative stockholder return assumes $100 invested at the beginning of the period in our common stock, the S&P and PHLX. Historical stock price performance is not necessarily indicative of future stock price performance.

Lattice Cumulative Stockholder Return



	12/14	12/15	12/16	12/17	12/18	12/19
Lattice Semiconductor Corporation	100.00	93.90	106.82	83.89	100.44	277.79
S&P 500	100.00	101.38	113.51	138.29	132.23	173.86
PHLX Semiconductor	100.00	98.41	137.10	192.69	181.04	295.57

The stock price performance included in this graph is not necessarily indicative of future stock price performance.

Table of Contents

Item 6. Selected Financial Data

STATEMENT OF OPERATIONS:	Year Ended (1)				
(In thousands, except per share data)	December 28, 2019	December 29, 2018	December 30, 2017	December 31, 2016	January 2, 2016 (2)
Revenue	$ 404,093	$ 398,799	$ 385,961	$ 427,054	$ 405,966
Cost of revenue	165,671	179,360	169,382	180,620	186,057
Gross margin	238,422	219,439	216,579	246,434	219,909
Operating expenses:					
Research and development	78,617	82,449	103,357	117,518	136,868
Selling, general, and administrative	82,542	91,054	90,718	98,602	97,349
Amortization of acquired intangible assets	13,558	17,690	31,340	33,575	29,580
Restructuring charges	4,664	17,349	7,196	9,267	19,239
Impairment of acquired intangible assets and goodwill	—	12,486	32,431	7,866	21,655
Acquisition related charges	—	1,531	3,781	6,305	22,450
Gain on sale of building	—	—	(4,624)	—	—
Total operating expenses	179,381	222,559	264,199	273,133	327,141
Income (loss) from operations	59,041	(3,120)	(47,620)	(26,699)	(107,232)
Interest expense	(11,731)	(20,600)	(18,807)	(20,327)	(18,389)
Other (expense) income, net	(2,245)	(249)	(3,286)	2,844	(1,072)
Income (loss) before income taxes	45,065	(23,969)	(69,713)	(44,182)	(126,693)
Income tax expense	1,572	2,353	849	9,917	32,540
Net income (loss)	$ 43,493	$ (26,322)	$ (70,562)	$ (54,099)	$ (159,233)
Net income (loss) per share:					
Basic	$ 0.33	$ (0.21)	$ (0.58)	$ (0.45)	$ (1.36)
Diluted	$ 0.32	$ (0.21)	$ (0.58)	$ (0.45)	$ (1.36)
Shares used in per share calculations:					
Basic	132,471	126,564	122,677	119,994	117,387
Diluted	137,274	126,564	122,677	119,994	117,387

BALANCE SHEET:

(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	December 31, 2016	January 2, 2016
Cash, cash equivalents, and short-term marketable securities	$ 118,081	$ 128,675	$ 111,797	$ 116,860	$ 102,574
Total assets	$ 612,016	$ 623,687	$ 635,961	$ 766,883	$ 785,920
Long term liabilities	$ 184,538	$ 295,812	$ 334,621	$ 338,903	$ 369,223
Total liabilities	$ 284,357	$ 365,230	$ 418,268	$ 496,453	$ 480,400
Total stockholders' equity	$ 327,659	$ 258,457	$ 217,693	$ 270,430	$ 305,520

(1) Results for periods prior to 2018 are presented in accordance with ASC 605, which was in effect during those fiscal years.

(2) Our results for the year ended January 2, 2016 include the results associated with the acquisition of Silicon Image for the approximately 10-month period from March 11, 2015 through January 2, 2016.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview

Lattice Semiconductor Corporation and its subsidiaries (“Lattice,” the “Company,” “we,” “us,” or “our”) develop technologies that we monetize through differentiated programmable logic semiconductor products, system solutions, design services, and licenses.

This discussion and analysis of financial condition and results of operations should be read in conjunction with our consolidated financial statements and accompanying notes included in Item 8. "Financial Statements and Supplementary Data" of this report. Discussions of results for prior periods (fiscal 2018 compared to fiscal 2017) are incorporated by reference from our Annual Report on Form 10-K for the year ended December 29, 2018.

Critical Accounting Policies and Use of Estimates

Critical accounting policies are those that are both most important to the portrayal of a company's financial condition and results, and that require management's most difficult, subjective, and complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain.

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments affecting the amounts reported in our consolidated condensed financial statements and the accompanying notes. We base our estimates and judgments on historical experience, knowledge of current conditions, and our beliefs of what could occur in the future considering available information. While we believe that our estimates, assumptions, and judgments are reasonable, they are based on information available when made, and because of the uncertainty inherent in these matters, actual results may differ from these estimates under different assumptions or conditions. We evaluate our estimates and judgments on an ongoing basis.

We believe the following accounting policies and the related estimates are critical in the portrayal of our financial condition and results of operations, and require management's most difficult, subjective, or complex judgments. See "Note 1 - Nature of Operations and Significant Accounting Policies" under Part II, Item 8 of this report for further information on the significant accounting policies and methods used in the preparation of the consolidated financial statements.

Revenue from Contracts with Customers

We adopted ASC 606, *Revenue from Contracts with Customers,* effective on December 31, 2017, the first day of our 2018 fiscal year, using the modified retrospective method. We recognize revenue upon satisfaction of performance obligations when control of promised goods or services has been transferred to our customers. We measure revenue based on the amount of consideration we expect to be entitled to in exchange for products or services. For revenue recognized on both sales to distributors and related to HDMI royalties, the amount of consideration we expect to be entitled to receive is based on estimates that require assumptions and judgments relating to trends in recent and historical activity. See "Note 1 - Basis of Presentation and Significant Accounting Policies" under Part II, Item 8 of this report for further information on our recognition of revenue. Sales to most distributors are made under terms allowing certain price adjustments upon sale to their end customers and limited rights of return of our products held in their inventory. The revenue recognized based on estimated price adjustments and stock rotation reserves may be materially different from the actual consideration received if the actual distributor price adjustments and stock rotation returns differ significantly from the historical trends used in the estimates.

Inventories and Cost of Revenue

Inventories are recorded at the lower of average cost determined on a first-in-first-out basis or market. We establish provisions for inventory if it is obsolete or we hold quantities which are in excess of projected customer demand. The creation of such provisions results in a write-down of inventory to net realizable value and a charge to Cost of revenue.

Accounting for Income Taxes

Our provision for income tax is comprised of our current tax liability and changes in deferred tax assets and liabilities. Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts in the financial statements using enacted tax rates and laws that will be in effect when the difference is expected to reverse. Valuation allowances are provided to reduce deferred tax assets to an amount that in management’s judgment is more-likely-than-not to be recoverable against future taxable income. The determination of a valuation allowance and when it should be released requires complex judgment. In assessing the ability to realize deferred tax assets, we evaluate both positive and negative evidence that may exist and consider whether it is more-likely-than-not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible.

As part of our financial review process, we also assess the likelihood that our tax reporting positions will ultimately be sustained. To the extent it is determined it is more likely than not (a likelihood of more than 50 percent) that some portion or all of a tax reporting position will ultimately not be recognized and sustained, a provision for unrecognized tax benefit is provided by either reducing the applicable deferred tax asset or accruing an income tax liability. Our judgment regarding the sustainability of our tax reporting positions may change in the future due to changes in U.S. or international tax laws and other factors. These changes, if any, may require material adjustments to the related deferred tax assets or accrued income tax liabilities and an accompanying reduction or increase in income tax expense which may result in a corresponding increase or decrease in net income in the period when such determinations are made.

Results of Operations

Key elements of our Consolidated Statements of Operations, including as a percentage of revenue, are presented in the following table:

	Year Ended *					
(In thousands)	December 28, 2019		December 29, 2018		December 30, 2017	
Revenue	$ 404,093	100.0%	$ 398,799	100.0 %	$ 385,961	100.0 %
Gross margin	238,422	59.0	219,439	55.0	216,579	56.1
Research and development	78,617	19.5	82,449	20.7	103,357	26.8
Selling, general, and administrative	82,542	20.4	91,054	22.8	90,718	23.5
Amortization of acquired intangible assets	13,558	3.4	17,690	4.4	31,340	8.1
Restructuring charges	4,664	1.2	17,349	4.4	7,196	1.9
Impairment of acquired intangible assets	—	—	12,486	3.1	32,431	8.4
Acquisition related charges	—	—	1,531	0.4	3,781	1.0
Gain on sale of building	—	—	—	—	(4,624)	(1.2)
Income (loss) from operations	$ 59,041	14.6%	$ (3,120)	(0.8)%	$ (47,620)	(12.3)%

** Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

Revenue

	Year Ended *			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Revenue	$ 404,093	$ 398,799	$ 385,961	1.3%	3.3%

** Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

Revenue increased $5.3 million, or 1%, in fiscal 2019 compared to fiscal 2018, primarily driven by increased demand for products used in computing solutions and in 5G wireless infrastructure, along with increases in IP revenue, offset by broad market weakness.

Revenue by End Market

We sell our products globally in three primary groups of end markets: Communications and Computing, Industrial and Automotive, and Consumer. We also provide Intellectual Property licensing and services to these end markets.

We anticipate future revenue growth due to multiple market segment drivers, including:

- Communications and computing: 5G infrastructure deployments, cloud and enterprise servers, and client computing platforms,
- Industrial and automotive: industrial Internet of Things ("IoT"), factory automation, and automotive electronics,
- Consumer: smart home and prosumer.

We also generate revenue from the licensing of our Intellectual Property ("IP"), the collection of certain royalties, patent sales, the revenue related to our participation in consortia and standard-setting activities, and services. While these activities may be associated with multiple markets, Licensing and services revenue is reported as a separate end market as it has characteristics that differ from other categories, most notably a higher gross margin.

The end market data below is derived from data provided to us by our distributors and end customers. With a diverse base of customers who may manufacture end products spanning multiple end markets, the assignment of revenue to a specific end market requires the use of judgment. We also recognize certain revenue for which end customers and end markets are not yet known. We assign this revenue first to a specific end market using historical and anticipated usage of the specific products, if possible, and allocate to the end markets by product family based upon historical usage for each family if we cannot identify a specific end market.

The following are examples of end market applications for the fiscal years presented:

Communications and Computing	Industrial and Automotive	Consumer	Licensing and Services
Wireless	Security and Surveillance	Cameras	IP Royalties
Wireline	Machine Vision	Displays	Adopter Fees
Data Backhaul	Industrial Automation	Wearables	IP Licenses
Server Computing	Robotics	Televisions	Patent Sales
Client Computing	Automotive	Home Theater	
Data Storage	Drones		

The composition of our revenue by end market is presented in the following table:

	Year Ended *						% Change in	
(In thousands)	December 28, 2019		December 29, 2018		December 30, 2017		2019	2018
Communications and Computing	$ 155,821	38.6%	$ 123,195	30.9%	$ 113,019	29.3%	26.4 %	9.0 %
Industrial and Automotive	151,607	37.5	157,979	39.6	134,639	34.9	(4.0)	17.3
Consumer	75,120	18.6	99,294	24.9	108,844	28.2	(24.3)	(8.8)
Licensing and Services	21,545	5.3	18,331	4.6	29,459	7.6	17.5	(37.8)
Total revenue	$ 404,093	100.0%	$ 398,799	100.0%	$ 385,961	100.0%	1.3 %	3.3 %

** Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

Our revenue in the Communications and Computing end market increased 26% in fiscal 2019 compared to fiscal 2018 primarily due to demand increases for server and client computing products, as well as for products used in 5G wireless infrastructure.

For fiscal 2019 compared to fiscal 2018, Industrial and Automotive end market revenue decreased 4% primarily due to broad market weakness, primarily in Asia and Europe.

Consumer end market revenue decreased 24% in fiscal 2019 compared to fiscal 2018 primarily due to a greater focus on the Industrial and Automotive and the Communications and Computing end markets, and due to Asia market softness and broad market weakness.

Revenue from the Licensing and Services end market is subject to variability between periods. Revenue from the Licensing and Services end market increased by 18% in fiscal 2019 compared to fiscal 2018 predominantly due to increases in HDMI royalty revenue and certain patent and asset sales recognized in 2019.

We share HDMI royalties with the other HDMI Founders based on an allocation formula, which is reviewed periodically, generally every three years. In the fourth quarter of fiscal 2019, the Founders adopted a new agreement covering the five-year period beginning January 1, 2018. Revenues recorded during fiscal 2019 and 2018 based on our estimated share of the royalties were consistent with the amounts recognized under the new agreement.

Revenue by Geography

We assign revenue to geographies based on ship-to location of the end customer, where available, and based upon the location of the distributor to which the product was shipped otherwise.

The composition of our revenue by geography is presented in the following table:

	Year Ended *						% Change in	
(In thousands)	December 28, 2019		December 29, 2018		December 30, 2017		2019	2018
Asia	$ 298,765	73.9%	$ 298,119	74.8%	$ 277,638	71.9%	0.2%	7.4 %
Europe	47,392	11.7	45,546	11.4	44,547	11.5	4.1	2.2
Americas	57,936	14.4	55,134	13.8	63,776	16.6	5.1	(13.6)
Total revenue	$ 404,093	100.0%	$ 398,799	100.0%	$ 385,961	100.0%	1.3%	3.3 %

** Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

Revenue from End Customers

In the periods covered by this report, no end customer accounted for more than 10% of total revenue, and we expect to continue to sell our products to a broad base of end customers.

Revenue from Distributors

Distributors have historically accounted for a significant portion of our total revenue. Revenue attributable to our primary distributors is presented in the following table:

	Year Ended *		
	December 28, 2019	December 29, 2018	December 30, 2017
Weikeng Group	29.8%	25.4%	26.7%
Arrow Electronics Inc.	25.4	28.7	23.9
All others	26.9	28.8	26.4
All distributors **	82.1%	82.9%	77.1%

* *Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

** *During the first quarter of 2018, we updated our channel categories to group all forms of distribution into a single channel. Prior periods have been reclassified to match current period presentation.*

Gross margin

The composition of our gross margin, including as a percentage of revenue, is presented in the following table:

	Year Ended *		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Gross margin	$ 238,422	$ 219,439	$ 216,579
Percentage of revenue	59.0%	55.0%	56.1%
Product gross margin %	56.7%	52.9%	53.8%
Licensing and services gross margin %	100.0%	98.6%	84.0%

** Results for 2017 are presented in accordance with ASC 605, which was in effect during that fiscal year.*

Gross margin, as a percentage of revenue, increased 400 basis points from fiscal 2018 to fiscal 2019 due to product cost reductions, benefits from pricing optimization, as well as overall mix. The increase in gross margin was also attributable to the non-recurrence in 2019 of the $8.0 million in specific inventory charges taken in the second quarter of fiscal 2018 as a result of the discontinuation of our millimeter wave business.

Additionally, Gross margin was favorably impacted by the relative mix between product revenue and licensing and services revenue. Licensing and services accounted for 5.3% of total revenue in fiscal 2019 compared to 4.6% of total revenue in fiscal 2018. Because of its higher margin, the licensing and services portion of our overall revenue can have a disproportionate impact on Gross Margin.

Operating Expenses

Research and development expense

The composition of our Research and development expense, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Research and development	$ 78,617	$ 82,449	$ 103,357	(4.6)%	(20.2)%
Percentage of revenue	19.5%	20.7%	26.8%		

Research and development expense includes costs for compensation and benefits, stock compensation, engineering wafers, depreciation, licenses, and outside engineering services. These expenditures are for the design of new products, IP cores, processes, packaging, and software solutions.

The decrease in Research and development expense for fiscal 2019 compared to fiscal 2018 was due mainly to the cost reductions realized from the discontinuation of our millimeter wave business and other restructuring actions including the consolidation of leased facilities. These savings were predominantly from headcount related expenses and from reductions in both depreciation and rent expense, partially offset by increased stock compensation expense.

We believe that a continued commitment to Research and development is essential to maintaining product leadership and providing innovative new product offerings and, therefore, we expect to continue to make significant future investments in Research and development, particularly with expanded investment in software and solutions.

Selling, general, and administrative expense

The composition of our Selling, general, and administrative expense, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Selling, general, and administrative	$ 82,542	$ 91,054	$ 90,718	(9.3)%	0.4%
Percentage of revenue	20.4%	22.8%	23.5%		

Selling, general, and administrative expense includes costs for compensation and benefits related to selling, general, and administrative employees, commissions, depreciation, professional and outside services, trade show, and travel expenses.

The decrease in Selling, general, and administrative expense for fiscal 2019 compared to fiscal 2018 was due mainly to the cost reductions realized from restructuring actions including the consolidation of leased facilities. These savings were predominantly from headcount related expenses and from reductions in both depreciation and rent expense, partially offset by increased stock compensation expense. Additional savings in the current year period resulted from the non-recurrence of certain one-time costs related to our CEO transition in the prior year, including accelerated stock compensation, severance expense, and CEO search fees

Amortization of acquired intangible assets

The composition of our Amortization of acquired intangible assets, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Amortization of acquired intangible assets	$ 13,558	$ 17,690	$ 31,340	(23.4)%	(43.6)%
Percentage of revenue	3.4%	4.4%	8.1%		

The decrease in Amortization of acquired intangible assets for fiscal 2019 compared to fiscal 2018 was due to the end of the amortization period for certain intangibles and to the reduction of certain intangibles as a result of impairment charges in previous periods. The amortization period for most of our acquired intangible assets will end in the first quarter of fiscal 2020.

Restructuring charges

The composition of our Restructuring charges, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Restructuring charges	$ 4,664	$ 17,349	$ 7,196	(73.1)%	100+%
Percentage of revenue	1.2%	4.4%	1.9%		

Restructuring charges are comprised of expenses resulting from reductions in our worldwide workforce, consolidation of our facilities, removal of fixed assets from service, and cancellation of software contracts and engineering tools. Details of our restructuring plans and expenses incurred under them are more fully discussed in "Note 7 - Restructuring" to our Consolidated Financial Statements in Part II, Item 8 of this report.

The $12.7 million decrease in Restructuring charges in fiscal 2019 compared to fiscal 2018 was driven primarily by the higher headcount-related restructuring charges in the prior year periods, as compared to lower charges in the current period from ceasing use of certain leased facilities and from termination fees on the cancellation of certain contracts.

Impairment of acquired intangible assets

The composition of our Impairment of acquired intangible assets, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Impairment of acquired intangible assets	$ —	$ 12,486	$ 32,431	(100.0)%	(61.5)%
Percentage of revenue	—%	3.1%	8.4%		

During the third quarter of fiscal 2018, we concluded that a certain product line had limited future revenue potential due to a decline in customer demand for that product. We determined that this conclusion constituted an impairment indicator to the related specific developed technology intangible asset acquired in our acquisition of Silicon Image. Our assessment of the fair value of this intangible asset concluded that it had been fully impaired as of September 29, 2018, and we recorded an impairment charge of $0.6 million in the Consolidated Statements of Operations.

In the second quarter of 2018, we made the strategic decision to discontinue our millimeter wave business, which included certain wireless technology intangible assets. We determined that this action constituted an impairment indicator related to certain of the developed technology intangible assets acquired in our acquisition of Silicon Image. Our assessment of the fair value of these intangible assets concluded that they had been fully impaired as of June 30, 2018, and we recorded an impairment charge of $11.9 million in the Consolidated Statements of Operations.

Acquisition related charges

The composition of our Acquisition related charges, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Acquisition related charges	$ —	$ 1,531	$ 3,781	(100.0)%	(59.5)%
Percentage of revenue	—%	0.4%	1.0%		

Acquisition related charges include legal and professional fees directly related to acquisitions. We incurred no Acquisition related charges in fiscal 2019. For fiscal years 2018, and 2017, Acquisition related charges were entirely attributable to legal fees and outside services in connection with our proposed acquisition by Canyon Bridge Acquisition Company, Inc. Although the acquisition was terminated, we continued to incur certain residual legal fees directly related to this transaction.

Interest Expense

The composition of our Interest expense, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Interest expense	$ (11,731)	$ (20,600)	$ (18,807)	(43.1)%	9.5%
Percentage of revenue	(2.9)%	(5.2)%	(4.9)%		

Interest expense is primarily related to our long-term debt, which is further discussed under the Credit Arrangements heading in the Liquidity and Capital Resources section, below. This interest expense is comprised of contractual interest and amortization of original issue discount and debt issuance costs based on the effective interest method.

The decrease in Interest expense for fiscal 2019 compared to fiscal 2018 was largely driven by the significant reduction in the effective interest rate on our long-term debt under the terms of the new Credit Agreement, coupled with the reduction in the principal balance of our long-term debt as a result of the additional principal payments made in the current and previous periods.

Other expense, net

The composition of our Other expense, net, including as a percentage of revenue, is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Other expense, net	$ (2,245)	$ (249)	$ (3,286)	100+%	(92)%
Percentage of revenue	(0.6)%	(0.1)%	(0.9)%		

For fiscal 2019 compared to fiscal 2018, Other expense, net increased primarily due to the $2.2 million loss on re-financing charge taken in the second quarter of fiscal 2019 to write off the remaining unamortized balance of debt costs and original issue discount related to our refinanced long-term debt, partially offset by reduced miscellaneous expenses during the period.

Income taxes

The composition of our Income tax expense is presented in the following table:

	Year Ended			% Change in	
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017	2019	2018
Income tax expense	$ 1,572	$ 2,353	$ 849	(33.2)%	177.1%

Our Income tax expense is composed primarily of foreign income and withholding taxes, partially offset by benefits resulting from the release of uncertain tax positions due to statute of limitation expirations that occurred in the respective periods. The decrease in expense in fiscal 2019 as compared to fiscal 2018 primarily results from the release of uncertain tax positions due to statute of limitations expiration.

We are not currently paying U.S. federal income taxes and do not expect to pay such taxes until we fully utilize our tax net operating loss and credit carryforwards. We expect to pay a nominal amount of state income tax. We are paying foreign income taxes, which are primarily related to withholding taxes on income from foreign royalties, foreign sales, and the cost of operating offshore research and development, marketing, and sales subsidiaries. It is reasonably possible that during the next twelve months, we will establish a sustained level of profitability in the U.S. As a result, we may reverse a significant portion of the valuation allowance recorded against our U.S. deferred tax assets. The reversal would result in an income tax benefit for the quarterly and annual fiscal period in which we release the valuation allowance. We accrue interest and penalties related to uncertain tax positions in income tax expense on our Consolidated Statements of Operations. The inherent uncertainties related to the geographical distribution and relative level of profitability among various high and low tax jurisdictions make it difficult to estimate the impact of the global tax structure on our future effective tax rate.

Liquidity and Capital Resources

The following sections discuss material changes in our financial condition from the end of fiscal 2018, including the effects of changes in our Consolidated Balance Sheets, and the effects of our credit arrangements and contractual obligations on our liquidity and capital resources.

We have historically financed our operating and capital resource requirements through cash flows from operations, and from the issuance of long-term debt to fund acquisitions. Cash provided by or used in operating activities will fluctuate from period to period due to fluctuations in operating results, the timing and collection of accounts receivable, and required inventory levels, among other things.

We believe that our financial resources will be sufficient to meet our working capital needs through at least the next 12 months. As of December 28, 2019, we did not have significant long-term commitments for capital expenditures. In the future, we may continue to consider acquisition opportunities to further extend our product or technology portfolios and further expand our product offerings. In connection with funding capital expenditures, acquisitions, securing additional wafer supply, increasing our working capital, or other operations, we may seek to obtain equity or additional debt financing, or advance purchase payments or similar arrangements with wafer manufacturers. We may also seek to obtain equity or additional debt financing if we experience downturns or cyclical fluctuations in our business that are more severe or longer than we anticipated when determining our current working capital needs. On May 17, 2019, we entered into our Current Credit Agreement that is more fully discussed under the "Credit Arrangements" heading, below.

Liquidity

Cash and cash equivalents and Short-term marketable securities

(In thousands)	December 28, 2019	December 29, 2018	$ Change	%Change
Cash and cash equivalents	$ 118,081	$ 119,051	$ (970)	(0.8)%
Short-term marketable securities	—	9,624	(9,624)	(100.0)%
Total Cash and cash equivalents and Short-term marketable securities	$ 118,081	$ 128,675	$ (10,594)	(8.2)%

As of December 28, 2019, we had total Cash, cash equivalents, and short-term marketable securities of $118.1 million, of which approximately $57.4 million in Cash and cash equivalents was held by our foreign subsidiaries. During the first quarter of fiscal 2019, we liquidated our Short-term marketable securities. We manage our global cash requirements considering, among other things, (i) available funds among our subsidiaries through which we conduct business, (ii) the geographic location of our liquidity needs, and (iii) the cost to access international cash balances. The repatriation of non-US earnings may require us to withhold and pay foreign income tax on dividends. This should not result in our recording significant additional tax expense as we have accrued expense based on current withholding rates. As of December 28, 2019, we could access all cash held by our foreign subsidiaries without incurring significant additional expense.

The net decrease in Cash, cash equivalents, and short-term marketable securities of $10.6 million between December 29, 2018 and December 28, 2019 was primarily driven by cash flows from the following activities:

Operating activities — Cash provided by operating activities results from net income adjusted for certain non-cash items and changes in assets and liabilities. Cash provided by operating activities in fiscal 2019 was $124.1 million, an increase of $72.6 million from the $51.5 million of cash provided by operating activities in fiscal 2018. This increase was driven by both improved operating performance, which contributed $64.5 million to the increase, and by changes in working capital, which contributed $8.1 million to the increase, primarily due to the receipt of royalties distributed by the HDMI agent with the adoption of the new sharing agreement, partially offset by changes in Operating lease liabilities. We are using this increased cash provided by operating activities to invest in our operations.

Investing activities — Investing cash flows consist primarily of transactions related to short-term marketable securities, capital expenditures, and payments for software licenses. The $15.5 million of cash used by investing activities in fiscal 2019 was $5.6 million less than the $21.1 million used by investing activities in fiscal 2018 primarily due to a $14.3 million change in the net cash flows for short-term marketable securities offset by $8.7 million more cash used for capital expenditures and software licenses. In fiscal 2018, we made $4.6 million in net purchases of short-term marketable securities, whereas we liquidated all short-term investments in 2019 for $9.7 million. The total $25.2 million of cash used in fiscal 2019 for capital expenditures and payments for software licenses was $8.7 million greater than the $16.5 million used in fiscal 2018 due primarily to increased investments in test equipment and software enhancements.

Financing activities — Financing cash flows consist primarily of payments on and refinancing of our long-term debt, proceeds from the exercise of options to acquire common stock, and tax payments related to the net share settlement of restricted stock units. In May 2019, we entered into our Current Credit Agreement and received $206.5 million, which we used to pay off the $204.4 million outstanding balance on our previous loan. In connection with the Current Credit Agreement, we paid $2.1 million in debt issuance costs. During fiscal 2019, we made a total of $117.0 million in voluntary and required principal payments on our long-term debt. Employee exercises of stock options partially offset by tax withholdings on vesting of RSUs provided net cash flows of $7.1 million in fiscal 2019, which is a decrease of approximately $19.8 million from the $26.9 million provided in fiscal 2018.

Accounts receivable, net

(In thousands)	December 28, 2019		December 29, 2018		$Change		%Change
Accounts receivable, net	$	64,917	$	60,890	$	4,027	6.6%
Days sales outstanding - Overall		59		58		1	

Accounts receivable, net as of December 28, 2019 increased by approximately $4.0 million, or 7%, compared to December 29, 2018. This resulted primarily from the timing of shipments in December 2019 compared to December 2018.

Inventories

(In thousands)	December 28, 2019		December 29, 2018		$Change		%Change
Inventories	$	54,980	$	67,096	$	(12,116)	(18.1)%
Days of inventory on hand		123		147		(24)	

Inventories as of December 28, 2019 decreased $12.1 million, or approximately 18%, compared to December 29, 2018 primarily due to our improved management of inventory levels, as well as the ramp down of mature and aging products.

The Days of inventory on hand ratio compares the inventory balance at the end of a quarter to the cost of sales in that quarter. Our Days of inventory on hand decreased to 123 days at December 28, 2019 from 147 days at December 29, 2018. This decrease resulted from improved inventory management.

Credit Arrangements

On May 17, 2019, we entered into our new Credit Agreement with Wells Fargo Bank, National Association, as administrative agent, and other lenders. The details of this new arrangement are more fully described in "Note 6 - Long-Term Debt" in the accompanying Notes to Consolidated Financial Statements.

As of December 28, 2019, we had no significant long-term purchase commitments for capital expenditures or existing used or unused credit arrangements beyond the secured revolving loan facility described above.

Contractual Cash Obligations

The following table summarizes our contractual cash obligations at December 28, 2019:

Fiscal year *(In thousands)*	Operating leases (1)		Long-term Debt (2)	
2020	$	6,445	$	26,335
2021		5,485		21,337
2022		4,468		20,799
2023		4,596		20,261
2024		4,716		74,658
Thereafter		6,705		—
	$	32,415	$	163,390

(1) Certain of our facilities and equipment are leased under operating leases, which expire at various times through 2027.

(2) Cash payments due for long-term debt include estimated interest payments, which are based on outstanding principal amounts, currently effective interest rates as of December 28, 2019, timing of scheduled payments and the debt term. Our 53-week fiscal 2020 will result in five quarterly installments being paid during that fiscal year. See Liquidity section of Item 7 for further discussion pertaining to our Credit Arrangements.

The table above does not include amounts related to uncertain tax positions because we cannot reliably estimate the timing of the settlement of such liabilities.

Our significant operating leases are for our facilities in Hillsboro and Portland, Oregon; San Jose, California; Muntinlupa City, Philippines; and Shanghai, China.

In the first quarter of 2019, we relocated our corporate headquarters to our facility in Hillsboro, Oregon, which is leased until November 2022. Annual rental costs are estimated at $0.6 million with 3% annual increases.

The lease for our former office space in Portland, Oregon expires in March 2025. Annual rental costs are estimated at $0.7 million with average annual increases of approximately 5%. Under a previously approved restructuring plan, we fully vacated the space in Portland, Oregon in early 2019 and subleased the vacated space.

Our lease in San Jose, California expires September 2026 with total annual rental costs estimated to be $2.4 million and annual increases of approximately 3%. Under a previously approved restructuring plan, we vacated approximately 50% or our facility in San Jose, California in the fourth quarter of fiscal 2018 and intend to sublease the vacated space.

Two of our leases in Muntinlupa City, Philippines expire in May 2025 and June 2025, with total annual rental costs estimated to be $0.7 million and annual increases of approximately 5%. Our lease in Shanghai expires in May 2021, with total annual rental costs estimated to be $1.8 million.

New Accounting Pronouncements

The information contained under the heading "New Accounting Pronouncements" in Note 1 - Nature of Operations and Significant Accounting Policies to our Consolidated Financial Statements in Part II, Item 8 is incorporated by reference into this Part II, Item 7.

Off-Balance Sheet Arrangements

As of December 28, 2019, we did not have any off-balance sheet arrangements of the type described by Item 303(a)(4) of SEC Regulation S-K.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in foreign currency exchange rates and interest rates. We assess these risks on a regular basis and have established policies that are designed to protect against the adverse effects of these and other potential exposures.

Foreign Currency Exchange Rate Risk

While our revenues and the majority of our expenses are denominated in U.S. dollars, we collect an annual Japanese consumption tax refund in yen, and as a result of having various international subsidiary and branch operations, our financial position and results of operations are subject to foreign currency exchange rate risk.

We mitigate the resulting foreign currency exchange rate exposure by entering into foreign currency forward exchange contracts, details of which are presented in the following table:

	December 28, 2019	December 29, 2018
Total cost of contracts for Japanese yen (thousands)	$ 1,894	$ 1,955
Number of contracts	2	2
Settlement month	June 2020	June 2019

Although these hedges mitigate our foreign currency exchange rate exposure from an economic perspective, they were not designated as "effective" hedges under U.S. GAAP and as such are adjusted to fair value through Other expense, net. We do not engage in speculative trading in any financial or capital market.

The net fair value of these contracts was favorable by approximately $0.1 million at both December 28, 2019 and December 29, 2018. A hypothetical 10% unfavorable exchange rate change in the yen against the U.S. dollar would have resulted in an unfavorable change in net fair value of approximately $0.2 million at both December 28, 2019 and December 29, 2018. Changes in fair value resulting from foreign exchange rate fluctuations would be substantially offset by the change in value of the underlying hedged transactions.

Interest Rate Risk

We are exposed to interest rate risk related to our indebtedness. At December 28, 2019, we had $148.1 million outstanding under our Credit Agreement. A hypothetical increase in the one-month LIBOR by 1% (100 basis points) would increase our future interest expense by approximately $0.4 million per quarter.

Item 8. Financial Statements and Supplementary Data

Index to Consolidated Financial Statements:

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended		
(In thousands, except per share data)	December 28, 2019	December 29, 2018	December 30, 2017
Revenue	$ 404,093	$ 398,799	$ 385,961
Cost of revenue	165,671	179,360	169,382
Gross margin	238,422	219,439	216,579
Operating expenses:			
Research and development	78,617	82,449	103,357
Selling, general, and administrative	82,542	91,054	90,718
Amortization of acquired intangible assets	13,558	17,690	31,340
Restructuring charges	4,664	17,349	7,196
Impairment of acquired intangible assets	—	12,486	32,431
Acquisition related charges	—	1,531	3,781
Gain on sale of building	—	—	(4,624)
Total operating expenses	179,381	222,559	264,199
Income (loss) from operations	59,041	(3,120)	(47,620)
Interest expense	(11,731)	(20,600)	(18,807)
Other expense, net	(2,245)	(249)	(3,286)
Income (loss) before income taxes	45,065	(23,969)	(69,713)
Income tax expense	1,572	2,353	849
Net income (loss)	$ 43,493	$ (26,322)	$ (70,562)
Net income (loss) per share:			
Basic	$ 0.33	$ (0.21)	$ (0.58)
Diluted	$ 0.32	$ (0.21)	$ (0.58)
Shares used in per share calculations:			
Basic	132,471	126,564	122,677
Diluted	137,274	126,564	122,677

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(In thousands)	Year Ended December 28, 2019	Year Ended December 29, 2018	Year Ended December 30, 2017
Net income (loss)	$ 43,493	$ (26,322)	$ (70,562)
Other comprehensive income (loss):			
Unrealized gain (loss) related to marketable securities, net of tax	42	41	(73)
Reclassification adjustment for (gains) losses related to marketable securities included in Other expense, net of tax	(53)	(18)	252
Translation adjustment, net of tax	341	(1,271)	2,620
Change in actuarial valuation of defined benefit pension	(602)	369	(95)
Comprehensive income (loss)	$ 43,221	$ (27,201)	$ (67,858)

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED BALANCE SHEETS

(In thousands, except share and par value data)	December 28, 2019	December 29, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 118,081	$ 119,051
Short-term marketable securities	—	9,624
Accounts receivable, net of allowance for doubtful accounts	64,917	60,890
Inventories	54,980	67,096
Prepaid expenses and other current assets	24,452	27,762
Total current assets	262,430	284,423
Property and equipment, net	39,230	34,883
Operating lease right-of-use assets	23,591	—
Intangible assets, net	6,977	21,325
Goodwill	267,514	267,514
Deferred income taxes	478	215
Other long-term assets	11,796	15,327
Total assets	$ 612,016	$ 623,687
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses (includes restructuring)	$ 60,255	$ 51,763
Accrued payroll obligations	13,404	9,365
Current portion of long-term debt	21,474	8,290
Current portion of operating lease liabilities	4,686	—
Total current liabilities	99,819	69,418
Long-term debt, net of current portion	125,072	251,357
Long-term operating lease liabilities, net of current portion	21,438	—
Other long-term liabilities	38,028	44,455
Total liabilities	284,357	365,230
Commitments and contingencies (Notes 8 and 13)	—	—
Stockholders' equity:		
Preferred stock, $.01 par value, 10,000,000 shares authorized, none issued and outstanding	—	—
Common stock, $.01 par value, 300,000,000 shares authorized; 133,883,000 shares issued and outstanding as of December 28, 2019 and 129,728,000 shares issued and outstanding as of December 29, 2018	1,339	1,297
Additional paid-in capital	762,213	736,274
Accumulated deficit	(433,290)	(476,783)
Accumulated other comprehensive loss	(2,603)	(2,331)
Total stockholders' equity	327,659	258,457
Total liabilities and stockholders' equity	$ 612,016	$ 623,687

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Cash flows from operating activities:			
Net income (loss)	$ 43,493	$ (26,322)	$ (70,562)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	33,056	39,261	57,861
Impairment of acquired intangible assets	—	12,486	32,431
Stock-based compensation expense	18,899	13,646	12,543
Reduction in the carrying amount of right-of-use assets	5,797	—	—
Loss on re-financing of long-term debt	2,235	—	—
Amortization of debt issuance costs and discount	1,659	2,230	1,982
Impairment of operating lease right-of-use asset (recorded in Restructuring charges)	977	—	—
Gain on sale of building	—	—	(4,624)
Loss on sale of assets and business units	—	—	1,496
Other non-cash adjustments	(374)	(79)	1,707
Changes in assets and liabilities:			
Accounts receivable, net	(4,027)	(3,978)	44,613
Inventories	12,116	13,177	(902)
Prepaid expenses and other assets	3,740	(11,667)	889
Accounts payable and accrued expenses (includes restructuring)	9,261	13,325	(23,588)
Accrued payroll obligations	4,039	(1,051)	726
Operating lease liabilities, current and long-term portions	(6,896)	—	—
Income taxes payable	162	498	(556)
Deferred income and allowances on sales to distributors	—	—	(15,007)
Deferred licensing and services revenue	—	(68)	(495)
Net cash provided by operating activities	124,137	51,458	38,514
Cash flows from investing activities:			
Proceeds from sales of and maturities of short-term marketable securities	9,655	5,000	12,689
Purchases of marketable securities	—	(9,603)	(7,420)
Proceeds from sale of building	—	—	7,895
Cash paid for costs of sale of building	—	—	(1,004)
Capital expenditures	(15,590)	(8,384)	(12,855)
Proceeds from sale of assets and business units, net of cash sold	—	—	967
Repayment received on short-term loan to cost-method investee	—	—	2,000
Short-term loan to cost-method investee	—	—	(2,000)
Cash paid for software licenses	(9,601)	(8,123)	(8,532)
Net cash used in investing activities	$ (15,536)	$ (21,110)	$ (8,260)

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS (continued)

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Cash flows from financing activities:			
Restricted stock unit tax withholdings	$ (10,084)	$ (2,370)	$ (3,267)
Proceeds from issuance of common stock	17,166	29,288	6,085
Proceeds from issuance of long-term debt	206,500	—	—
Original issue discount and debt issuance costs	(2,086)	—	—
Repayment of debt	(321,408)	(43,759)	(35,429)
Net cash used in financing activities	(109,912)	(16,841)	(32,611)
Effect of exchange rate change on cash	341	(1,271)	2,620
Net (decrease) increase in cash and cash equivalents	(970)	12,236	263
Beginning cash and cash equivalents	119,051	106,815	106,552
Ending cash and cash equivalents	$ 118,081	$ 119,051	$ 106,815

Supplemental disclosure of cash flow information and non-cash investing and financing activities:

	December 28, 2019	December 29, 2018	December 30, 2017
Interest paid	$ 10,995	$ 18,607	$ 20,649
Operating lease payments	$ 8,425	$ —	$ —
Income taxes paid, net of refunds	$ 3,393	$ 3,054	$ 2,387
Accrued purchases of property and equipment	$ 826	$ 110	$ 588
Operating lease right-of-use assets obtained in exchange for lease obligations	$ 747	$ —	$ —
Note receivable resulting from sale of assets and business units	$ —	$ —	$ 3,050

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands, except par value data)	Common Stock ($.01 par value) Shares	Common Stock ($.01 par value) Amount	Additional Paid-in capital	Accumulated deficit	Accumulated other comprehensive loss	Total
Balances, December 31, 2016	121,645	$ 1,216	$ 680,315	$ (406,945)	$ (4,156)	$ 270,430
Net loss for 2017	—	—	—	(70,562)	—	(70,562)
Unrealized loss related to marketable securities, net of tax	—	—	—	—	(73)	(73)
Recognized gain on redemption of marketable securities, previously unrealized	—	—	—	—	252	252
Translation adjustments, net of tax	—	—	—	—	2,620	2,620
Common stock issued in connection with the exercise of stock options, ESPP and vested RSUs, net of shares withheld for employee taxes	2,250	23	2,795	—	—	2,818
Stock-based compensation expense related to stock options, ESPP and RSUs (1)	—	—	12,658	—	—	12,658
Defined benefit pension, net of actuarial valuation adjustments	—	—	—	—	(95)	(95)
Accounting method transition adjustment (2)	—	—	—	(355)	—	(355)
Balances, December 30, 2017	123,895	$ 1,239	$ 695,768	$ (477,862)	$ (1,452)	$ 217,693
Net loss for 2018	—	—	—	(26,322)	—	(26,322)
Unrealized gain related to marketable securities, net of tax	—	—	—	—	41	41
Recognized loss on redemption of marketable securities, previously unrealized	—	—	—	—	(18)	(18)
Translation adjustments, net of tax	—	—	—	—	(1,271)	(1,271)
Common stock issued in connection with the exercise of stock options, ESPP and vested RSUs, net of shares withheld for employee taxes	5,833	58	26,860	—	—	26,918
Stock-based compensation expense related to stock options, ESPP and RSUs	—	—	13,646	—	—	13,646
Defined benefit pension, net of actuarial valuation adjustments	—	—	—	—	369	369
Accounting method transition adjustment (3)	—	—	—	27,401	—	27,401
Balances, December 29, 2018	129,728	$ 1,297	$ 736,274	$ (476,783)	$ (2,331)	$ 258,457
Net income for 2019	—	—	—	43,493	—	43,493
Unrealized gain related to marketable securities, net of tax	—	—	—	—	42	42
Recognized gain on redemption of marketable securities, previously unrealized	—	—	—	—	(53)	(53)
Translation adjustments, net of tax	—	—	—	—	341	341
Common stock issued in connection with the exercise of stock options, ESPP and vested RSUs, net of shares withheld for employee taxes	4,155	42	7,040	—	—	7,082
Stock-based compensation expense related to stock options, ESPP and RSUs	—	—	18,899	—	—	18,899
Defined benefit pension, net of actuarial valuation adjustments	—	—	—	—	(602)	(602)
Balances, December 28, 2019	133,883	$ 1,339	$ 762,213	$ (433,290)	$ (2,603)	$ 327,659

(1) In the third quarter of fiscal 2017, in relation to the sale of 100% of the equity of our Hyderabad, India subsidiary and certain assets related to our Simplay Labs testing and certification business, certain stock compensation was accelerated due to a change of control agreement. As a result of this acceleration, the equity effect of stock compensation shown above includes approximately $0.1 million that was charged to restructuring expense as part of the June 2017 Plan (see "Note 7 - Restructuring").

(2) During the first quarter of fiscal 2017, we early adopted ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory*. This guidance is required to be applied on a modified retrospective basis through a cumulative-effect adjustment to the balance sheet as of the beginning of the fiscal year of adoption. As a result of this adoption, we recorded a nominal amount to Accumulated deficit, as detailed in the table above.

(3) As of the beginning of fiscal 2018, we adopted ASC 606, *Revenue from Contracts With Customers,* using the modified retrospective transition method. As a result of this adoption, we recorded a cumulative-effect adjustment to Accumulated deficit, as shown in the table above.

The accompanying notes are an integral part of these Consolidated Financial Statements

LATTICE SEMICONDUCTOR CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1 - Basis of Presentation and Significant Accounting Policies

Basis of Presentation and Use of Estimates

The accompanying Consolidated Financial Statements have been prepared in accordance with U.S. Generally Accepted Accounting Principles ("U.S. GAAP"). They include the accounts of Lattice and its subsidiaries after the elimination of all intercompany balances and transactions.

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments affecting the amounts reported in our consolidated condensed financial statements and the accompanying notes. The actual results that we experience may differ materially from our estimates.

Fiscal Reporting Periods

We report based on a 52 or 53-week fiscal year ending on the Saturday closest to December 31. Our fiscal 2019, 2018, and 2017 were 52-week years that ended December 28, 2019, December 29, 2018, and December 30, 2017 respectively. Our fiscal 2020 will be a 53-week year and will end on January 2, 2021. All references to quarterly or annual financial results are references to the results for the relevant fiscal period.

Concentrations of Risk

Potential exposure to concentrations of risk may impact revenue, accounts receivable, and supply of wafers for our new products.

In the periods covered by this report, no end customer accounted for more than 10% of total revenue.

Distributors have historically accounted for a significant portion of our total revenue. Our two largest distributor groups, the Weikeng Group ("Weikeng") and Arrow Electronics, Inc. ("Arrow"), each account for substantial portions of our total revenue and our net accounts receivable. Revenue attributable to distributors as a percentage of total revenue is presented in the following table:

	Year Ended		
	December 28, 2019	December 29, 2018	December 30, 2017
Weikeng Group	30%	25%	27%
Arrow Electronics Inc.	25	29	24
All others	27	29	26
Revenue attributable to distributors*	82%	83%	77%

* *During the first quarter of 2018, we updated our channel categories to group all forms of distribution into a single channel. Prior periods have been reclassified to match the current period presentation.*

At December 28, 2019 and December 29, 2018, Arrow accounted for 40% and 41%, respectively, and Weikeng accounted for 38% and 23%, respectively, of net accounts receivable. No other distributor group or end customer accounted for more than 10% of net accounts receivable at these dates.

Concentration of credit risk with respect to accounts receivable is mitigated by our credit and collection process including active management of collections, credit limits, routine credit evaluations for essentially all customers, and secure transactions with letters of credit or advance payments where appropriate. We regularly review our allowance for doubtful accounts and the aging of our accounts receivable.

We rely on a limited number of foundries for our wafer purchases. We seek to mitigate the concentration of supply risk by establishing, maintaining and managing multiple foundry relationships; however, certain of our products are sourced from a single foundry and changing from one foundry to another can have a significant cost, or create delays in production or shipments, among other factors.

Cash and Cash Equivalents

We consider all investments that are readily convertible into cash and that have original maturities of three months or less to be cash equivalents. Cash equivalents consist primarily of highly liquid investments in time deposits or money market accounts and are carried at cost, which approximates fair value. Deposits with financial institutions at times exceed Federal Deposit Insurance Corporation insurance limits.

Foreign Exchange and Translation of Foreign Currencies

While our revenues and the majority of our expenses are denominated in U.S. dollars, we also have international subsidiaries and branch operations that conduct some transactions in foreign currencies. Gains or losses from foreign exchange rate fluctuations on balances denominated in foreign currencies are reflected in Other expense, net.

We translate accounts denominated in foreign currencies in accordance with ASC 830, "*Foreign Currency Matters*," using the current rate method under which asset and liability accounts are translated at the current rate, while stockholders' equity accounts are translated at the appropriate historical rates, and revenue and expense accounts are translated at average monthly exchange rates. Translation adjustments related to the consolidation of foreign subsidiary financial statements are reflected in Accumulated other comprehensive loss in Stockholders' equity (See our Consolidated Statements of Stockholders' Equity).

Revenue Recognition

We adopted ASC 606 effective on December 31, 2017, the first day of our 2018 fiscal year, using the modified retrospective method. Under this transition method, we applied the provisions of the new standard to all open customer contracts as of the date of adoption and recorded the cumulative effect of adoption to Accumulated deficit on December 31, 2017. We have not restated any prior financial statements presented. Under the guidance in effect prior to the adoption of ASC 606, we deferred the recognition of revenue and the cost of revenue from certain sales until the distributors of our products reported that they had sold the products to their customers, at which point the selling price of these products became fixed and determinable, and certain licensing revenues were not recognizable under previous GAAP due to the fixed and determinable revenue recognition criteria not being met.

Under ASC 606, we recognize revenue when we satisfy performance obligations as evidenced by the transfer of control of our products or services to customers. We consider customer purchase orders, which in some cases are governed by master sales agreements, to be the contracts with a customer. For sales to distributors, we have concluded that our contracts are with the distributor, rather than with the distributor's end customer, as we hold a contract bearing enforceable rights and obligations only with the distributor. The majority of our revenue is derived from product sales. For each contract, we consider our promise to transfer each distinct product to be the identified performance obligations. Revenue for product sales is recognized at the time of product shipment, as determined by the agreed upon contract shipping terms.

Our Licensing and services revenue is comprised of revenue from our intellectual property ("IP") core licensing activity, patent monetization activities, design services, and royalty and adopter fee revenue from our standards activities. These activities are complementary to our product sales and help us to monetize our IP associated with our technology and standards. We consider licensing arrangements with our customers and agreements with the standards consortia of which we are a member to be the contract. For each contract, we consider the promise to deliver a license that grants the customer the right to use the IP, as well as any professional services provided under the contract, as distinct performance obligations. We recognize license revenue at the point in time that control of the license transfers to the customer, which is generally upon delivery, or as usage occurs.

We measure revenue based on the amount of consideration we expect to be entitled to in exchange for products or services. Variable consideration is estimated and reflected as an adjustment to the transaction price. We determine variable consideration, which consists primarily of various sales price concessions, by estimating the most likely amount of consideration we expect to receive from the customer based on an analysis of historical ship and debit claims, at the distributor and product level, over a period of time considered adequate to account for current pricing and business trends. Sales rebates earned by customers are offset against their receivable balances. Rebates earned by customers when they do not have outstanding receivable balances are recorded within other accrued liabilities. The impacts of distributor sales price reductions resulting from price protection agreements are also estimated based on historical analysis of such activity and are reflected as a reduction in net revenue. Our HDMI and MHL standards revenue, as well as certain IP licenses, include variable consideration in the form of usage-based royalties.

We generally provide an assurance warranty that our products will substantially conform to the published specifications for twelve months from the date of shipment. In some cases, the warranty period may be longer than twelve months. We do not separately price or sell the assurance warranty. Our liability is limited to either a credit equal to the purchase price or replacement of the defective part. Under the practical expedient provided by ASC 340, we generally expense sales commissions when incurred because the amortization period would be less than one year. We record these costs within Selling, general, and administrative expenses. Substantially all of our performance obligations are satisfied within twelve months. Accordingly, under the optional exemption provided by ASC 606, we do not disclose revenues allocated to future performance obligations of partially completed contracts.

Inventories and Cost of Revenue

Inventories are recorded at the lower of average cost determined on a first-in-first-out basis or market. We establish provisions for inventory if it is obsolete or we hold quantities which are in excess of projected customer demand. The creation of such provisions results in a write-down of inventory to net realizable value and a charge to Cost of revenue. Shipping and handling costs are included in Cost of revenue in our Consolidated Statements of Operations.

Property and Equipment

Property and equipment are stated at cost. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the related assets, generally three to five years for equipment and software, one to three years for tooling, and thirty years for buildings and building space. Leasehold improvements are amortized over the shorter of the non-cancelable lease term or the estimated useful life of the assets. We capitalize costs for the fabrication of masks used by our foundry partners to manufacture our products. The capitalized mask costs begin depreciating to Cost of revenue once the products go into production, and depreciation is straight-lined over a three-year period, which is the expected useful life of the mask. Upon disposal of property and equipment, the accounts are relieved of the costs and related accumulated depreciation and amortization, and resulting gains or losses are reflected in the Consolidated Statements of Operations for recognized gains and losses, or in the Consolidated Balance Sheets for deferred gains and losses. Repair and maintenance costs are expensed as incurred.

Impairment of Long-Lived Assets

Long-lived assets, which consist primarily of property and equipment and amortizable intangible assets, are carried on our financial statements based on their cost less accumulated depreciation or amortization. We monitor the carrying value of our long-lived assets for potential impairment and test the recoverability of such assets whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. These events or changes in circumstances, including management decisions pertaining to such assets, are referred to as impairment indicators. If an impairment indicator occurs, we perform a test of recoverability by comparing the carrying value of the asset group to its undiscounted expected future cash flows. If the carrying values are in excess of undiscounted expected future cash flows, we measure any impairment by comparing the fair value of the asset group to its carrying value. Fair value is generally determined by considering (i) internally developed discounted projected cash flow analysis of the asset group; (ii) actual third-party valuations; and/or (iii) information available regarding the current market for similar asset groups. If the fair value of the asset group is determined to be less than the carrying amount of the asset group, an impairment in the amount of the difference is recorded in the period that the impairment indicator occurs and is included in our Consolidated Statements of Operations. Estimating future cash flows requires significant judgment and projections may vary from the cash flows eventually realized, which could impact our ability to accurately assess whether an asset has been impaired. There has been no occurrence of events to date that would trigger an impairment analysis of property and equipment. The results of our assessments of amortizable intangible assets are detailed in "Note 9 - Intangible Assets."

Valuation of Goodwill

Goodwill is an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized. Goodwill is not amortized, but is instead tested for impairment annually during the fourth quarter and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable. When evaluating whether goodwill is impaired, we make a qualitative assessment to determine if it is more likely than not that the reporting unit's fair value is less than the carrying amount. If the qualitative assessment determines that it is more likely than not that the fair value is less than the carrying amount, the fair value of the reporting unit is compared with its carrying value (including goodwill). If the fair value of the reporting unit is less than its carrying value, then goodwill impairment exists for the reporting unit. The impairment loss, if any, is recognized for the amount by which the carrying value exceeds the fair value. If the fair value of the reporting unit exceeds its carrying value, no further impairment analysis is needed. For purposes of testing goodwill for impairment, we currently operate as a single reporting unit: the core Lattice ("Core") business, which includes intellectual property and semiconductor devices. We do not expect goodwill impairment to be tax deductible for income tax purposes.

We determined that the strategic decision to discontinue our millimeter wave business in the second quarter of 2018 constituted a triggering event related to goodwill, and we evaluated our goodwill balance as of June 30, 2018. We concluded that goodwill was not impaired, and no impairment charges relating to goodwill were recorded for fiscal 2018. No impairment charges relating to goodwill were recorded for either fiscal 2019 or 2017 as no indicators of impairment were present.

Leases

We adopted ASC 842, "*Leases*," effective on December 30, 2018, the first day of our 2019 fiscal year, using the modified retrospective transition method. The new standard requires lessees to record assets and liabilities on the balance sheet for all leases with terms longer than 12 months. We elected the "package of practical expedients" that would allow us to carryforward our historical lease classifications, not reassess historical contracts to determine if they contain leases, and not reassess the initial direct costs for any existing leases. We also elected the practical expedient to not separate lease and non-lease components, which we have applied to all asset classes. Concurrent with our adoption of Topic 842, we have early adopted ASU 2019-01, *Leases (Topic 842): Codification Improvements,* which grants disclosure relief for interim periods during the year in which a company adopted Topic 842.

Right-of-use ("ROU") assets represent our right to use an underlying asset for the lease term, and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized on the commencement date of the lease based on the present value of lease payments over the lease term. As most of our leases do not provide an implicit rate, we determine the present value of lease payments using an incremental borrowing rate based on information from our commercial bank for an equivalent borrowing and term in the respective region as of the lease commencement date. At inception, we determine if an arrangement is a lease, if it includes options to extend or terminate the lease, and if it is reasonably certain that we will exercise the options. Lease cost, representing lease payments over the term of the lease and any capitalizable direct costs less any incentives received, is recognized on a straight-line basis over the lease term as lease expense. We have operating leases for corporate offices, sales offices, research and development facilities, storage facilities, and a data center.

The exercise of lease renewal options is at our sole discretion. When deemed reasonably certain of exercise, the renewal options are included in the determination of the lease term and lease payment obligation, respectively. For our leases that contain variable lease payments, residual value guarantees, or restrictive covenants, we have concluded that these inputs are not significant to the determination of the ROU asset and lease liability.

Research and Development

Research and development expenses include costs for compensation and benefits, engineering wafers, depreciation, licenses, and outside engineering services. These expenditures are for the design of new products, intellectual property cores, processes, packaging, and software solutions. Research and development costs are expensed as incurred.

Restructuring Charges

Expenses associated with exit or disposal activities are recognized when incurred under ASC 420, "*Exit or Disposal Cost Obligations*," for everything except severance expenses and vacated leased facilities. Because we have a history of paying severance benefits, the cost of severance benefits associated with a restructuring plan is recorded when such costs are probable and the amount can be reasonably estimated in accordance with ASC 712, "*Compensation - Nonretirement Postemployment Benefits.*" When leased facilities are vacated, the amount of any ROU asset impairment is calculated in accordance with ASC 360, "*Property, Plant, and Equipment*" and recorded as a part of restructuring charges. Expenses from other exit or disposal activities, including the cancellation of software contracts and engineering tools or the abandonment of long-lived assets, is recorded as a part of restructuring charges.

Accounting for Income Taxes

Our provision for income tax is comprised of our current tax liability and changes in deferred tax assets and liabilities. Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts in the financial statements using enacted tax rates and laws that will be in effect when the difference is expected to reverse. Valuation allowances are provided to reduce deferred tax assets to an amount that in management's judgment is more-likely-than-not to be recoverable against future taxable income. The determination of a valuation allowance and when it should be released requires complex judgment.

In assessing the ability to realize deferred tax assets, we evaluate both positive and negative evidence that may exist and consider whether it is more-likely-than-not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Any adjustment to the net deferred tax asset valuation allowance is recorded in the Consolidated Statements of Operations for the period that the adjustment is determined to be required.

Our income tax calculations are based on application of the respective U.S. federal, state or foreign tax law**.** Our tax filings, however, are subject to audit by the relevant tax authorities. Accordingly, we recognize tax liabilities based upon our estimate of whether, and the extent to which, additional taxes will be due when such estimates are more-likely-than-not to be sustained. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained. To the extent the final tax liabilities are different than the amounts originally accrued, the increases or decreases as well as any interest or penalties are recorded as income tax expense or benefit in the Consolidated Statements of Operations.

Stock-Based Compensation

We use the Black-Scholes option pricing model to estimate the fair value of substantially all share-based awards consistent with the provisions of ASC 718, "*Compensation - Stock Compensation*." We have also granted stock options and RSUs with a market condition to certain executives. We determined and fixed the fair value of the awards with a market condition using a lattice-based option-pricing model. The valuation of these awards incorporated a Monte-Carlo simulation, and considered the likelihood that we would achieve the market condition. The awards with a market condition generally have a two- or three-year vesting period and vest between 0% and 250% of the target amount, based on the Company's relative Total Shareholder Return ("TSR") when compared to the TSR of a component of companies of the PHLX Semiconductor Sector Index over the measurement period. TSR is a measure of stock price appreciation plus dividends paid, if any, in the performance period. We have also granted RSUs with a performance condition to our President and Chief Executive Officer, which will vest and become payable based upon the Company's generating specified "adjusted" EBITDA levels on a trailing four-quarter basis in any two consecutive trailing four-quarter periods. We assess the probability of achieving the performance condition on a quarterly basis. We valued the RSUs with a performance condition using the market price on the day of grant.

Segment Information

As of December 28, 2019, we had one operating segment: the core Lattice business, which includes semiconductor devices, evaluation boards, development hardware, and related intellectual property licensing, services, and sales. Our chief operating decision maker is the Chief Executive Officer, who reviews operating results and financial information presented on a consolidated basis for purposes of making operating decisions, allocating resources, and evaluating financial performance.

New Accounting Pronouncements

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. This guidance requires entities to use a current expected credit loss ("CECL") methodology to measure impairments of certain financial assets and to recognize an allowance for its estimate of lifetime expected credit losses. The new standard will become effective for our fiscal year 2020, which begins on December 29, 2019. We are evaluating the implementation of ASC 326 and expect it will not have a material impact on our consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which adds new guidance for accounting for tax law changes, year-to-date losses in interim periods, and determining how to apply the income tax guidance to franchise taxes that are partially based on income, as well as other changes to simplify accounting for income taxes. The ASU is effective for calendar year-end public business entities on January 1, 2021. Entities may early adopt the ASU in any interim period for which financial statements have not yet been issued (or made available for issuance). We are currently assessing the impact of ASU 2019-12 on our consolidated financial statements and related disclosures.

Note 2 - Net Income (Loss) Per Share

Our calculation of the diluted share count includes the number of shares from our equity awards with market conditions or performance conditions that would be issuable under the terms of such awards at the end of the reporting period. For equity awards with a market condition, the maximum number of shares issuable are included in the diluted share count as of December 28, 2019, as the market condition would have been achieved at the highest level of vesting if measured as of the end of the reporting period. For equity awards with a performance condition, no shares are included in the diluted share count as of December 28, 2019, as vesting of these awards is contingent upon achievement of the performance condition over two consecutive trailing four-quarter periods, which has not yet been achieved. See "Note 10 - Stock-Based Compensation Plans" to our consolidated financial statements for further discussion of our equity awards with market or performance conditions.

A summary of basic and diluted Net income (loss) per share is presented in the following table:

	Year Ended		
(in thousands, except per share data)	December 28, 2019	December 29, 2018	December 30, 2017
Net income (loss)	$ 43,493	$ (26,322)	$ (70,562)
Shares used in basic Net income (loss) per share	132,471	126,564	122,677
Dilutive effect of stock options, RSUs, ESPP shares, and equity awards with a market condition or performance condition	4,803	—	—
Shares used in diluted Net (loss) income per share	137,274	126,564	122,677
Basic Net income (loss) per share	$ 0.33	$ (0.21)	$ (0.58)
Diluted Net income (loss) per share	$ 0.32	$ (0.21)	$ (0.58)

The computation of diluted Net income (loss) per share excludes the effects of stock options, RSUs, ESPP shares, and equity awards with a market condition or performance condition that are antidilutive, aggregating approximately the following number of shares:

	Year Ended		
(in thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Stock options, RSUs, ESPP shares, and equity awards with a market condition or performance condition excluded as they are antidilutive	890	7,567	6,622

Note 3 - Revenue from Contracts with Customers

Disaggregation of Revenue

The following tables provide disaggregation of revenue from contracts with customers by major class of revenue, revenue by channel, and by geographical market, based on ship-to location of the end customer, where available, and ship-to location of distributor otherwise:

Major Class of Revenue	**Year Ended ***					
(In thousands)	**December 28, 2019**		**December 29, 2018**		**December 30, 2017**	
Product	$ 382,548	95%	$ 380,468	95%	$ 356,502	92%
Licensing and services	21,545	5%	18,331	5%	29,459	8%
Total revenue	$ 404,093	100%	$ 398,799	100%	$ 385,961	100%

Revenue by Channel	**Year Ended ***					
(In thousands)	**December 28, 2019**		**December 29, 2018**		**December 30, 2017**	
Product revenue - Distributors	$ 331,941	82%	$ 330,719	83%	$ 297,736	77%
Product revenue - Direct	50,607	13%	49,749	12%	58,766	15%
Licensing and services revenue	21,545	5%	18,331	5%	29,459	8%
Total revenue	$ 404,093	100%	$ 398,799	100%	$ 385,961	100%

Revenue by Geographical Market	**Year Ended ***					
(In thousands)	**December 28, 2019**		**December 29, 2018**		**December 30, 2017**	
Asia	$ 298,765	74%	$ 298,119	75%	$ 277,638	72%
Europe	47,392	12%	45,546	11%	44,547	12%
Americas	57,936	14%	55,134	14%	63,776	16%
Total revenue	$ 404,093	100%	$ 398,799	100%	$ 385,961	100%

* *Amounts in periods prior to fiscal 2018 have not been adjusted under the modified retrospective method of adopting ASC 606 and, therefore, are presented under GAAP in effect during that period.*

Contract balances

Our contract assets relate to our rights to consideration for licenses and royalties due to us as a member of the HDMI consortium, with collection dependent on events other than the passage of time, such as collection of licenses and royalties from customers by the HDMI licensing agent. The balance results primarily from the amount of estimated revenue related to HDMI that we have recognized to date, but which has not yet been collected by the agent. Contract assets are recorded in Prepaid expenses and other current assets in our Consolidated Balance Sheets. The following table summarizes activity during the periods presented:

(In thousands)		
Balance as of December 31, 2017	$	7,515
Revenues recorded during the period		11,618
Transferred to accounts receivable or collected		(9,990)
Contract assets as of December 29, 2018		9,143
Revenues recorded during the period		17,356
Transferred to Accounts receivable or collected		(20,930)
Contract assets as of December 28, 2019	$	5,569

Contract liabilities are included in Accounts payable and accrued expenses on our Consolidated Balance Sheets. The following table summarizes activity during the periods presented:

(In thousands)		
Contract liabilities as of December 31, 2017	$	—
Accruals for estimated future stock rotation and scrap returns		4,281
Less: Release of accruals for recognized stock rotation and scrap returns		(2,667)
Contract liabilities as of December 29, 2018		1,614
Accruals for estimated future stock rotation and scrap returns		5,763
Less: Release of accruals for recognized stock rotation and scrap returns		(5,064)
Contract liabilities as of December 28, 2019	$	2,313

The impact to revenue in fiscal years 2019 and 2018 from the release of accruals for recognized stock rotation and scrap returns was offset by the processing of return merchandise authorizations totaling $5.0 million and $3.7 million, respectively, yielding a net revenue increase of approximately $0.1 million and a net revenue decrease of approximately $1.0 million, respectively.

Impact of Adoption of ASC 606

We adopted ASC 606 effective on December 31, 2017, the first day of our 2018 fiscal year, using the modified retrospective method. ASC 606 requires us to disclose the effect of adoption on each financial statement line item in the year of adoption as compared to the revenue recognition accounting standard that was in effect previously, and an explanation of the reasons for significant changes. The significant impacts of the new standard were to accelerate the recognition of revenues on both sales to certain distributors and certain licensing activities. As a result of adopting this standard, we recorded a cumulative effect adjustment of $27.4 million as a reduction to Accumulated deficit on December 31, 2017, resulting primarily from a net $20.2 million of previously deferred distributor revenues and costs and $6.6 million of previously unrecognized licensing revenues. The effect of adoption on each financial statement line item is detailed in the tables below:

Condensed Consolidated Statement of Operations

	Year ended December 29, 2018					
(In thousands, except per share data)		As reported under new standard		Adjustments		Pro forma as if previous standard was in effect
Product revenue	$	380,468	$	(14,098)	$	366,370
Licensing and services revenue		18,331		(1,478)		16,853
Cost of product revenue		179,101		(6,399)		172,702
Net loss	$	(26,322)	$	(9,177)	$	(35,499)
Net loss per share, basic and diluted	$	(0.21)	$	(0.07)	$	(0.28)

Condensed Consolidated Balance Sheets

	As of December 29, 2018		
(In thousands)	As reported under new standard	Adjustments	Pro forma as if previous standard was in effect
Accounts receivable, net of allowance for doubtful accounts	$ 60,890	$ 6,600	$ 67,490
Inventories	67,096	78	67,174
Prepaid expenses and other current assets	27,762	(9,775)	17,987
Total assets	$ 623,687	$ (3,097)	$ 620,590
Accounts payable and accrued expenses (includes restructuring)	$ 51,763	$ (1,156)	$ 50,607
Deferred income and allowances on sales to distributors	—	34,637	34,637
Accumulated deficit	(476,783)	(36,578)	(513,361)
Total liabilities and stockholders' equity	$ 623,687	$ (3,097)	$ 620,590

Condensed Consolidated Statement of Cash Flows

	Year ended December 29, 2018		
(In thousands)	As reported under new standard	Adjustments	Pro forma as if previous standard was in effect
Cash flows from operating activities:			
Net loss	$ (26,322)	$ (9,177)	$ (35,499)
Accounts receivable, net	(3,978)	(8,408)	(12,386)
Inventories	13,177	(448)	12,729
Prepaid expenses and other assets	(11,667)	2,260	(9,407)
Accounts payable and accrued expenses (includes restructuring)	13,325	(1,614)	11,711
Deferred income and allowances on sales to distributors	$ —	$ 17,387	$ 17,387

Note 4 - Balance Sheet Components

Short-Term Marketable Securities

Our Short-term marketable securities consisted of U.S. government agency obligations with maturities up to two years, which we carried at their fair value as Level 1 instruments in accordance with ASC 820, "*Fair Value Measurements*." We liquidated these investments in the first quarter of fiscal 2019. The following table summarizes the maturities of our formerly-held Short-term marketable securities at fair value.

(In thousands)	December 28, 2019	December 29, 2018
Short-term marketable securities:		
Maturing within one year	$ —	$ 7,454
Maturing between one and two years	—	2,170
Total marketable securities	$ —	$ 9,624

Accounts Receivable

Accounts receivable do not bear interest and are shown net of allowances for doubtful accounts. The allowance for doubtful accounts reflects our best estimate of probable losses inherent in the accounts receivable balance. We determine the allowance based on assessment of known troubled accounts, analysis of the aging of our accounts receivable, historical experience, management judgment, and other currently available evidence.

(In thousands)	December 28, 2019	December 29, 2018
Accounts receivable	$ 65,023	$ 61,087
Less: Allowance for doubtful accounts	(106)	(197)
Accounts receivable, net of allowance for doubtful accounts	$ 64,917	$ 60,890

The following table displays the activity related to changes in our allowance for doubtful accounts:

Fiscal Years Ended *(In thousands)*	**Balance at beginning of period**	**Charged (Credit) to costs and expenses**	**Charged (credit) to other accounts**	**Settlements & write-offs net of recoveries**	**Balance at end of period**
Allowance for doubtful accounts					
December 28, 2019	$ 197	$ (30)	$ (12)	$ (49)	$ 106
December 29, 2018	$ 9,371	$ 1	$ 73	$ (9,248)	$ 197
December 30, 2017	$ 9,299	$ 3	$ 38	$ 31	$ 9,371

During fiscal 2018, we wrote off $9.0 million of accounts receivable from a bankrupt distributor group. This write off had no impact on Accounts Receivable in fiscal 2018, as we had recorded a full allowance against our accounts receivable, net of deferred revenue, from the bankrupt distributor group in fiscal 2016.

Inventories

(In thousands)	**December 28, 2019**	**December 29, 2018**
Work in progress	$ 39,855	$ 47,224
Finished goods	15,125	19,872
Total inventories	$ 54,980	$ 67,096

In the second quarter of 2018, we made the strategic decision to discontinue our millimeter wave business, which included certain wireless technology inventory items. As such, specific inventory charges of $8.0 million were taken during fiscal 2018 on product lines eliminated with the discontinuation of our millimeter wave business and were charged to Cost of revenue in the Consolidated Statements of Operations.

Accounts Payable and Accrued Expenses

Included in Accounts payable and accrued expenses in the Consolidated Balance Sheets are the following balances:

(In thousands)	**December 28, 2019**	**December 29, 2018**
Trade accounts payable	$ 44,350	$ 31,880
Liability for non-cancelable contracts	6,964	6,078
Restructuring	3,060	4,220
Other accrued expenses	5,881	9,585
Total accounts payable and accrued expenses	$ 60,255	$ 51,763

Cloud Based Computing Implementation Costs

During the fourth quarter of fiscal 2019, we early adopted ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40)*, which clarifies the accounting for implementation costs in cloud computing arrangements. We adopted this guidance using the retrospective method, but did not restate any prior financial statements presented. As of December 28, 2019, we had capitalized approximately $2.5 million of implementation costs mainly for our new and interrelated distributor accounting management systems. These cloud based computing implementation costs are recorded in Prepaid expenses and other current assets and Other long-term assets on our Consolidated Balance Sheets.

Note 5 - Property and Equipment

(In thousands)	**December 28, 2019**	**December 29, 2018**
Production equipment and software	$ 150,591	$ 160,979
Leasehold improvements	12,517	12,648
Office furniture and equipment	2,112	2,623
	165,220	176,250
Accumulated depreciation and amortization	(125,990)	(141,367)
	$ 39,230	$ 34,883

For fiscal year 2019, depreciation and amortization expense for property and equipment was $11.6 million, including $0.4 million of restructuring expense. For fiscal year 2018, depreciation and amortization expense for property and equipment was $13.4 million, including $0.6 million of restructuring expense. For fiscal year 2017, depreciation and amortization expense for property and equipment was $16.3 million.

In August 2017, we sold building space which we owned in Shanghai, China for gross proceeds of approximately $7.9 million. As of the sale date, the building had a historical cost of $3.6 million, accumulated depreciation of $1.4 million and we incurred $1.1 million of direct selling costs, resulting in a net gain on sale of $4.6 million, which is presented as Gain on sale of building in our Consolidated Statements of Operations.

Property and Equipment – Geographic Information

Our Property and equipment, net by country at the end of each period was as follows:

(In thousands)	December 28, 2019	December 29, 2018
United States	$ 32,313	$ 27,353
China	1,683	2,360
Philippines	2,683	3,319
Taiwan	1,885	949
Japan	283	324
Other	383	578
Total foreign property and equipment, net	6,917	7,530
Total property and equipment, net	$ 39,230	$ 34,883

Note 6 - Long-Term Debt

On May 17, 2019, we entered into a new credit agreement (the "Current Credit Agreement") with Wells Fargo Bank, National Association, as administrative agent, and other lenders. The Current Credit Agreement provides for a five-year secured term loan facility in an aggregate principal amount of $175.0 million and a five-year secured revolving loan facility in an aggregate principal amount of up to $75.0 million, along with other components and options, such as a letter of credit, swing line, or expansion of the revolver, currently not in use, which are more fully described in the Current Credit Agreement.

We used the $175.0 million term loan proceeds and an initial $31.5 million revolving loan draw at closing to (i) repay the $204.4 million obligation outstanding under our previous credit agreement (the "Previous Credit Agreement") with Jefferies Finance LLC, as administrative agent, and (ii) pay fees and expenses totaling $2.1 million incurred in connection with the Current Credit Agreement. The revolving loan may be used for working capital and general corporate purposes. With the repayment of our obligations under the Previous Credit Agreement, we wrote off the remaining unamortized balance of the related original issue discount and debt costs, which we recorded as a $2.2 million loss on refinancing in Other expense, net on our Consolidated Statements of Operations in the second quarter of fiscal 2019.

At our option, the term loan and the revolving loan (collectively, "long-term debt") accrue interest at a per annum rate based on either (i) the base rate plus a margin ranging from 0.25% to 1.00%, determined based on our total leverage ratio or (ii) the London Interbank Offered Rate ("LIBOR") for interest periods of 1, 2, 3 or 6 months plus a margin ranging from 1.25% to 2.00%, determined based on our total leverage ratio. The base rate is defined as the highest of (i) the federal funds rate, plus 0.50%, (ii) Wells Fargo Bank, National Association's prime rate or (iii) the LIBOR rate for a 1-month interest period plus 1.00%. As of December 28, 2019, the effective interest rate on the term loan was 3.16%, and the revolving loan did not have an outstanding balance. We pay a commitment fee of 0.20% on the unused portion of the revolving loan.

The term loan is payable through a combination of (i) required quarterly installments of approximately $4.4 million, and (ii) any payments due upon certain issuances of additional indebtedness and certain asset dispositions, with any remaining outstanding principal amount due and payable on the maturity date of the term loan. The revolving loan is payable at our discretion, with any remaining outstanding principal amount due and payable on the maturity date of the revolving loan.

The Current Credit Agreement contains customary affirmative and negative covenants, including covenants limiting the ability of the Company to, among other things, incur debt, grant liens, undergo certain fundamental changes, make investments, make certain restricted payments, dispose of assets, enter into transactions with affiliates, and enter into burdensome agreements, in each case, subject to limitations and exceptions set forth in the Current Credit Agreement. We are also required to maintain compliance with a total leverage ratio and an interest coverage ratio, in each case, determined in accordance with the terms of the Current Credit Agreement.

We account for the original issue discount and the debt issuance costs as a reduction to the carrying value of our long-term debt on our Consolidated Balance Sheets. We amortize the discount and costs to Interest expense in our Consolidated Statements of Operations over the contractual term using the effective interest method. We determine the Current portion of long-term debt as the sum of the required quarterly installments to be made over the next twelve months, reduced by the original issue discount and the debt issuance costs to be amortized over the next twelve months.

The fair value of our long-term debt approximates the carrying value, which is reflected in our Consolidated Balance Sheets as follows:

(In thousands)	December 28, 2019	December 29, 2018
Principal amount	$ 148,125	$ 263,033
Unamortized original issue discount and debt costs	(1,579)	(3,386)
Less: Current portion of long-term debt	(21,474)	(8,290)
Long-term debt, net of current portion and unamortized debt issue costs	$ 125,072	$ 251,357

Interest expense related to our long-term debt was included in Interest expense on our Consolidated Statements of Operations as follows:

	Year Ended		
(in thousands)	**December 28, 2019**	**December 29, 2018**	**December 30, 2017**
Contractual interest	$ 10,278	$ 18,600	$ 16,503
Amortization of debt issuance costs and discount	1,659	2,230	1,982
Total Interest expense related to the long-term debt	$ 11,937	$ 20,830	$ 18,485

Expected future principal payments are based on the schedule of required quarterly installments, adjusted for known voluntary payments. Our 53-week fiscal 2020 will result in five quarterly installments being paid during that fiscal year. As of December 28, 2019, expected future principal payments on our long-term debt were as follows:

Fiscal year	*(in thousands)*
2020	$ 21,875
2021	17,500
2022	17,500
2023	17,500
2024	73,750
	$ 148,125

Note 7 - Restructuring

In April 2019, our management approved and executed an internal restructuring plan (the “Q2 2019 Sales Plan”) which focused on a restructuring of the global sales organization through cancellation of certain contracts and a workforce reduction. Under this plan, we have incurred $2.0 million of restructuring expense during fiscal 2019. All actions planned under the Q2 2019 Sales Plan have been implemented.

In December 2018, our management approved and executed an internal restructuring plan (the “December 2018 Plan”), which included a global workforce reduction. This plan also included the abandonment of long lived assets related to the restructuring of our agreements with a privately-held investee. Under this plan, no restructuring expense was incurred during fiscal year 2019, and approximately $4.8 million of restructuring expense was incurred during fiscal year 2018. All actions planned under the December 2018 Plan have been implemented.

In June 2018, our Board of Directors approved an internal restructuring plan (the "June 2018 Plan"), which included the discontinuation of our millimeter wave business and the use of certain assets related to our Wireless products, and a workforce reduction. Under this plan, we recorded a total credit adjustment of approximately $0.1 million during fiscal 2019 due to the final reconciliation of expenses incurred, and we incurred approximately $4.2 million of restructuring expense during fiscal 2018. Approximately $4.1 million of total expense has been incurred through December 28, 2019 under the June 2018 Plan. All actions planned under the June 2018 Plan have been implemented.

In June 2017, our Board of Directors approved an internal restructuring plan (the "June 2017 Plan"), which included the sale of 100% of the equity of our Hyderabad, India subsidiary and the transfer of certain assets related to our Simplay Labs testing and certification business, a worldwide workforce reduction, and an initiative to reduce our infrastructure costs, including reconfiguring our use of certain leased properties. Under this initiative approved by the Board in 2017, we vacated 100% or our facility in Portland, Oregon in the first quarter of fiscal 2019, and recorded approximately $2.7 million of Restructuring charges from ceasing use of this space, which includes approximately $1.0 million of impairment of the operating lease right-of-use asset for this property. During fiscal 2019, we entered into a sublease agreement for this facility and bought out the lease on the portion of the space that was not sublet. Under this plan, approximately $2.7 million, $8.4 million, and $8.0 million of expense was incurred during the years ended December 28, 2019, December 29, 2018, and December 30, 2017, respectively. Approximately $19.1 million of total expense has been incurred through December 28, 2019 under the June 2017 Plan, and all planned actions have been implemented. We expect the total cost of the June 2017 Plan to be approximately $20.0 million to $21.5 million as accretion expenses related to our partially vacated facility in San Jose, California will be incurred over the remaining lease term.

These expenses and credits were recorded to Restructuring charges on our Consolidated Statements of Operations. The restructuring accrual balance is presented in Accounts payable and accrued expenses and Other long-term liabilities on our Consolidated Balance Sheets.

The following table displays the activity related to the restructuring plans described above:

(In thousands)	**Severance & Related (1)**	**Lease Termination & Fixed Assets**	**Software Contracts & Engineering Tools (2)**	**Other (3)**	**Total**
Balance at December 31, 2016	$ 801	$ 1,036	$ 25	$ 12	$ 1,874
Restructuring charges	2,484	811	3,066	835	7,196
Costs paid or otherwise settled	(2,093)	(977)	(2,731)	(822)	(6,623)
Balance at December 30, 2017	$ 1,192	$ 870	$ 360	$ 25	$ 2,447
Restructuring charges	5,696	7,379	913	3,361	17,349
Costs paid or otherwise settled	(5,074)	381	(1,055)	(3,368)	(9,116)
Balance at December 29, 2018	$ 1,814	$ 8,630	$ 218	$ 18	$ 10,680
Restructuring charges	625	2,716	—	1,323	4,664
Costs paid or otherwise settled	(2,279)	(4,761)	(218)	(476)	(7,734)
Balance at December 28, 2019	$ 160	$ 6,585	$ —	$ 865	$ 7,610

(1) Includes employee relocation costs and accelerated stock compensation

(2) Includes cancellation of contracts, asset impairments, and accelerated depreciation on certain enterprise resource planning and customer relationship management systems

(3) In fiscal 2018, "Other" activity included the abandonment of long lived assets related to the restructuring of our agreements with a privately-held investee. In fiscal 2019, "Other" activity included termination fees on the cancellation of certain contracts under the Q2 2019 Sales Plan

Note 8 - Leases

All of our facilities are leased under operating leases, which expire at various times through 2027. We recorded fixed operating lease cost of $7.7 million for fiscal 2019. Rental expense under the previous guidance for operating leases was $8.3 million and $8.9 million for fiscal years 2018 and 2017, respectively.

Our leases have remaining lease terms of 1 to 8 years, some of which include options to extend for up to 5 years, and some of which include options to terminate within 1 year. For our operating leases, the weighted-average remaining lease term was 5.7 years and the weighted-average discount rate is 7.0% as of December 28, 2019.

Our adoption of Topic 842 resulted in the non-cash recognition of additional net ROU assets and lease liabilities of approximately $29.9 million and $32.3 million, respectively, as of December 30, 2018. The difference between these amounts resulted from an adjustment to the deferred rent balance existing under the prior guidance. Adoption of this standard did not materially affect our consolidated net earnings.

The following table presents the lease balance classifications within the Consolidated Balance Sheets and summarizes their activity during fiscal 2019:

Operating lease right-of-use assets		*(in thousands)*
Balance as of December 29, 2018	$	—
Right-of-use assets recorded from adoption of ASC 842		29,893
Right-of-use assets obtained in exchange for new lease obligations during the period		747
Reduction in the carrying amount of right-of-use assets during the period		(5,797)
Impairment of right-of-use asset on Portland, Oregon office (recorded in Restructuring charges)		(977)
Adjustments for present value and foreign currency effects		(275)
Balance as of December 28, 2019	$	23,591

Operating lease liabilities		*(in thousands)*
Balance as of December 29, 2018	$	—
Lease liabilities recorded from adoption of ASC 842		32,273
Lease liabilities incurred for new lease obligations during the period		747
Accretion of lease liabilities		1,918
Operating cash used by payments on lease liabilities		(8,425)
Adjustments for present value, foreign currency, and restructuring liability effects		(389)
Balance as of December 28, 2019		26,124
Less: Current portion of operating lease liabilities		(4,686)
Long-term operating lease liabilities, net of current portion	$	21,438

Maturities of operating lease liabilities as of December 28, 2019 are as follows:

Fiscal year		*(in thousands)*
2020	$	6,445
2021		5,485
2022		4,468
2023		4,596
2024		4,716
Thereafter		6,705
Total lease payments		32,415
Less: amount representing interest		(6,156)
Less: amount representing restructuring liability adjustments		(135)
Total lease liabilities	$	26,124

Under the previous lease guidance, ASC 840, future minimum lease commitments at December 29, 2018 were as follows:

Fiscal year		*(In thousands)*
2019	$	7,090
2020		6,893
2021		5,452
2022		4,658
2023		4,229
Thereafter		9,930
	$	38,252

Prior to 2019, the reporting of future minimum lease commitments included the lease obligations associated with previously restructured facilities. Lease obligations for facilities restructured prior to the adoption of Topic 842 totaled approximately $6.6 million at December 28, 2019 and continued to be recorded in Other long-term liabilities on our Consolidated Balance Sheets.

Table of Contents

Note 9 - Intangible Assets

In connection with our acquisitions of Silicon Image, Inc. in March 2015 and SiliconBlue Technologies, Inc. in December 2011, we recorded identifiable intangible assets related to developed technology, customer relationships, licensed technology, patents, and in-process research and development based on guidance for determining fair value under the provisions of ASC 820, "*Fair Value Measurements*." Additionally, during the fiscal years presented, we licensed additional third-party technology. We do not believe there is any significant residual value associated with these intangible assets. We are amortizing the intangible assets using the straight-line method over their estimated useful lives.

The following tables summarize the details of our Intangible assets, net as of December 28, 2019 and December 29, 2018:

	December 28, 2019			
(In thousands)	Weighted Average Amortization Period (in years)	Gross	Accumulated Amortization	Intangible assets, net
Developed technology	5.0	$ 110,987	$ (105,594)	$ 5,393
Customer relationships	5.8	22,934	(21,400)	1,534
Licensed technology	5.0	459	(409)	50
Total identified intangible assets		$ 134,380	$ (127,403)	$ 6,977

	December 29, 2018			
(In thousands)	Weighted Average Amortization Period (in years)	Gross	Accumulated Amortization	Intangible assets, net
Developed technology	5.0	$ 110,987	$ (94,389)	$ 16,598
Customer relationships	5.8	22,934	(19,048)	3,886
Licensed technology	5.0	1,194	(353)	841
Total identified intangible assets		$ 135,115	$ (113,790)	$ 21,325

We recorded amortization expense related to intangible assets on the Consolidated Statements of Operations as presented in the following table:

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Research and development	$ 55	$ 277	$ 569
Amortization of acquired intangible assets	13,558	17,690	31,340
	$ 13,613	$ 17,967	$ 31,909

The annual expected amortization expense of acquired intangible assets is as follows:

(In thousands)	Amount
2020	$ 4,500
2021	2,239
2022	238
Total	$ 6,977

No impairment charges relating to acquired intangible assets were recorded for fiscal 2019 as no indicators of impairment were present. During the third quarter of fiscal 2018, we concluded that a certain product line had limited future revenue potential due to a decline in customer demand for that product, and we recorded an impairment charge of $0.6 million to the intangible asset associated with that product. During the second quarter of 2018, we recorded an impairment charge relating to intangible assets of $11.9 million as a result of the strategic decision to discontinue our millimeter wave business. During fiscal 2017, we recorded a net impairment charge of $32.4 million related to certain of the developed technology intangible assets acquired in our acquisition of Silicon Image. These charges were recorded to Impairment of acquired intangible assets in the Consolidated Statements of Operations.

Note 10 - Stock-Based Compensation Plans

Employee and Director Stock Options, Restricted Stock and ESPP

We have two active equity incentive plans, the "2013 Incentive Plan and the "2011 Non-Employee Director Equity Incentive Plan", under which shares remain available for grants to employees and non-employee directors, respectively. In addition, we have made grants of inducement awards to certain of our newly hired executives and employees that are granted outside of, but governed by, the 2013 Incentive Plan. "Incentive stock options" under Section 422 of the U.S. Internal Revenue Code and restricted stock unit ("RSU") grants are part of our equity compensation practices for employees who receive equity grants. Options and RSUs generally vest quarterly over a four-year period beginning on the grant date. The contractual terms of options granted do not exceed ten years.

In May 2012, the Company's stockholders approved the 2012 Employee Stock Purchase Plan ("2012 ESPP"), which authorizes the issuance of 3.0 million shares of common stock to eligible employees to purchase shares of common stock through payroll deductions, which cannot exceed 10% of an employee's compensation. The purchase price of the shares is the lower of 85% of the fair market value of the stock at the beginning of each six-month offering period or 85% of the fair market value at the end of such period. We have treated the 2012 ESPP as a compensatory plan. We recorded $0.5 million and $0.6 million related compensation expense in fiscal 2019 and 2018, respectively. During fiscal 2017 only, the ESPP was suspended and we recorded no related compensation expense.

At December 28, 2019, a total of 9.0 million shares of our common stock were available for future grants under the 2013 Incentive Plan, and the 2011 Non-Employee Director Equity Incentive Plan. Following our 2018 Shareholder meeting, a share ratio of 2.2:1 was applied to the 2013 Incentive Plan. This ratio takes two and two tenths shares out of the 2013 Plan for every one full value share granted. During fiscal 2019, a total of 2.9 million shares were adjusted out of the 2013 Plan. Shares subject to stock option grants that expire or are canceled, without delivery of such shares, generally become available for re-issuance under equity incentive plans. At December 28, 2019, a total of 1.4 million shares of our common stock were available for future purchases under the 2012 ESPP.

Stock-Based Compensation

Total stock-based compensation expense included in our Consolidated Statements of Operations is presented in the following table:

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Cost of revenue	$ 1,422	$ 940	$ 795
Research and development	5,640	4,357	5,245
Selling, general, and administrative	11,837	8,349	6,503

Total stock-based compensation	$ 18,899	$ 13,646	$ 12,543

The stock-based compensation expense included in Selling, general, and administrative expense for fiscal 2018 includes approximately $1.4 million of additional one-time expense for acceleration of stock compensation under the CEO separation agreement executed with our former CEO during the first quarter of fiscal 2018.

The fair values of each option award on the date of grant and of the shares expected to be issued under the employee stock purchase plan were estimated using the Black-Scholes valuation model and the assumptions noted in the following table. The expected term is based on historical vested option exercises and includes an estimate of the expected term for options that are fully vested and outstanding. The expected volatility of both stock options and ESPP shares is based on the daily historical volatility of our stock price, measured over the expected term of the option or the ESPP purchase period. The risk-free interest rate is based on the implied yield on a U.S. Treasury zero-coupon issue with a remaining term closest to the expected term of the option. The dividend yield reflects that we have not paid any cash dividends since inception and do not intend to pay any cash dividends in the foreseeable future.

The following table summarizes the assumptions used in the valuation of stock option and ESPP compensation:

	Year Ended		
	December 28, 2019	**December 29, 2018**	**December 30, 2017**
Employee and Director Stock Options *			
Expected volatility	n/a	39.87% to 41.11%	40.96% to 48.01%
Risk-free interest rate	n/a	2.29% to 2.78%	1.99% to 2.09%
Expected term (years)	n/a	4.08 to 4.25	4.08 to 4.25
Employee Stock Purchase Plan **			
Weighted average expected volatility	31.6%	36.4%	n/a
Weighted average risk-free interest rate	2.51%	1.61%	n/a
Expected term	6 months	6 months	n/a

* No stock options granted during fiscal 2019

** ESPP suspended during fiscal 2017 only

At December 28, 2019, there was $3.2 million of total unrecognized compensation cost related to unvested employee and director stock options, which is expected to be recognized over a weighted average period of 1.5 years. Our current practice is to issue new shares to satisfy option exercises. Compensation expense for all stock-based compensation awards is recognized using the straight-line method.

The following table summarizes our stock option activity and related information for the year ended December 28, 2019:

(Shares and aggregate intrinsic value in thousands)	**Shares**	**Weighted average exercise price**	**Weighted average remaining contractual term (years)**	**Aggregate Intrinsic Value**
Balance, December 29, 2018	6,616	$ 5.94		
Granted	—	—		
Effect of vesting multiplier	36			
Exercised	(2,715)	5.73		
Forfeited or expired	(605)	5.72		
Balance, December 28, 2019	3,332	$ 6.16		
Vested and expected to vest at December 28, 2019	3,332	$ 6.16	4.50	$ 43,553
Exercisable, December 28, 2019	1,721	$ 6.00	3.95	$ 22,758

The aggregate intrinsic value in the table above represents the total pretax intrinsic value (the difference between the Company's closing stock price on the last trading day of the fiscal year and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on that day. This amount changes based on the fair market value of the Company's stock. Total intrinsic value of options exercised for fiscal 2019, 2018, and 2017 was $17.8 million, $6.5 million, and $2.2 million, respectively. The total fair value of options and RSUs vested and expensed in fiscal 2019, 2018, and 2017 was $18.4 million, $13.0 million, and $12.5 million, respectively.

The resultant grant date weighted-average fair values for stock options granted, calculated using the Black-Scholes option pricing model with the noted assumptions for stock options, were $2.73 and $2.02 for fiscal years 2018 and 2017, respectively. No stock options were granted during fiscal 2019. The weighted average fair values for the ESPP, calculated using the Black-Scholes option pricing model with the noted assumptions for the ESPP, were $1.69 and $1.50 for fiscal years 2019 and 2018, respectively.

The following table summarizes our RSU activity for the year ended December 28, 2019:

(Shares in thousands)	Shares	Weighted average grant date fair value
Balance, December 29, 2018	4,412	$ 7.53
Granted	2,445	16.23
Effect of vesting multiplier	216	—
Vested	(1,734)	8.10
Forfeited or expired	(564)	7.27
Balance, December 28, 2019	4,775	$ 12.23

At December 28, 2019 there was $51.9 million of total unrecognized compensation cost related to unvested RSUs. Our current practice is to issue new shares when RSUs vest. Compensation expense for RSUs is recognized using the straight-line method over the related vesting period.

Market-Based and Performance-Based Stock Compensation

In fiscal years 2017 through 2019, we granted stock options and RSUs with either a market condition (TSR) or a performance condition (Adjusted EBITDA) to certain executives.

The options with a market condition granted in fiscal year 2017 have a two year vesting period and vest between 0% and 200% of the target amount, based on the Company's relative TSR when compared to the TSR of a component of companies of the PHLX Semiconductor Sector Index over a two year period. Under the terms of the grants, executives will receive the target amount if the Company's TSR relative to that of the Index achieves or exceeds the 50th percentile. Executives may receive 200% if the Company's TSR exceeds the 75th percentile. No vesting occurs if the Company's TSR does not exceed the 25th percentile.

In fiscal years 2018 and 2019, we granted inducement awards outside of, but subject to the terms and conditions of the 2013 Incentive Plan to certain executives. These awards consisted of RSUs with either a market condition or a performance condition that vest and become payable upon achievement of TSR or Adjusted EBITDA targets, respectively. The TSR-based awards vest and become payable over a three-year period based on the Company's TSR relative to the PHLX Semiconductor Sector Index, with 100% of the units vesting at the 50th percentile and either 200% or 250% of the units vesting at the 75th percentile, depending upon the executive, zero vesting if relative TSR is below the 25th percentile, and vesting scaling linearly for achievement between the 25th and 75th percentile. The Adjusted EBITDA-based awards will vest and become payable based upon the Company's generating specified "adjusted" EBITDA levels on a trailing four quarter basis in any two consecutive trailing four-quarter periods. During the third quarter of fiscal 2019, the market condition for awards granted in the previous year achieved the 75th percentile of the condition, and the first tranche of these awards vested at 200% or 250% of the RSUs, as applicable for the respective executive.

The following table summarizes the assumptions used in the valuation of stock options and RSUs with a market or performance condition:

	Year Ended		
	December 28, 2019	December 29, 2018	December 30, 2017
Executive stock options with a market condition			
Expected volatility	n/a	n/a	41%
Risk-free interest rate	n/a	n/a	1.9%
Expected term (years)	n/a	n/a	4.5
Executive RSUs with a market or performance condition			
Expected volatility	40.15% to 41.10%	41.06% to 41.74%	n/a
Risk-free interest rate	1.66% to 2.55%	2.71% to 2.87%	n/a
Expected term (years)	3.00	3.00 to 3.16	n/a

The following table summarizes the activity for our stock options and RSUs with a market condition or performance condition:

(Shares in thousands)	Unvested	Vested	Total
Balance, December 29, 2018	909	—	909
Granted	584	—	584
Effect of vesting multiplier	260	—	260
Vested	(484)	71	(413)
Exercised	—	(71)	(71)
Canceled	(106)	—	(106)
Balance, December 28, 2019	1,163	—	1,163

We incurred stock compensation expense related to these stock option and RSU awards with a market or performance condition of approximately $5.7 million, $0.9 million, and $0.5 million in fiscal years 2019, 2018, and 2017, respectively, which is recorded as a component of total stock-based compensation expense.

Note 11 - Income Taxes

We are subject to federal and state income tax as well as income tax in the various foreign jurisdictions in which we operate. The domestic and foreign components of Income (loss) before income taxes were as follows:

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Domestic	$ 33,417	$ (8,274)	$ (17,341)
Foreign	11,648	(15,695)	(52,372)
Income (loss) before taxes	$ 45,065	$ (23,969)	$ (69,713)

The components of the Income tax expense are as follows:

	Year Ended		
(In thousands)	December 28, 2019	December 29, 2018	December 30, 2017
Current:			
Federal	$ 499	$ 536	$ 508
State	45	38	30
Foreign	1,345	1,869	304
	1,889	2,443	842
Deferred:			
Federal	—	—	—
State	—	—	—
Foreign	(317)	(90)	7
	(317)	(90)	7
Income tax expense	$ 1,572	$ 2,353	$ 849

Income tax expense differs from the amount of income tax determined by applying the applicable U.S. statutory federal income tax rate to pretax income as a result of the following differences:

	Year Ended		
	December 28, 2019	December 29, 2018	December 30, 2017
	%	%	%
Statutory federal rate	21	(21)	(35)
Adjustments for tax effects of:			
State taxes, net	3	(6)	(7)
Research and development credits	3	(5)	(1)
Stock compensation	(11)	8	3
Foreign rate differential	(2)	20	28
Foreign dividends	—	—	1
Foreign withholding taxes	3	5	—
Other permanent	6	2	—
Other deferred tax asset adjustment	—	13	—
Valuation allowance	(19)	(11)	(73)
Change in uncertain tax benefit accrual	—	2	1
Stock compensation (ASU 2016-09) adoption	—	—	(8)
Tax rate change	—	—	93
Other	—	3	(1)
Effective income tax rate	4	10	1

ASC 740, "*Income Taxes*", provides for the recognition of deferred tax assets if realization of these assets is more-likely-than-not. We evaluate both positive and negative evidence to determine if some or all of our deferred tax assets should be recognized on a quarterly basis.

Through December 28, 2019, we continued to evaluate the valuation allowance position in the United States and concluded that we should maintain a full valuation allowance against the net federal and state deferred tax assets. In making this evaluation, we exercised significant judgment and considered estimates about our ability to generate revenue and taxable profits sufficient to offset expenditures in future periods within the United States. It is reasonably possible that during the next twelve months, we will establish a sustained level of profitability in the U.S. As a result, we may reverse a significant portion of the valuation allowance recorded against our U.S. deferred tax assets. The reversal would result in an income tax benefit for the quarterly and annual fiscal period in which we release the valuation allowance.

We will continue to evaluate both positive and negative evidence in future periods to determine if we will realize the net deferred tax assets. We don't have a valuation allowance in any foreign jurisdictions as we have concluded it is more likely than not that we will realize the net deferred tax assets in future periods. The net decrease in the total valuation allowance affecting the effective tax rate for the year ended December 28, 2019 was approximately $8.6 million, mainly attributable to the write down of intangible assets which had no tax basis.

The components of our net deferred tax assets are as follows:

(In thousands)	**December 28, 2019**	**December 29, 2018**
Deferred tax assets:		
Accrued expenses and reserves	$ 4,137	$ 3,714
Inventory	—	2
Deferred Revenue	—	—
Stock-based and deferred compensation	2,812	2,660
Interest expense disallowance	—	1,283
Intangible assets	12,294	14,649
Fixed assets	256	281
Net operating loss carry forwards	86,899	88,333
Tax credit carry forwards	90,339	92,208
Capital loss carry forwards	4,235	5,007
Other	1,059	1,130
Total deferred tax assets	202,031	209,267
Less: valuation allowance	(198,499)	(207,108)
Net deferred tax assets	3,532	2,159
Deferred tax liabilities:		
Fixed assets	2,620	1,536
Deferred revenue	434	525
Other	—	(57)
Total deferred tax liabilities	3,054	2,004
Net deferred tax assets	$ 478	$ 155

The following table displays the activity related to changes in our valuation allowance for deferred tax assets:

Fiscal Years Ended *(In thousands)*	**Balance at beginning of period**	**Charged (Credit) to costs and expenses**	**Charged (credit) to other accounts**	**Balance at end of period**
Valuation allowance for deferred tax assets				
December 28, 2019	$ 207,108	$ (8,609)	$ —	$ 198,499
December 29, 2018	$ 209,691	$ (2,583)	$ —	$ 207,108
December 30, 2017	$ 260,687	$ (50,960)	$ (36)	$ 209,691

At December 28, 2019, we had U.S. federal net operating loss ("NOL") carryforwards (pretax) of approximately $360.5 million that expire at various dates between 2020 and 2037. We had state NOL carryforwards (pretax) of approximately $141.3 million that expire at various dates from 2020 through 2039. We also had federal and state credit carryforwards of $50.1 million and $62.6 million, respectively. Of the $62.6 million state credit carryforwards, $61.9 million do not expire. The federal and remaining state credits expire at various dates from 2020 through 2039.

Future utilization of federal and state net operating losses and tax credit carry forwards may be limited if cumulative changes to ownership exceed 50% within any three-year period. If there is a significant change in ownership, future tax attribute utilization may be restricted and NOL carryforwards and/or R&D credits will be reduced to reflect the limitation.

Foreign earnings may be subject to withholding taxes in local jurisdictions if they are distributed and repatriated in the United States. At December 28, 2019, U.S. income taxes and foreign withholding taxes were not provided for on a cumulative total of approximately $2.9 million of the undistributed earnings of our Chinese subsidiary. We intend to reinvest these earnings indefinitely.

At December 28, 2019, our unrecognized tax benefits associated with uncertain tax positions were $41.9 million, of which $39.9 million, if recognized, would affect the effective tax rate, subject to valuation allowance. As of December 28, 2019, interest and penalties associated with unrecognized tax benefits were $9.0 million, which are not reflected in the table below.

The following table summarizes the changes to unrecognized tax benefits for the fiscal years presented:

(In thousands)	Amount
Balance at December 31, 2016	$ 47,623
Additions based on tax positions related to the current year	471
Additions based on tax positions of prior years	11
Reduction for tax positions of prior years	(1,226)
Reduction as a result of lapse of applicable statute of limitations	(2,047)
Balance at December 30, 2017	44,832
Additions based on tax positions related to the current year	389
Additions based on tax positions of prior years	19
Reductions for tax positions of prior years	(5)
Reduction as a result of lapse of applicable statute of limitations	(1,235)
Balance at December 29, 2018	44,000
Additions based on tax positions related to the current year	238
Additions based on tax positions of prior years	334
Reductions for tax positions of prior years	(213)
Reduction as a result of lapse of applicable statute of limitations	(2,432)
Balance at December 28, 2019	$ 41,927

Our liability for uncertain tax positions (including penalties and interest) was $24.6 million and $26.3 million at December 28, 2019 and December 29, 2018, respectively, and is recorded as a component of Other long-term liabilities on our Consolidated Balance Sheets. The remainder of our uncertain tax position exposure of $24.8 million is netted against deferred tax assets.

At December 28, 2019, it is reasonably possible that $2.4 million of unrecognized tax benefits and $0.5 million of associated interest and penalties could be recognized during the next twelve months. The $2.9 million potential change would represent a decrease in unrecognized tax benefits, comprised of items related to tax filings for years that will no longer be subject to examination under expiring statutes of limitations.

The years that remain subject to examination are 2016 for federal income taxes, 2015 for state income taxes, and 2012 for foreign income taxes, including years ending thereafter. However, to the extent allowed by law, the tax authorities may have the right to examine prior periods where net operating losses or tax credits were generated and carried forward, and make adjustments up to the amount of the net operating losses or credit carryforward amount.

Our Philippines 2016 and 2017 and Israeli 2013 through 2017 income tax returns are currently under examination. We are not under examination in any other jurisdiction.

We are not currently paying U.S. federal income taxes and do not expect to pay such taxes until we fully utilize our tax NOL and credit carryforwards. We expect to pay a nominal amount of state income tax. We are paying foreign income and withholding taxes, which are reflected in income tax expense in our Consolidated Statements of Operations and are primarily related to the cost of operating offshore activities and subsidiaries. We accrue interest and penalties related to uncertain tax positions in income tax expense.

Note 12 - Employee Benefit Plans

Qualified Investment Plan

In 1990, we adopted a 401(k) tax-deferred savings plan, which provides all employees in the United States who meet certain eligibility requirements with an opportunity to accumulate funds for retirement. Participants may contribute up to the amount allowable as a deduction for federal income tax purposes. The plan does not allow investments in the Company's common stock. The plan allows for the Company to make discretionary matching contributions in cash. We recorded matching contributions of approximately $0.8 million, $0.6 million, and $0.8 million in fiscal years 2019, 2018, and 2017, respectively.

Cash Incentive Plans

For 2019, 2018, and 2017, the Board of Directors of the Company, upon the recommendation of the Compensation Committee, approved the Cash Incentive Plan (the "Cash Plans") for the respective fiscal year. The chief executive officer, other executive officers, and other members of senior management, including vice presidents and director-level employees, together with all other employees of the Company not on the Company's sales incentive plan are eligible to participate in the Cash Plans. Under the Cash Plans, individual cash incentive payments for the eligible employees will be based both on Company financial performance, as measured by achievement of operating income (before incentive plan accruals) and revenue goals within specified ranges established by the Compensation Committee, and Company performance, as measured by the achievement of personal management objectives. The Compensation Committee determines the performance of the chief executive officer, the chief financial officer and other participants based on the achievement of the management objectives established by the Compensation Committee during the first quarter of the respective fiscal year. We recorded approximately $5.8 million, $5.9 million, and $7.2 million of expense under the Cash Plans in fiscal 2019, 2018, and 2017, respectively.

Note 13 - Contingencies

Legal Matters

On or about December 19, 2018, Steven A.W. De Jaray, Perienne De Jaray and Darrell R. Oswald (collectively, the “Plaintiffs”) commenced an action against the Company and several unnamed defendants in the Multnomah County Circuit Court of the State of Oregon, in connection with the sale of certain products by the Company to the Plaintiffs in or around 2008. The Plaintiffs allege that we violated The Lanham Act, engaged in negligence and fraud by failing to disclose to the Plaintiffs the export-controlled status of the subject parts. The Plaintiffs seek damages of $138 million, treble damages, and other remedies. In January 2019, we removed the action to the United States District Court for the District of Oregon. At this stage of the proceedings, we do not have an estimate of the likelihood or the amount of any potential exposure to the Company; however, we believe that these claims are without merit and intend to vigorously defend the action. See “Litigation and unfavorable results of legal proceedings could adversely affect our financial condition and operating results” in “Risk Factors” in Item 1A of Part I of this Annual Report on Form 10-K.

From time to time, we are exposed to certain asserted and unasserted potential claims. Periodically, we review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and a range of possible losses can be estimated, we then accrue a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based only on the best information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation and may revise estimates.

Note 14 - Quarterly Financial Data (Unaudited)

A summary of the Company's consolidated quarterly results of operations is as follows:

	2019				2018			
(In thousands, except per share data)	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1
Revenue	$ 100,237	$ 103,469	$ 102,296	$ 98,091	$ 95,977	$ 101,484	$ 102,715	$ 98,623
Gross margin	59,293	61,439	60,038	57,652	54,306	58,364	50,248	56,521
Restructuring charges	(55)	252	3,126	1,341	11,854	90	4,376	1,029
Net income (loss)	$ 13,987	$ 13,539	$ 8,559	$ 7,408	$ (7,121)	$ 6,974	$ (20,223)	$ (5,952)
Net income (loss) per share - basic	$ 0.10	$ 0.10	$ 0.06	$ 0.06	$ (0.05)	$ 0.05	$ (0.16)	$ (0.05)
Net income (loss) per share - diluted	$ 0.10	$ 0.10	$ 0.06	$ 0.05	$ (0.05)	$ 0.05	$ (0.16)	$ (0.05)

Note 15 - Subsequent Event

Subsequent to December 28, 2019, the Company's Board of Directors approved a stock repurchase program pursuant to which up to $40.0 million of outstanding common stock may be repurchased from time to time. The duration of the repurchase program is twelve months. All repurchases will be open market transactions and funded from available working capital.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Lattice Semiconductor Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Lattice Semiconductor Corporation and subsidiaries (the Company) as of December 28, 2019 and December 29, 2018, the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, 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 28, 2019 and December 29, 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 28, 2019, 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 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 24, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for leases as of December 30, 2018, due to the adoption of ASC 842, *Leases,* and related amendment ASU 2019-01, *Leases (Topic 842): Codification Improvements*.

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for revenue recognition as of December 31, 2017, due to the adoption of ASC 606, *Revenue from Contracts with Customers*.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated 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 consolidated 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 consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated 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 consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgment. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Assessment of the net realizable value of inventory

As discussed in Notes 1 and 4 to the consolidated financial statements, the Company's inventories were $54,980 thousand as of December 28, 2019. The Company records its inventories at the lower of average cost or market. The Company records an adjustment to the cost basis of inventory when it is obsolete or the Company holds quantities in excess of projected customer demand. These adjustments result in a write-down of inventory to net realizable value. The Company's estimate of the obsolete and/or excess inventory includes comparing projected customer demand to inventory units-on-hand.

We identified the assessment of the net realizable value of inventory as a critical audit matter. This is due to a higher degree of auditor judgment that was required to evaluate projected customer demand, due to the dynamic business environment the Company competes in, which is characterized by rapid technology and product evolution.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's inventory process, including controls related to the Company's projected customer demand. We evaluated the assumption that historical sales was a relevant predictor of projected customer demand by:

– inquiring of relevant Company personnel in order to identify and analyze changes to the overall business environment, including customers, key products or product lines, and industry factors,
– selecting a sample of inventory items and testing historical sales of those samples by agreeing them to underlying sales documents and comparing it to inventory units-on-hand, and
– obtaining the historical sales for each product line associated with each sample selection and performing a historical sales trend analysis.

/s/ KPMG LLP

We have served as the Company's auditor since 2007.

Portland, Oregon
February 24, 2020

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Lattice Semiconductor Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited Lattice Semiconductor Corporation and subsidiaries' (the Company) internal control over financial reporting as of December 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

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 28, 2019 and December 29, 2018, the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, the consolidated financial statements), and our report dated February 24, 2020 expressed an unqualified opinion on those consolidated financial statements.

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 the 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 of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included 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/ KPMG LLP

Portland, Oregon
February 24, 2020

Item 9. Changes in and Disagreements with Accountants On Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

In connection with the filing of this Form 10-K, our management, including our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) as of December 28, 2019. These disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms. Our disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that we accumulate and communicate correct information to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls are effective as of December 28, 2019.

Management's Report on Internal Control Over Financial Reporting

The management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) or 15d-15(f) under the Securities Exchange Act of 1934. The Company's internal control over financial reporting is a process designed to provide reasonable assurance regarding reliability of financial reporting and the preparation and fair presentation of published financial statements for external purposes in accordance with generally accepted accounting principles.

Our internal control over financial reporting includes those policies and procedures that:

(i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;
(ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and
(iii) 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. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met, and 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.

Management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the Company's internal control over financial reporting as of December 28, 2019. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control - Integrated Framework (2013)*. Based on this assessment, management concluded that, as of December 28, 2019, the Company's internal control over financial reporting was effective.

KPMG LLP, our independent registered public accounting firm, has audited the Company's internal control over financial reporting and has issued its opinion on the effectiveness of the Company's internal control over financial reporting, which appears on page 55 in this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

During the quarter ended December 28, 2019, the Company’s management identified deficiencies in the design and operation of general information technology controls over system access. We evaluated the controls over system access and designed a remediation plan which included implementing additional controls and improving the design of existing controls over system access. During the quarter ended December 28, 2019, management implemented the remediation plan, tested the controls over system access, and concluded the deficiencies had been remediated.

Except with respect to the changes in connection with our implementation of the remediation plan discussed above, there were no changes in our internal controls over financial reporting (as defined in Rules 13a-15(f) under the Exchange Act) that occurred during the fourth quarter of fiscal 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Certain information required by Part III is incorporated by reference from our definitive proxy statement (the “Proxy Statement”) for the 2020 Annual Meeting of Stockholders, pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended, which we will file not later than 120 days after the end of the fiscal year covered by this report. With the exception of the information expressly incorporated by reference from the Proxy Statement, the Proxy Statement is not to be deemed filed as a part of this report.

Item 10. Directors, Executive Officers and Corporate Governance

Information regarding our directors that is required by this item is incorporated by reference from the information contained under the captions “Proposal 1: Election of Directors” and “Corporate Governance and Other Matters--Board Meetings and Committees” in the Proxy Statement. Information regarding our executive officers that is required by this item is incorporated by reference from the information contained under the caption "Executive Compensation--The Executive Officers of the Company” in the Proxy Statement.

Information regarding Section 16(a) reporting compliance that is required by this item is incorporated by reference from the information contained under the caption “Section 16(a) Beneficial Ownership Reporting Compliance” in the Proxy Statement.

We have adopted a Code of Conduct that applies to all of our employees, including our principal executive officer, principal financial officer, principal accounting officer, and persons performing similar functions. The Code of Conduct is posted on our website at www.latticesemi.com. There were no changes to our Code of Conduct during fiscal 2019. Amendments to the Code of Conduct or any grant of a waiver from a provision of the Code of Conduct requiring disclosure under applicable SEC rules, if any, will be disclosed on our website at www.latticesemi.com.

Information about our Corporate Governance Policies, our “Director Code of Ethics” and written committee charters for our Audit Committee, Compensation Committee, and Nominating and Governance Committee are available free of charge on the Company's website at www.latticesemi.com and are available in print to any shareholder upon request.

Information regarding our Audit Committee that is required by this Item is incorporated by reference from the information concerning our Audit Committee contained under the caption “Corporate Governance and Other Matters--Board Meetings and Committees” in the Proxy Statement.

Item 11. Executive Compensation

The information contained under the captions “Executive Compensation,” "Director Compensation," “Compensation Committee Interlocks and Insider Participation,” and “Compensation Committee Report” in the Proxy Statement is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information contained under the captions “Security Ownership of Certain Beneficial Owners and Management” and "Equity Compensation Plan Information" in the Proxy Statement is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information contained under the captions entitled “Certain Relationships and Related Transactions” and “Corporate Governance and Other Matters--Director Independence” in the Proxy Statement is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information contained under the caption entitled “Proposal 5: Ratification of Appointment of Independent Registered Public Accounting Firm--Audit and Related Fees” in the Proxy Statement is incorporated herein by reference.

PART IV

Item 15. Exhibits

(a) List of Documents Filed as Part of this Report

(1) All financial statements

The following financial statements are filed as part of this report under Item 8.

All other schedules have been omitted because the required information is included in the Consolidated Financial Statements or the notes thereto, or is not applicable or required.

(2) Exhibits

Exhibit Number	Description
3.1	The Company's Restated Certificate of Incorporation filed, as amended on June 4, 2009 (Incorporated by reference to Exhibit 3.1 filed with the Company's Current Report on Form 8-K filed June 4, 2009).
3.2	The Company's Bylaws, as amended as of November 3, 2016 (Incorporated by reference to Exhibit 3.2 filed with the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016).
4.1	Description of Securities
10.1*	Lattice Semiconductor Corporation 1996 Stock Incentive Plan, as amended, and Related Form of Option Agreement (Incorporated by reference to Exhibit 10.24 filed with the Company's Annual Report on Form 10-K for the fiscal year ended December 29, 2012).
10.2*	2001 Stock Plan, as amended, and related Form of Option Agreement (Incorporated by reference to Exhibit 10.34 filed with the Company's Annual Report on Form 10-K for the fiscal year ended December 29, 2012).
10.3*	Form of Indemnification Agreement executed by each director and executive officer of the Company and certain other officers and employees of the Company and its subsidiaries (Incorporated by reference to Exhibit 10.41 filed with the Company's Annual Report on Form 10-K for the fiscal year ended January 3, 2004).
10.4*	Form of Amendment to Stock Option Agreements for 1996 Stock Incentive Plan, as amended, and 2001 Stock Plan, as amended (Incorporated by reference to Exhibit 99.3 filed with the Company's Current Report on Form 8-K filed on December 12, 2005).
10.5*	Form of Notice of Grant of Restricted Stock Units to Executive Officer (Incorporated by reference to Exhibit 99.1 filed with the Company's Current Report on Form 8-K filed on February 8, 2007).
10.6*	Employment Agreement between Lattice Semiconductor Corporation and Byron Milstead effective as of December 30, 2008 (Incorporated by reference to Exhibit 10.66 filed with the Company's Annual Report on Form 10-K filed for the fiscal year ended January 3, 2009).
10.7	Credit Agreement among Lattice Semiconductor Corporation, the Subsidiary Guarantors from time to time party thereto, the various Lenders from time to time party thereto, Jefferies Finance LLC as Administrative Agent, Jefferies Finance LLC and HSBC Securities (USA) Inc. as lead arrangers and book runners, Jefferies Finance LLC as syndication agent and HSBC Securities (USA) Inc. and ING Capital LLC as co-documentation agents (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed March 11, 2015).
10.8*	Lattice Semiconductor Corporation 2012 Employee Stock Purchase Plan (incorporated by reference to Annex 1 to the Company's Definitive Proxy Statement on Schedule 14A for the 2012 Annual Meeting of Stockholders filed on April 12, 2012).
10.9*	Lattice Semiconductor Corporation 2011 Non-Employee Director Equity Incentive Plan. (Incorporated by reference to Exhibit 99.2 filed with the Company's Registration Statement on Form S-8 filed June 25, 2019).
10.10*	Lattice Semiconductor Corporation 2013 Incentive Plan. (Incorporated by reference to Exhibit 99.1 filed with the Company's Registration Statement on Form S-8 filed June 25, 2019).

Exhibit Number	Description
10.11	Office Lease, effective as of October 21, 2014, between 555 SW Oak, LLC and Lattice Semiconductor Corporation (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed October 27, 2014).
10.12*	Lattice Semiconductor Corporation 2017 Cash Incentive Plan (Incorporated by reference to Exhibit 10.12 filed with the Company's Annual Report on Form 10-K filed on March 14, 2018).
10.13*	Lattice Semiconductor Corporation 2018 Cash Incentive Plan (Incorporated by reference to Exhibit 10.13 filed with the Company's Annual Report on Form 10-K filed on February 26, 2019).
10.14*	Lattice Semiconductor Corporation 2019 Cash Incentive Plan
10.15*	Separation Agreement, dated as of March 12, 2018, between Lattice Semiconductor Corporation and Darin G. Billerbeck (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed on March 12, 2018).
10.16	Letter Agreement, dated as of March 7, 2018, among Lattice Semiconductor Corporation, Lion Point Capital, LP, Lion Point Master, LP, Lion Point Capital GP, LLC, Lion Point Holdings GP, LLC, Didric Cederholm and Jim Freeman (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed on March 13, 2018).
10.17*	Employment Agreement, by and between Lattice Semiconductor Corporation and James R. Anderson, effective September 4, 2018 (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed on August 27, 2018).
10.18*	Employment Agreement, by and between Lattice Semiconductor Corporation and Stephen Douglass, effective September 4, 2018 (Incorporated by reference to Exhibit 10.2 filed with the Company's Quarterly Report on Form 10-Q filed on October 29, 2018).
10.19*	Employment Agreement, by and between Lattice Semiconductor Corporation and Sherri Luther, effective January 2, 2019 (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed on January 2, 2019).
10.20*	CFO Notice and Supplemental Separation Benefit Letter, by and between Lattice Semiconductor Corporation and Max Downing, dated September 28, 2018 (Incorporated by reference to Exhibit 10.3 filed with the Company's Quarterly Report on Form 10-Q filed on October 29, 2018).
10.21*	Employment Agreement, by and between Lattice Semiconductor Corporation and Esam Elashmawi, dated September 24, 2018 (Incorporated by reference to Exhibit 10.20 filed with the Company's Annual Report on Form 10-K filed on February 26, 2019.).
10.22	Credit Agreement by and among Lattice Semiconductor Corporation, as borrower, the lenders from time to time party thereto and Wells Fargo Bank, National Association, as administrative agent. (Incorporated by reference to Exhibit 10.1 filed with the Company's Current Report on Form 8-K filed May 20, 2019).
10.23*	Amended Employment Agreement, by and between Lattice Semiconductor Corporation and James R. Anderson, effective February 21, 2020.
10.24*	Form of Amended Employment Agreement
21.1	Subsidiaries of the Registrant.
23.1	Consent of Independent Registered Public Accounting Firm.
31.1	Certification of Chief Executive Officer pursuant to the Securities Exchange Act of 1934 Rule 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer pursuant to the Securities Exchange Act of 1934 Rule 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. 1350, as adopted 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 Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* *Management contract or compensatory plan or arrangement required to be filed as an Exhibit to this Annual Report on Form 10-K pursuant to Item 15(b) thereof.*

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.

LATTICE SEMICONDUCTOR CORPORATION

(Registrant)

By: /s/ Sherri Luther

Sherri Luther
Chief Financial Officer
(Duly Authorized Officer and Principal Financial and Accounting Officer)

Date: February 24, 2020

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints James Anderson and Sherri Luther, or either of them, his or her attorneys-in-fact, each with the power of substitution, for such person in any and all capacities, to sign any amendments to this report and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that either of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

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 in the capacities indicated and on the dates indicated:

Signature	Title	Date
Principal Executive Officer		
/s/ James Anderson		February 24, 2020
James Anderson	President, Chief Executive Officer, and Director	
Principal Financial and Accounting Officer		
/s/ Sherri Luther		February 24, 2020
Sherri Luther	Chief Financial Officer	
Directors		
/s/ Robin Abrams		February 24, 2020
Robin Abrams	Director	
/s/ John Bourgoin		February 24, 2020
John Bourgoin	Director	
/s/ Mark Jensen		February 24, 2020
Mark Jensen	Director	
/s/ Anjali Joshi		February 24, 2020
Anjali Joshi	Director	
/s/ James Lederer		February 24, 2020
James Lederer	Director	
/s/ John Major		February 24, 2020
John Major	Director	
		February 24, 2020
Krishna Rangasayee	Director	
/s/ Jeff Richardson		February 24, 2020
Jeff Richardson	Director	

Exhibit 4.1

DESCRIPTION OF SECURITIES

References to "Lattice" and the "Company" herein are, unless the context otherwise indicates, only to Lattice Semiconductor Corporation and not to any of its subsidiaries.

Description of Capital Stock

The following is a summary of the Company's capital stock and certain provisions of its Restated Certificate of Incorporation (the "**Certificate**") and Bylaws (the "**Bylaws**"). This summary does not purport to be complete and is qualified in its entirety by the provisions of the Certificate and the Bylaws.

Common Stock

Shares Outstanding. The Company is authorized to issue up to 300 million shares of common stock, par value $0.01 per share (the "**Common Stock**").

Dividends. Subject to prior dividend rights of the holders of any shares of preferred stock of the Company ("**Preferred Stock**"), holders of shares of Common Stock are entitled to receive ratably dividends when, as and if declared by the Company's Board of Directors (the "**Board**") out of funds legally available for that purpose. Delaware law allows a corporation to pay dividends only out of surplus, as determined under Delaware law.

Voting Rights. Each share of Common Stock is entitled to one vote on all matters submitted to a vote of stockholders. Holders of shares of Common Stock do not have cumulative voting rights. This means a holder of a single share of Common Stock cannot cast more than one vote for each position to be filled on the Board. The directors of the Company are elected by a plurality of the voting power of the shares present in person or represented by proxy. On all other matters submitted to the stockholders, the affirmative vote of the majority of the voting power of the shares present in person or represented by proxy shall be the act of the shareholders.

Other Rights. In the event of a liquidation, dissolution or winding up of our company, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior liquidation preferences of holders of convertible preferred stock, if any, then outstanding. The shares of Common Stock are not subject to redemption by operation of a sinking fund or otherwise. Holders of shares of Common Stock are not currently entitled to pre-emptive rights or conversion rights or other subscription rights.

Fully Paid. The issued and outstanding shares of Common Stock are fully paid and non-assessable. This means the full purchase price for the outstanding shares of Common Stock has been paid and the holders of such shares will not be assessed any additional amounts for such shares. Any additional shares of Common Stock that the Company may issue in the future will also be fully paid and non-assessable.

Transfer Agent and Registrar. The transfer agent and registrar for the Common Stock is Computershare Trust Company N.A.

Listing. Our Common Stock is listed on the Nasdaq Global Select Market under the trading symbol "LSCC".

Preferred Stock

The Board is authorized to issue up to 10 million shares of Preferred Stock from time to time in one or more series, to establish the number of shares to be included in each such series and to fix the designation, powers, preferences and rights of such shares and any qualifications, limitations or restrictions thereof. The issuance of Preferred Stock may have the effect of delaying, deferring or preventing a change in control of the Company without further action by the stockholders and may adversely affect the voting and other rights of the holders of Common Stock. The issuance of Preferred Stock with voting and conversion rights may adversely affect the voting power of the holders of Common Stock, including the loss of voting control to others.

Anti-takeover Effects of Our Certificate of Incorporation and Bylaws and Delaware Law

Some provisions of Delaware law, the Certificate and Bylaws could make the following more difficult:

- acquisition of the Company by means of a tender offer,
- acquisition of the Company by means of a proxy contest or otherwise, or
- removal of the Company's incumbent officers and directors.

These provisions, summarized below, are expected to discourage and prevent coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of the Company to first negotiate with the Board. They are also intended to provide our management with the flexibility to enhance the likelihood of continuity and stability if our Board determines that a takeover is not in our best interests or the best interests of the stockholders. These provisions, however could have the effect of discouraging attempts to acquire us, which could deprive our stockholders of opportunities to sell their shares of Common Stock at prices higher than prevailing market prices. The Company believes that the benefits of these provisions, including increased protection, give it the potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure the Company and outweigh the disadvantages of discouraging takeover proposals, because negotiation of takeover proposals could result in an improvement of their terms.

Size of Board and Vacancies. The Bylaws provide that the Board will have one or more members, which number will be determined from time to time by resolution of the Board. We do not have a classified board. The Certificate and Bylaws contain provisions that establish specific procedures for appointing and removing members of the Board. Under the Certificate and the Bylaws, vacancies and newly created directorships on the Board may be filled only by a majority of directors then serving on the Board. Under the Certificate and Bylaws, directors may be removed, with or without cause by a majority of the shares then entitled to vote at an election of directors.

Elimination of Stockholder Action by Written Consent. The Bylaws eliminate the right of the Company's stockholders to act by written consent. Stockholder action must take place at the annual or a special meeting of the Company's stockholders.

Stockholder Meetings. Under the Bylaws, only the chairman of the Board, chief executive officer or a majority of the authorized number of directors on the Board may call special meetings of the Company's stockholders.

Requirements for Advance Notification of Stockholder Nominations and Proposals. The Bylaws establish advance notice procedures with respect to stockholder proposals and nomination of candidates for election as directors.

Delaware Anti-takeover Law. The Company is subject to Section 203 of the Delaware General Corporation Law (“**Section 203**”), an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date such person became an interested stockholder, unless the business combination or the *transaction* in which such person became an interested stockholder is approved in a prescribed manner. Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an “interested stockholder” is a person that, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation’s voting stock. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the Board, including discouraging attempts that might result in a premium over the market price for the shares of Common Stock held by stockholders.

No Cumulative Voting. Neither the Certificate nor Bylaws provide for cumulative voting in the election of directors.

Undesignated Preferred Stock. The authorization of the Company’s undesignated Preferred Stock makes it possible for the Board to issue Preferred Stock with voting or other rights or preferences that could impede the success of any attempt to change control of the Company.

Exhibit 10.14

LATTICE SEMICONDUCTOR CORPORATION

2019 Cash Incentive Plan Summary

Purpose

The Lattice Cash Incentive Plan (the “Plan”) directly supports the achievement of business objectives while rewarding individual contribution. Employees will be compensated both for achievement of specific financial measures derived from the Company’s annual operating plan and corporate performance measured by the achievement of corporate MBOs. The Plan is established under the terms of and is governed by the Company’s 2013 Incentive Plan and the Plan accordingly is subject to administration by the Compensation Committee of the Company’s Board of Directors (the “Compensation Committee”).

Effective Date

The Plan is effective the first day of the fiscal year as defined by the Lattice Finance Department.

Incentive Period

The Incentive Period is the fiscal year as defined by the Lattice Finance Department.

Incentive Payment

Incentives are paid annually following the close of the fiscal year, audit of the Company’s financial results for the year, determination of the achievement of Corporate MBOs and Compensation Committee approval of the proposed payment.

Eligibility

Regular employees become eligible to participate in the plan beginning on their hire date, except as otherwise provided under the heading Other General Provisions hereafter. Employees in grade 16 and above (hereafter “Executives”) become eligible to participate as provided in their initial offer letter or Employment Agreement, as applicable.

Eligibility excludes the following:

- Those who are eligible under the Company’s Sales Incentive Plan (“SIP”);
- Temporary employees (including interns) and contractors; and
- Any other persons deemed ineligible by application of the provisions set forth under the heading "Other General Provisions" hereafter.

Incentive Targets

Each participant will be assigned an incentive target (“Individual Target”) established under the Company’s compensation practices. The Individual Target, stated as a percentage of Eligible Wages, is the potential incentive amount that an employee may earn if all funding and performance criteria for the Incentive Period are met at 100% of target. Changes in the Individual Target during the fiscal year will be prorated as provided under the heading Other General Provisions hereafter.

Participants may earn from 0% up to 200% of their Individual Target based on achievement of funding and performance criteria as outlined herein.

Performance Metrics

The table below contains the three (3) performance metrics, and their weight applied to the incentive target. The Compensation Committee of the Board of Directors approves the Corporate MBOs as well as the payout factor of the Corporate MBOs at the end of the preceding fiscal year. The determination of the Committee is final.

2019 Performance Metric	Metric Weight
1 - Operating Income	33.3%
2 - Revenue	33.3%
3 - Corporate MBOs	33.3%
Total	100.0%

Funding

Pool funding is based on the achievement of the financial metrics Revenue and Operating Income. No funding will take place until either the Revenue threshold or Operating Income threshold are achieved. Once the Revenue threshold or Operating Income threshold is attained, the Corporate MBOs will begin to payout and will be based on the Corporate MBOs payout factor approved by the Compensation Committee of the Board of Directors. The Corporate MBOs have a maximum payout factor of 100%.

Once the financial metrics achieve their threshold the metric will fund the plan on a linear basis starting with a payout factor of 0% and continuing until the maximum payout factor of 250% is attained.

Operating Income is defined as Non-GAAP Operating Income before incentive accrual and acquisition related expenses.

The Compensation Committee reserves the right to adjust the financial metrics in the event the Company engages in non-ordinary course transactions, including without limitation, mergers, acquisitions or divestitures.

Employee Payout

At the end of the Incentive Period, employees will be eligible for an incentive based on the following formula:

$$\text{Employee Payout} = (\text{Eligible Wages} \times \text{Individual Target})$$
$$\times [(\text{Payout Factor}_{\text{Revene}} \times 0.33) + \text{Payout Factor}_{\text{Operating Income}} \times 0.33) + (\text{Payout Factor}_{\text{Corporate MBOs}} \times 0.33)]$$

The Compensation Committee reserves the right to reduce or increase any amount payable under this Plan, including without limitation amounts payable on application of this formula.

Other General Provisions

Current Employees

Employee must be both a regular and active employee to participate in the plan. Employee payments will be prorated to exclude the number of calendar days the employee is not both a regular and active employee during the incentive period.

New Employees

New regular employees will be eligible to participate in the plan effective on the date they become actively employed. The employee payout will be prorated based on the number of calendar days they are actively employed during the incentive period.

Transfers

Regular employees that transfer either on to or off of the Sales Incentive Plan will have their employee payout prorated based on the number of calendar days they are eligible to participate in the Corporate Incentive Plan during the incentive period.

Changes in Incentive Targets

Changes in incentive targets will be prorated based on the number of calendar days the incentive target is in effect during the incentive period.

Leaves of Absence

Employee payments will be prorated to exclude the number of calendar days the employee is on leave during the incentive period, unless otherwise provided by local law.

Terminations - Voluntary and Involuntary

Employee must be in an active, eligible employment status as of the date incentive payments are actually paid to be eligible to receive an incentive payout for the prior Incentive Period and such incentive is not deemed to be earned until the payment date. No pro rata or partial payment will be paid for employees who are not actively employed on the date payments are made.

The following exception is applicable to all payments: An eligible employee whose termination date, as a result of an approved Employee Restructure Plan, is on or after the last day of the incentive period, but prior to the actual payment date shall remain eligible for an incentive payout for that plan year, subject to all other plan provisions.

Incentive Payments

Incentive payments will be made after the end of the fiscal year, once financial results have been determined and audited, and the Corporate MBOs have been reviewed and approved by the Compensation Committee and Board of Directors as provided above.

Eligible Wages

Eligible Wages means the 12-month base salary paid during the applicable incentive period, exclusive of any bonuses or wage supplements, unless otherwise required by local law. In the case of hourly employees, Eligible Wages mean ordinary wages earned and paid exclusive of any overtime wages paid during the incentive period.

Performance Improvement Plan

Employees who are on a formal Performance Improvement Plan (PIP) due to an Improvement Required rating determination or other unsatisfactory performance at the end of the incentive period will not be eligible for an incentive payment. The determination of the employee’s manager shall be conclusive and final with respect to the issue of whether a PIP has been satisfactorily performed.

Taxing

All required and applicable taxes and deductions will be withheld from incentive payments.

Plan Administrators

The Compensation Committee of the Board of Directors will oversee the Plan. The Lattice Finance Department will make all determinations of the Revenue and Operating Income metrics. The Lattice Human Resources Department will administer the Plan.

Company Discretion

Participation in this plan does not constitute a contract of employment with the Company for any specified period of time, nor is it an entitlement to participate in any other program or any future program. The Compensation Committee reserves the right to cancel, revise, interpret, and apply this Plan and its provisions and to reduce any amounts payable under its terms at its sole discretion. Changes to the Plan must be in writing. Changes impacting the Executives must be approved by the Compensation Committee. The Company's senior employee of Human Resources, and CEO must approve any exceptions to the Plan.

Exhibit 10.23

Employment Agreement

This Employment Agreement (the "Agreement") is entered into by and between James R. Anderson (the "Executive") and **LATTICE SEMICONDUCTOR CORPORATION**, a Delaware corporation (the "Company") as of **February 21, 2020 (the "Effective Date")** and amends and restates that certain Employment Agreement between Executive and the Company dated August 20, 2018.

1. **Duties and Scope of Employment**.

(a) **Position**. For the term of his employment under this Agreement ("Employment"), the Executive will serve as the President and Chief Executive Officer ("PCEO"). The Executive shall report directly to the Company's Board of Directors (the "Board"). Executive will render such business and professional services in the performance of his duties, consistent with the Executive's position within the Company, as will reasonably be assigned to him by the Board. The Executive presently serves on the Board as of the Effective Date (as defined below), and the Board will use its best efforts to nominate Executive for election to the Board throughout the Employment.

(b) **Obligations**. The Executive shall have such duties, authority and responsibilities that are commensurate with being the Company's most senior executive officer. During the term of his Employment, the Executive will devote Executive's full business efforts and time to the Company. For the duration of his Employment, Executive agrees not to actively engage in any other employment, occupation, or consulting activity for any direct or indirect remuneration without the prior approval of the Board (which approval will not be unreasonably withheld); provided, however, that Executive may (a) serve in any capacity with any civic, educational, or charitable organization, and (b) serve as a member of the board of directors of one public company that is not a direct or indirect competitor of the Company, so long as such services do not interfere with Executive's obligations to the Company as determined by the Board in its reasonable and good faith discretion. Executive shall comply at all times with the Company's Code of Conduct and all other applicable Company policies. Executive shall perform his duties primarily at the Company's corporate facility in San Jose, California.

(c) **Effective Date**. The Executive commenced full-time Employment as PCEO September 4, 2018 and shall continue such employment under the terms of this Agreement.

2. **Cash and Incentive Compensation**.

(a) **Salary**. As of the Effective Date and thereafter, the Company shall pay Executive as compensation for his services a base salary at a gross annual rate of not less than $550,000 (such annual salary, as is then in effect, to be referred to herein as "Base Salary"). The Base Salary will be paid periodically in accordance with the Company's normal payroll practices and be subject to the usual, required withholdings, provided, however, that Executive shall receive pro-rata payments of Base Salary no less frequently than once per month. Executive's Base Salary will be subject to review by the Compensation Committee of the Board (the "Committee") not less than annually, and adjustments will be made in the discretion of the Committee.

(b) **Incentive Bonuses**. Executive shall be a participant in a Cash Incentive Plan, as established by the Company (the "CIP"). Under the CIP, Executive shall be eligible to earn an annual fiscal year incentive payment equal to 100% of Executive's Base Salary as of the beginning of such fiscal year or such higher percentage that the Committee may select (such annual amount is the "Target Amount"), provided Executive is employed at the end of the annual fiscal year. The Target Amount shall be awarded to Executive based upon the achievement of specific milestones that will be established by the Committee and Executive in writing no later than 60 days after the start of each fiscal year (the "Target Amount Milestones"). For superior achievement of the Target Amount Milestones, as determined in the Company's sole discretion, Executive may earn a maximum annual fiscal year incentive bonus of up to 200% of Executive's Base Salary as of the beginning of such fiscal year or such higher percentage that the Committee may select. Cash payment for each fiscal year's incentive compensation actually earned shall be made to Executive no later than 45 days after the end of the applicable fiscal year for which the annual incentive was earned; provided, however, that the Company shall have no obligation to make such payment for a fiscal year until such time as the audit of the Company's financial statements for such fiscal year has been completed and the Company has publicly reported its financial results for such fiscal year as long as such payment is made within 70 days of the end of the applicable fiscal year. All awards of incentive compensation to executive officers of the Company (including Compensation Equity described below) are subject to the Company's policy (including any amendments or such policy or any successor policy) to seek recovery, at the direction of the Company's Board of Directors, to the extent permitted or required by applicable law, of incentive compensation awarded or paid to an executive officer of the Company for a fiscal period if the result of a performance measure upon which the award was based or paid is subsequently restated or otherwise adjusted in a manner that would reduce the size of the award or payment.

(c) **Terms of Company Compensatory Equity Awards**. Executive shall be eligible for grants of options to purchase shares of the Company's common stock, restricted stock units, performance shares or other Company equity, pursuant to an applicable stockholder-approved equity compensation plan (the "Plan") or in the case of initial grants to the Executive under rules applicable to inducement equity grants, at times and in such amounts as determined by the Committee (any prior or future compensatory equity grants to Executive shall be collectively referred to herein as "Compensatory Equity"). The equity awards granted to Executive prior to the date of this Agreement, including without limitation any grants made upon the initial hiring of Executive by the Company, grants made in August, 2019 and grants made in February, 2020, shall vest based on the terms of such awards except as hereafter provided.

(i) All grants of Compensatory Equity (and the issuance of any underlying shares) to Executive shall be: (i) issued pursuant to the Plan or rules applicable to inducement equity grants and (ii) issued pursuant to an effective registration statement filed with the Securities and Exchange Commission under the Securities Act of 1933 as amended. Accelerated vesting of Compensatory Equity may occur: (x) pursuant to the terms of this Agreement and in addition (y) pursuant to the terms of the Plan and any applicable Compensatory Equity agreement.

(ii) Executive may elect to establish a trading plan in accordance with Rule 10b5-1 of the Securities Exchange Act of 1934 for any of his Compensatory Equity shares, provided, however, that such trading plan must comply with all of the requirements for the safe harbor under Rule 10b5-1 and must be either (i) approved by the Board (such approval not to be unreasonably withheld) or (ii) approved in accordance with any Rule 10b5-1 Trading Plan Policy the Company may subsequently implement.

(iii) In the event of a Change in Control, as hereafter defined, Executive's entitlement to vesting under all awards of Compensatory Equity that vest based on performance shall vest based on the terms of such awards; provided, however, if no treatment has been set forth in such award then for purposes of determining performance under any relative TSR awards outstanding on or granted after the Effective Date, the ending average stock price will be determined as the price per share paid for the Company's stock in the Change in Control and the peer group ending average stock price will be determined based on the average closing stock prices for the component members of the peer group for the 30-trading days ending prior to the date of the Change in Control. For purposes of any tranche where the determination period has not commenced as of the date of the public announcement of the proposed Change in Control, the Company stock price for the initial date of such determination period shall be deemed to be the price of the Company's stock as of the date of the original performance grant. This calculation will be applied to any tranches of the relative TSR awards that were eligible to vest for measurement periods ending on or after the date of the Change in Control and those tranches be converted to restricted stock units and will vest on the originally scheduled measurement dates, subject to Executive remaining a service provider to the Company or its successor through such dates and such awards being afforded the same protection under this Agreement as Compensatory Equity that vests solely based on Service. Any of those Compensatory Equity grants to Executive subject to performance-based vesting relating to EBITDA by reason of a determination/testing date falling after the date of the Change in Control will vest immediately at the target amount of the grant (i.e., for grants subject to adjusted EBITDA targets, the 100% vesting level being the number of granted units to the extent not already vested (for example, if 50% of the units granted have already vested as of the date, an additional 50% of those units will vest effective on the Termination Date)).

(d) **Service Definition**. For purposes of this Agreement and Executive's Compensatory Equity, "Service" shall mean service by the Executive as an employee and/or consultant of the Company (or any subsidiary or parent or affiliated entity of the Company) and/or service by the Executive as a member of the Board.

3. **Vacation and Employee Benefits**. During the term of his Employment, the Executive shall be entitled to vacation in accordance with the Company's standard vacation policy. During the term of his Employment, the Executive shall be eligible to participate in any employee benefit plans (including, without limitation, group health insurance coverage for Executive and his dependents) or arrangements maintained by the Company on no less favorable terms than for other Company executives, subject in each case to the generally applicable terms and conditions of the plan or arrangement in question and to the determinations of any person or committee administering such plan or arrangement.

4. **Business Expenses**. During the term of his Employment, the Executive shall be authorized to incur necessary and reasonable travel, entertainment and other business expenses in connection with his duties hereunder. The Company shall promptly reimburse the Executive for such expenses upon presentation of appropriate supporting documentation, all in accordance with the Company's generally applicable policies. The Company shall also timely pay for all of Executive's reasonable home telecommunications phone and facsimile lines used for business purposes and reimburse Executive for his actual and reasonable mobile phone costs (in each case, during the term of his Employment) on a monthly basis. All such payments shall be made by the end of Executive's next tax year. The amount eligible for reimbursement in one year will not affect the amount eligible for reimbursement in any other year, and the right to reimbursement is not subject to liquidation or exchange for another benefit.

5. **Term of Employment**.

(a) **Term of Agreement**. This Agreement will commence on the Effective Date and continue until Executive's Employment is terminated as provided herein.

(b) **Basic Rule**. The Company may terminate the Executive's Employment with or without Cause, by giving the Executive 30 days' advance notice in writing. Provided, however, where the termination is for Cause constituting events such as fraud, willful violation of insider trading rules, willful violation of conflict of interest policies, willful or unauthorized use or disclosure of trade secrets or other confidential information or conviction of a felony, the Company may terminate Executive's Employment effective immediately upon notice. The Executive may terminate his Employment by giving the Company 30 days advance notice in writing. The Executive's Employment shall terminate automatically in the event of his death. For avoidance of doubt, as Executive is an at-will employee, as outlined below, the definition of Cause is solely included for purposes of determining entitlement to severance.

(c) **Employment at Will**. The Executive's Employment with the Company shall be "at will," meaning that either the Executive or the Company shall be entitled to terminate the Executive's employment at any time and for any reason, with or without Cause. This Agreement shall constitute the full and complete agreement between the Executive and the Company on the "at will" nature of the Executive's Employment, which may only be changed in an express written agreement signed by the Executive and a member of the Board.

(d) **Rights Upon Termination**. Upon the termination of the Executive's Employment, the Executive shall be entitled to the compensation, benefits and reimbursements described in this Agreement for the period ending as of the effective date of the termination (the "Termination Date"). Upon termination of Executive's Employment for any reason, the Executive shall receive the following payments on the Termination Date: (i) all unpaid salary, and unpaid vacation accrued (if applicable), through the Termination Date, (ii) any unpaid, but earned and accrued incentive payments under the CIP (whether paid quarterly, annually or as might otherwise be established under the CIP), and (iii) any unreimbursed business expenses. Executive may also be eligible for other post-Employment payments and benefits as provided in this Agreement.

6. **Termination Benefits**.

(a) **Severance Pay**. If there is an Involuntary Termination (as defined below) of Executive's Employment, then the Company shall pay Executive an amount equal to (i) [1.0 times Executive's then-current Base Salary, plus (ii) an amount equal to the incentive payment that Executive would have earned under Section 2(b) had his employment continued through the end of the fiscal year in which the Involuntary Termination occurs, with such amount to be estimated reasonably and in good faith by the Company's Finance group at the time of the Involuntary Termination based on the anticipated actual payout under the CIP as of the end of the fiscal year based on the performance of the Company and which estimate shall be evidenced by the Finance group's accrual for the same in the books of the Company (collectively in the aggregate, the "Cash Severance").] Such Cash Severance shall be paid in a single lump sum cash payment to Executive on the effective date of the separation agreement referenced in Section 8(a), provided Executive executes the separation agreement and general release in favor of the Company, without revocation. Executive shall also be entitled to receive the benefits provided in Sections 6(b) and 6(c) and, if applicable, 6(d).

(b) **Health Insurance**. If Subsection (a) above applies, such that Executive is entitled to Severance Pay, but subject to applicable law, and if Executive properly and timely elects to continue coverage under the Company's group health plan pursuant to Section 4980B(f) of the Internal Revenue Code of 1986, as amended ("COBRA") for Executive and his eligible covered dependents following the termination of his Employment, then the Company shall reimburse Executive's monthly premium under COBRA for Executive and his eligible covered dependents until the earliest of [(i) twelve months after the Termination Date], (ii) the date when Executive commences receiving substantially equivalent health insurance coverage in connection with new employment, or (iii) the date Executive is no longer entitled to COBRA continuation coverage under the Company's group health plan. Notwithstanding the foregoing, Company may unilaterally amend this Section 6(b) or eliminate the benefit provided hereunder to the extent it deems necessary to avoid the imposition of excise taxes, penalties or similar charges on Company or any of its affiliates, including, without limitation, under Section 4980D of the Internal Revenue Code of 1986, as amended (the "Code"). Nothing herein is entitled to warranty or guarantee entitlement to COBRA and Executive acknowledges and agrees that he shall be solely responsible for paying such premiums as any obligation of the Company hereunder, if any, is to reimburse such premiums to Executive.

(c) **Equity Vesting**. If Subsection (a) above applies, such that Executive is entitled to the Cash Severance, then Executive's then-outstanding Compensatory Equity grants (including any equity grants to Executive in addition to those described in Section 2(d)) will become immediately become vested and exercisable or payable with respect to an additional number of shares of Company common stock as if Executive had continued in Service for an additional 12 months following the Termination Date. Any of those Compensatory Equity grants to Executive subject to performance-based vesting by reason of a determination/testing date falling within the 12-month period following the Termination Date will vest immediately at the target amount of the grant (i.e., at the 100% vesting level for the applicable determination/testing date, and for grants subject to adjusted EBITDA targets, 100% vesting level being the number of granted units to the extent not already vested (for example, if 50% of the units granted have already vested as of the Termination Date, an additional 50% of those units will vest effective on the Termination Date)).

(d) **Effect of Change in Control**. If the Company is subject to a Change in Control (as defined below) and if there is an Involuntary Termination of Executive's Employment in connection with such Change in Control (it will automatically be deemed to be in connection with the Change in Control if there is an Involuntary Termination during the period commencing 90 calendar days prior to the Change in Control and extending through the date that is 24 months after the Change in Control): (x) Executive shall vest in all of Executive's unvested Compensatory Equity including any Compensatory Equity after giving effect to Section 2(c)(iii) above, (y) the amount of the Cash Severance in Section 6(a) shall be increased such that the Executive shall receive 2.0 (instead of 1.0) times his then-current Base Salary, plus 2.0 (instead of 1.0) times his then-current Target Amount, and (z) the duration of COBRA coverage in Section 6(b) shall continue to be as set forth in Section 6(b).

(e) **Excise Tax**. Notwithstanding anything herein to the contrary, in the event that Executive becomes entitled to receive or receives any payment or benefit provided for under this Agreement or under any other plan, agreement, or arrangement with the Company, or from any person whose actions result in a Change in Control or any person affiliated with the Company or any such person (all such payments and benefits being referred to herein as the "Total Payments") and it is determined that any of the Total Payments (i) constitute "parachute payments" within the meaning of Section 280G of the Code and (ii) but for this Subsection (e), would be subject to the excise tax imposed by Section 4999 of the Code, then the Total Payments shall be payable either (1) in full, or (2) as to such lesser amount which would result in no portion of the Total Payments being subject to excise tax under Section 4999 of the Code, whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by the Executive on an after-tax basis, of the greatest amount of the Total Payments, notwithstanding that all or some portion of the Total Payments may be taxable under Section 4999 of the Code. Unless Executive and the Company agree otherwise in writing, the determination of Executive's excise tax liability, if any, and the amount, if any, required to be paid under this Subsection (e) will be made in writing by the independent auditors who are primarily used by the Company immediately prior to the Change in Control (the "Accountants"). For purposes of making the calculations required by this Subsection (e), the Accountants may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. Executive and the Company agree to furnish such information and documents as the Accountants may reasonably request in order to make a determination under this Subsection (e). The Company will bear all costs the Accountants may reasonably incur in connection with any calculations contemplated by this Subsection (e). Any reduction of the Total Payments shall be made first to any payments or benefits that are exempt from the application of Section 409A of the Code, and thereafter to any payments or benefits that are subject to Section 409A of the Code; provided that in applying this reduction methodology, the reduction shall be made in a manner consistent with the requirements of Section 409A of the Code, and where more than one of the Total Payments in a category has the same economic cost to Executive and such Total Payments are payable at different times, such Total Payments will be reduced on a pro-rata basis.

(f) **Change in Control Definition**. For purposes of this Agreement, “Change in Control” shall mean the occurrence of any of the following events: (i) the consummation of a merger or consolidation of the Company with or into another entity or any other corporate reorganization, if persons who were not stockholders of the Company immediately prior to such merger, consolidation or other reorganization own immediately after such merger, consolidation or other reorganization more than 50% of the voting power of the outstanding securities of each of (A) the continuing or surviving entity and (B) any direct or indirect parent corporation of such continuing or surviving entity, (ii) the sale, transfer or other disposition of all or substantially all of the Company’s assets, or (iii) in any two-year period, individuals who were members of the Board at the beginning of such period plus each new director whose election or nomination for election was approved by at least a majority of the directors in office immediately prior to such election or nomination, cease for any reason to constitute at least a majority of the Board. A transaction shall not constitute a Change in Control if its sole purpose is to change the state of the Company’s incorporation or to create a holding company that will be owned in substantially the same proportions by the persons who held the Company’s securities immediately before such transaction.

(g) **Cause Definition**. For purposes of this Agreement, “Cause” shall mean (i) Executive’s material breach of this Agreement that is not corrected within a 30 day correction period that begins upon delivery to Executive of a written demand from the Company that describes the basis for the Company’s belief that Executive has materially breached this Agreement; (ii) any refusal to comply with the reasonable and lawful instructions of the Board; (iii) any willful act of fraud or dishonesty that causes material damage to the Company; (iv) any willful violation of the Company’s insider trading policy; (v) any willful violation of the Company’s conflict of interest policies; (vi) any willful unauthorized use or disclosure of trade secrets or other confidential information; or (vii) Executive’s conviction of a felony.

The foregoing shall not be deemed an exclusive list of all acts or omissions that the Company may consider as grounds for the termination of Executive’s Employment, but it is an exclusive list of the acts or omissions that shall be considered “Cause” for purposes of determining entitlement to Severance Pay. Executive’s employment is at-will, as defined above.

(h) **Good Reason Definition**. For all purposes under this Agreement, “Good Reason” shall mean the occurrence of any of the following, without Executive’s express written consent: (i) a material diminution of Executive’s duties, responsibilities, or authority; (ii) a material diminution of Executive’s Base Salary or Target Amount; (iii) the Company’s material breach of this Agreement; (iv) a requirement imposed by the Company or any successor to the Company that Executive report to a corporate officer or employee rather than to the Board or any successor Board; (v) the Company requiring Executive to relocate his primary place of employment to a facility or location that is more than 30 miles from his principal place of employment as of the Effective Date; or (vi) the Company’s failure to have any successor promptly agree in writing to assume the Company’s obligations hereunder, except where this Agreement is assumed by the successor by operation of law; provided, however, that Executive will only have Good Reason if (i) he notifies the Board in writing of the existence of the condition which he believes constitutes Good Reason within ninety (90) days of the initial existence of such condition (which notice specifically identifies such condition), (ii) Company fails to remedy such condition within thirty (30) days after the date on which the Board receives such notice (the “Remedial Period”), and (iii) his resignation is effective within thirty (30) days after the expiration of the Remedial Period.

(i) **Involuntary Termination Definition**. For all purposes under this Agreement, “Involuntary Termination” shall mean any of the following that occur without Executive’s prior written consent: (i) termination of Executive’s Employment by the Company without Cause, or (ii) Executive’s resignation of Employment for Good Reason.

7. **Successors**.

(a) **Company’s Successors**. This Agreement shall be binding upon any successor (whether direct or indirect and whether by purchase, lease, merger, consolidation, liquidation or otherwise) to all or substantially all of the Company’s business and/or assets. For all purposes under this Agreement, the term “Company” shall include any successor to the Company’s business and/or assets which becomes bound by this Agreement.

(b) **Executive’s Successors**. This Agreement and all rights of the Executive hereunder shall inure to the benefit of, and be enforceable by, the Executive’s personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees.

8. **Conditions to Receipt of Severance; No Duty to Mitigate**.

(a) **Separation Agreement and Release of Claims**. The receipt of any severance benefits pursuant to Section 6 will be subject to Executive signing and not revoking a separation agreement and release of claims in substantially the form attached hereto as Exhibit A, but with any appropriate modifications, reflecting changes in applicable law or other considerations (e.g., number of days to consider such release), as are necessary or appropriate to provide the Company with the protection it would have if the release were executed as of the Effective Date. No severance benefits will be paid or provided until the separation agreement and release agreement becomes effective. The separation agreement and release of claims must in all cases be effective by the 60th day following Executive's termination of Employment (or such earlier date as is provided in the release) or no severance benefits will be paid or provided under this Agreement. Notwithstanding anything herein to the contrary if the maximum period during which Executive can consider and revoke the release begins in one calendar year and ends in the subsequent calendar year, payment and provision of severance benefits under this Agreement shall not be made or commence to be made until the later of the effective date of the release and the first business day of the subsequent calendar year, regardless of when the release becomes effective.

(b) **Non-solicitation**. The receipt of any severance benefits will be subject to the Executive agreeing that during Employment and for the 12 month period after the Termination Date (the "Continuance Period"), the Executive will not (i) solicit any employee of the Company for employment other than at the Company, or (ii) , in light of Executive's access to confidential and proprietary information of the Company, solicit any customer, vendor, supplier, independent contractor or others having a business relationship with the Company that has the effect or purpose of decreasing or taking away the business or relationship with the Company. "Company" in this Section 8 refers to the Company and its subsidiaries.

(c) **Non-disparagement**. During Employment and the Continuance Period, the Executive will not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Company, its directors, or its officers. The Company's then and future directors will not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Executive during his Employment or the Continuance Period. The Company will also instruct its officers to not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Executive during his Employment or the Continuance Period. Notwithstanding the foregoing, nothing contained in this Agreement will be deemed to restrict the Executive, the Company or any of the Company's current or former officers and/or directors from providing truthful, accurate information to any governmental or regulatory agency (or in any way limit the content of such information) to the extent they are requested or required to provide such information pursuant to any applicable law or regulation. Further, nothing contained in this Agreement will be deemed to restrict Executive, the Company or any of the Company's current or former officers and/or directors from communicating or filing a complaint in good faith with any government agency or otherwise participating in any investigation or proceeding that may be conducted by any government agency, including providing documents or other information, without notice to the Company.

(d) **No Duty to Mitigate**. No payments or benefits provided to Executive (except as expressly provided in Section 6(b)) shall be subject to mitigation or offset.

9. **Miscellaneous Provisions**.

(a) **Indemnification**. The Company shall indemnify Executive to the maximum extent permitted by any applicable indemnification agreement, applicable law and the Company's bylaws with respect to Executive's Service (including timely advancing and/or reimbursing costs as incurred by Executive) and the Executive shall also be covered under a directors and officers liability insurance policy(ies) paid for by the Company.

(b) **Notice**. All notices and other communications required or permitted under the Agreement must be in writing and will be effectively given (i) upon actual delivery to the party to be notified, (ii) 24 hours after confirmed facsimile transmission, (iii) 1 business day after deposit with a recognized overnight courier or (iv) 3 business days after deposit with the U.S. Postal Service by first class certified or registered mail, return receipt requested, postage prepaid, addressed (A) if to the Executive, at the address the Executive shall have most recently furnished to the Company in writing, (B) if to the Company, at its corporate headquarters and directed to the attention of its General Counsel.

(c) **Arbitration**. With the exception of any claims for workers compensation, unemployment insurance, claims before any governmental administrative agencies as required by applicable law, or claims related to the National Labor Relations Act, any controversy relating to this Agreement or the Executive's employment, including any dispute or controversy arising out of or relating to any interpretation, construction, performance or breach of this Employment Agreement, or the Proprietary Rights Agreement, including, without limitation, employment claims, breach of contract claims, tort claims, wrongful termination claims, discrimination/harassment claims, claims for unpaid wages or other amounts, including pursuant to the California Labor Code, or any disputes related to this Arbitration provision (including its creation, terms, and enforceability), shall be settled by Company and Executive by binding arbitration. The arbitration proceeding will be administered by JAMS pursuant to its Employment Arbitration Rules & Procedures in effect as of the date the arbitration is initiated. The arbitrator shall have the authority to determine the enforceability of this Agreement as well as whether a claim is arbitrable, both of which shall be decided under the Federal Arbitration Act. A copy of the JAMS Employment Arbitration Rules & Procedures is available online at http://www.jamsadr.com/rules-employment-arbitration and also by calling JAMS at 213-620-1133 if you have questions about the arbitration process. This Arbitration policy, any arbitration proceedings held pursuant to this Arbitration policy, and any state court, federal court, or other proceeding concerning arbitration under this Arbitration policy are expressly subject to and governed by the Federal Arbitration Act, 9 U.S.C. § 1 et seq. ("FAA"). Such arbitration shall be presided over by a single arbitrator in the San Francisco Bay Area, California. The Company shall bear all costs uniquely associated with the arbitration process, including the arbitrator's fees, where required by applicable law. The arbitrator shall have the authority to award any damages authorized by law. This agreement to arbitrate shall apply to both the Company and Executive. The parties understand that they are giving up their right to a trial in a court of law.

(d) **Modifications and Waivers**. No provision of this Agreement shall be modified, waived or discharged unless the modification, waiver or discharge is agreed to in writing and signed by the Executive and by an authorized officer of the Company (other than the Executive). No waiver by either party of any breach of, or of compliance with, any condition or provision of this Agreement by the other party shall be considered a waiver of any other condition or provision or of the same condition or provision at another time.

(e) **Whole Agreement**. This Agreement contains the entire understanding of the parties with respect to the subject matter hereof and supersedes any other agreements, representations or understandings (whether oral or written and whether express or implied) with respect to the subject matter hereof. In the event of any conflict in terms between this Agreement and/or the Plan and/or any agreement executed by and between Executive and the Company, the terms of this Agreement shall prevail and govern.

(f) **Legal Fees**. Each party shall pay its own legal fees and expenses incurred in connection with the preparation and execution of this Agreement or any effort to enforce its rights under the Agreement; provided, however, that the Company shall reimburse Executive for reasonable legal fees in the event Company seeks to modify the Agreement during its term without the consent of the Executive.

(g) **Withholding Taxes**. All payments made under this Agreement shall be subject to reduction to reflect taxes or other charges required to be withheld by law.

(h) **Choice of Law**. This Agreement will be governed by the laws of the State of California without regard to California's conflicts of law rules that may result in the application of the laws of any jurisdiction other than California. To the extent that any lawsuit is permitted under this Agreement, the Executive hereby expressly consents to the personal and exclusive jurisdiction and venue of the state and federal courts located in California for any lawsuit filed against the Executive by the Company.

(i) **Severability**. The invalidity or unenforceability of any provision or provisions of this Agreement shall not affect the validity or enforceability of any other provision hereof, which shall remain in full force and effect.

(j) **Code Section 409A**.The parties intend that this Agreement and the payments and benefits provided hereunder, including, without limitation, those provided pursuant to Section 6 hereof, be exempt from the requirements of Section 409A of the Code ("Section 409A") to the maximum extent possible, whether pursuant to the short-term deferral exception described in Treasury Regulation Section 1.409A-1(b)(4), the involuntary separation pay plan exception described in Treasury Regulation Section 1.409A-1(b)(9)(iii), or otherwise. To the extent Section 409A is applicable to this Agreement, the parties intend that this Agreement and any payments and benefits thereunder comply with the deferral, payout and other limitations and restrictions imposed under Section 409A. Notwithstanding anything herein to the contrary, this Agreement shall be interpreted, operated and administered in a manner consistent with such intentions; provided, however that in no event shall the Company or any of its parents, subsidiaries or affiliates be liable to Executive or any other person for any additional tax, interest or penalty that may be imposed on Executive or any other person under, or as a result of, Section 409A or for any damages incurred by Executive or any other person as a result of this Agreement's (or the payments' or benefits' provided hereunder) failure to comply with, or be exempt from, Section 409A. Without limiting the generality of the foregoing, and notwithstanding any other provision of this Agreement to the contrary (other than the proviso in the immediately preceding sentence):

(i) if at the time Executive's employment hereunder terminates, Executive is a "specified employee," as defined in Section 409A(a)(2)(B)(i) of the Code, any and all amounts payable under this Agreement on account of such termination of employment that would (but for this provision) be payable within six (6) months following the date of termination, shall instead be paid in a lump sum on the first day of the seventh month following the date on which Executive's employment terminates or, if earlier, upon Executive's death, except (i) to the extent of amounts that do not constitute a deferral of compensation within the meaning of Treasury Regulation Section 1.409A-1(b) (including without limitation by reason of the safe harbor set forth in Treasury Regulation Section 1.409A-1(b)(9)(iii), as determined by the Company in its reasonable good faith discretion); (ii) benefits which qualify as excepted welfare benefits pursuant to Treasury Regulation Section 1.409A 1(a)(5); and (iii) other amounts or benefits that are not subject to the requirements of Section 409A;

(ii) a termination of employment shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of amounts or benefits upon or following a termination of employment unless such termination is also a "separation from service," as defined in Treasury Regulation Section 1.409A-1(h) after giving effect to the presumptions contained therein, and, for purposes of any such provision of this Agreement, references to a "terminate," "termination," "termination of employment," "resignation" and like terms shall mean separation from service; and

(k) each payment made under this Agreement shall be treated as a separate payment and the right to a series of installment payments under this Agreement shall be treated as a right to a series of separate payments.

(l) **No Assignment**. This Agreement and all rights and obligations of the Executive hereunder are personal to the Executive and may not be transferred or assigned by the Executive at any time. The Company may assign its rights under this Agreement to any entity that expressly in writing assumes the Company's obligations hereunder in connection with any sale or transfer of all or substantially all of the Company's assets to such entity.

(m) **Counterparts**. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by its duly authorized officer, as of the Effective Date.

/s/ James R. Anderson
James R. Anderson

Lattice Semiconductor Corporation

By: /s/ D. Jeffrey Richardson
Name: D. Jeffrey Richardson
Title: Chairman of the Board

EXHIBIT A
GENERAL RELEASE
RECITALS

This Separation Agreement and Release (“Release”) is made by and between ______________________ (“Employee”) and Lattice Semiconductor Corporation (the “Company”) (jointly referred to as the “Parties”):

WHEREAS, Employee is employed by the Company;

WHEREAS, the Company and Employee entered into an Employment Agreement dated _______________ (the “Employment Agreement”);

WHEREAS, the Parties agree that Employee’s employment with the Company will terminate on ________________ (the “Termination Date”);

WHEREAS, the Company and Employee entered into a Proprietary Rights Agreement dated [__________] regarding intellectual property and confidential information (the “Proprietary Rights Agreement”);

WHEREAS, the Company and Employee entered into an Indemnification Agreement, dated [_______], regarding Employee’s rights to indemnification (the “Indemnification Agreement”);

WHEREAS, the Company and Employee entered into Equity Agreements dated [____] granting Employee the option to purchase shares of the Company’s common stock subject to the terms and conditions of the Company’s Stock Option Plan(s) and the Stock Option Agreements and is the grantee of restricted stock units and performance shares representing shares of the Company’s common stock pursuant to the terms of Notice(s) of Grant and related equity incentive plans (all such agreements are referred to collectively as the “Equity Agreements”);

WHEREAS, the Parties wish to resolve any and all disputes, claims, complaints, grievances, charges, actions, petitions and demands that Employee may have against the Company as defined herein, arising out of, or related to, Employee’s employment with, or separation from, the Company;

NOW THEREFORE, in consideration of the promises made herein, the Parties hereby agree as follows:

COVENANTS

1. **Consideration.**

(a) Pursuant to Section 8(a) of the Employment Agreement, Employee’s receipt of severance is subject to Employee executing and not revoking this Release. In consideration of Employee executing and not revoking this Release, the Company agrees to pay (or provide, as applicable) Employee a cash payment of $_________ on the Effective Date and also the benefits specified in the Employment Agreement. Employee acknowledges that such cash payment and the provision of such benefits will be in full satisfaction of the payments and obligations provided under the Employment Agreement and he will not be entitled to any additional salary, wages, bonuses, accrued vacation, housing allowances, relocation costs, interest, severance, stock, stock options, outplacement costs, fees, commissions or any other benefits and compensation, except as provided in any Company employee welfare or pension benefit plans as defined by the Employee Retirement Income Security Act of 1974, as amended (“ERISA”) (such plans, the “Benefit Plans”), this Agreement, the Indemnification Agreement, and/or the Equity Agreements.

(b) Stock. Employee acknowledges that as of the Termination Date, and after taking into account any accelerated vesting provided by the Employment Agreement or Stock Agreements, he will then hold vested stock options to acquire [______] shares of Company common stock and no more, and will hold vested restricted stock units that will be settled for [______] shares of Company common stock and no more. The exercise of any stock options and the settlement of any restricted stock units shall continue to be subject to the terms and conditions of the Equity Agreements and the Employment Agreement.

(c) Benefits. Employee's health insurance benefits will cease on the last day of the month of the Termination Date, subject to Employee's right to continue his and his dependents' health insurance as provided in the Employment Agreement (with such premiums to be paid by the Company as provided in the Employment Agreement). Subject to the Employment Agreement, the Indemnification Agreement, the Equity Agreements and/or the Benefit Plans, Employee's participation in all other benefits and incidents of employment (including, but not limited to, the accrual of vacation and paid time off, and the vesting of stock options and restricted stock units) will cease on the Termination Date.

2. **Confidential Information.** Employee shall continue to comply with the terms and conditions of the Proprietary Rights Agreement, and maintain the confidentiality of all of the Company's confidential and proprietary information. Employee also shall return to the Company all of the Company's property, including all confidential and proprietary information, in Employee's possession, on or before the Effective Date.

3. **Release of Claims.** Employee agrees that the foregoing consideration represents settlement in full of all outstanding obligations owed to Employee by the Company. Employee, on his own behalf and on behalf of his respective heirs, family members, executors, agents, and assigns, hereby fully and forever releases the Company and its current and former: officers, directors, employees, agents, investors, attorneys, shareholders, administrators, affiliates, divisions, subsidiaries, predecessor and successor corporations and assigns (the "Releasees") from, and agrees not to sue any of the Releasees concerning, any claim, duty, obligation or cause of action for monetary damages relating to any matters of any kind arising out of or relating to his employment by the Company (except as provided in the Employment Agreement), or his service as an officer of the Company and/or a director of the Company, whether presently known or unknown, suspected or unsuspected, that Employee may possess arising from any omissions, acts or facts that have occurred up until and including the date on which Employee executes this Release, excluding the "Excluded Claims" (as defined below) and including, without limitation:

(a) any and all claims relating to or arising from Employee's employment with the Company, or the termination of that employment;

(b) any and all claims relating to, or arising from, Employee's right to purchase, or actual purchase of, shares of Company stock, including, but not limited to, any claims for fraud, misrepresentation, breach of fiduciary duty, breach of duty under applicable state corporate law, and securities fraud under any state or federal law;

(c) any and all claims under the law of any jurisdiction, including, but not limited to, wrongful discharge of employment; constructive discharge from employment; termination in violation of public policy; discrimination; breach of contract, both express and implied; breach of a covenant of good faith and fair dealing, both express and implied; promissory estoppel; negligent or intentional infliction of emotional distress; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; unfair business practices; defamation; libel; slander; negligence; personal injury; assault; battery; invasion of privacy; false imprisonment; and conversion;

(d) any and all claims for violation of any federal, state or municipal statute, including, but not limited to, Title VII of the Civil Rights Act of 1964; the Civil Rights Act of 1991; the Age Discrimination in Employment Act of 1967; the Americans with Disabilities Act of 1990; the Fair Labor Standards Act; ERISA; the Worker Adjustment and Retraining Notification Act; the Older Workers Benefit Protection Act; the Family and Medical Leave Act; and the Fair Credit Reporting Act;

(e) any and all claims for violation of the federal, or any state, constitution;

(f) any and all claims arising out of any other laws and regulations relating to employment or employment discrimination; and

(g) any and all claims for attorney fees and costs.

For purposes of this Agreement, the "Excluded Claims" shall include any claims pursuant to the Benefit Plans, the Indemnification Agreement, the non-disparagement clause of Section 8(c) of the Employment Agreement, the right to indemnification under Section 9(a) of the Employment Agreement, and any right to exercise stock options or receive restricted stock units pursuant to the relevant provisions of the Equity Agreements.

4. **Acknowledgement of Waiver of Claims Under ADEA.** Employee acknowledges that he is waiving and releasing any rights he may have against the Releasees for monetary damages under the Age Discrimination in Employment Act of 1967 (“ADEA”) and that this waiver and release is knowing and voluntary. Employee and the Company agree that this waiver and release does not apply to any rights or claims that may arise under the ADEA after the date on which Employee executes this Release. Employee acknowledges that the consideration given for this waiver and release Agreement is in addition to anything of value to which Employee was already entitled. Employee further acknowledges that he has been advised by this writing that:

(a) he should consult with an attorney prior to executing this Release;

(b) he has up to twenty-one (21) days within which to consider this Release;

(c) he has seven (7) days following his execution of this Release to revoke this Release;

(d) this ADEA waiver shall not be effective until the revocation period has expired; and,

(e) nothing in this Release prevents or precludes Employee from challenging or seeking a determination in good faith of the validity of this waiver under the ADEA, nor does it impose any condition precedent, penalties or costs for doing so, unless specifically authorized by federal law.

5. **Unknown Claims.** Employee acknowledges that he has been advised by legal counsel and are familiar with the principle that a general release does not extend to claims which the releasor does not know or suspect to exist in his favor at the time of executing the Release, which if known by him must have materially affected his settlement with the Releasee. Employee, being aware of said principle, agrees to expressly waive any rights Employee may have to that effect, as well as under any other statute or common law principles of similar effect. For avoidance of doubt, it is a condition hereof, and it is Employee’s intention in the execution of the General Release herein that the same shall be effective as a bar to each and every claim specified above, and in furtherance of this intention, Employee hereby expressly waives any and all rights and benefits conferred upon him by Section 1542 of the California Civil Code which provides: A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the Release, which if known by him or her must have materially affected his settlement with the debtor.

Employee agrees to waive the right to receive future monetary recovery directly from the Company, including Company payments that result from any complaints or charges that Employee files with any governmental agency or that are filed on his behalf.

6. **Application for Employment.** Employee understands and agrees that, as a condition of this Release,he shall not be entitled to any employment with the Company, its subsidiaries, or any successor, and he hereby waives any alleged right of employment or re-employment with the Company, its subsidiaries or related companies, or any successor.

7. **No Cooperation.** Employee agrees that he will not knowingly counsel or assist any attorneys or their clients in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints by any third party against any of the Releasees for monetary damages, unless requested by a governmental agency or unless under a subpoena or other court order to do so. Employee agrees both to immediately notify the Company upon receipt of any such subpoena or court order, and to furnish, within three (3) business days of its receipt, a copy of such subpoena or court order to the Company. If otherwise approached by anyone for counsel or assistance in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints against any of the Releasees, Employee shall state no more than that he cannot provide such counsel or assistance. Nothing in this Release is intended to or will be used in any way to limit Employee’s right to communicate with a government agency, as provided for, protected under or warranted under applicable law.

8. **Costs.** The Parties shall each bear their own costs, expert fees, attorney fees and other fees incurred in connection with the preparation of this Release.

9. **Arbitration.** The Parties agree that any and all disputes arising out of, or relating to, the terms of this Release, their interpretation, and any of the matters herein released, shall be subject to binding arbitration as described in Section 9(c) of the Employment Agreement.

10. **No Representations.** Each Party represents that it has had the opportunity to consult with an attorney, and has carefully read and understands the scope and effect of the provisions of this Release. Neither Party has relied upon any representations or statements made by the other Party hereto which are not specifically set forth in this Release.

11. **No Oral Modification.** Any modification or amendment of this Release, or additional obligation assumed by either Party in connection with this Release, shall be effective only if placed in writing and signed by both Parties or their authorized representatives.

12. **Entire Agreement.** This Release, the Employment Agreement, the Indemnification Agreement, the Benefit Plans, the Proprietary Rights Agreement and the Equity Agreements represent the entire agreement and understanding between the Company and Employee concerning the subject matter of this Release and Employee's relationship with the Company, and supersede and replace any and all prior agreements and understandings between the Parties concerning the subject matter of this Release and Employee's relationship with the Company.

13. **Governing Law.** This Release shall be governed by the laws of the State of California, without regard for choice of law provisions.

14. **Effective Date.** This Release is only effective after it has been signed by both parties and after eight (8) days have passed following the date Employee signed the Release without Employee revoking this Release (the "Effective Date").

15. **Voluntary Execution of Release.** This Release is executed voluntarily and with the full intent of releasing all claims, and without any duress or undue influence by any of the Parties. The Parties acknowledge that:

(a) They have read this Release;

(b) They have been represented in the preparation, negotiation, and execution of this Release by legal counsel of their own choice or that they have voluntarily declined to seek such counsel;

(c) They understand the terms and consequences of this Release and of the releases it contains; and

(d) They are fully aware of the legal and binding effect of this Release.

IN WITNESS WHEREOF, each of the Parties has executed this Release, in the case of the Company by a duly authorized officer, as of the day and year written below.

COMPANY:

LATTICE SEMICONDUCTOR CORPORATION

By:____ Date:_________________________________

Title:_______________________________________

EMPLOYEE:

____ Date:_________________________________
James R. Anderson

[**DO NOT SIGN PRIOR TO THE TERMINATION DATE**]

Exhibit 10.24

Employment Agreement

This Employment Agreement (the "Agreement") is entered into by and between ____________ (the "Executive") and **LATTICE SEMICONDUCTOR CORPORATION**, a Delaware corporation (the "Company") as of _______ __, 20__(the "Effective Date") and amends and restates that certain Employment Agreement between Executive and the Company effective as of _____________.

1. **Duties and Scope of Employment**

(a) **Position**. For the term of their employment under this Agreement ("Employment"), the Executive will serve as the _______________ ("CVP"). The Executive shall report directly to the Company's Chief Executive Officer (the "CEO"). Executive will render such business and professional services in the performance of his duties, consistent with the Executive's position within the Company, as will reasonably be assigned to him by the CEO.

(b) **Obligations**. The Executive shall have such duties, authority and responsibilities that are commensurate with being the Company's senior executive officer responsible for _________________. During the term of their Employment, the Executive will devote Executive's full business efforts and time to the Company. For the duration of their Employment, Executive agrees not to actively engage in any other employment, occupation, or consulting activity for any direct or indirect remuneration without the prior approval of the Company's CEO (which approval will not be unreasonably withheld); provided, however, that Executive may, without the approval of the CEO, serve in any capacity with any civic, educational, or charitable organization, provided such services do not interfere with Executive's obligations to the Company. Executive shall comply at all times with the Company's Code of Conduct and all other applicable Company policies. Executive shall perform their duties primarily at the Company's corporate facility in ______________.

(c) **Effective Date**. The Executive shall continue their full-time Employment as CVP under this Agreement on the Effective Date.

2. **Cash and Incentive Compensation**.

(a) **Salary**. As of the Effective Date and thereafter, the Company shall pay Executive as compensation for his services a base salary at a gross annual rate of not less than $__________ (such annual salary, as is then in effect, to be referred to herein as "Base Salary"). The Base Salary will be paid periodically in accordance with the Company's normal payroll practices and be subject to the usual, required withholdings, provided, however, that Executive shall receive pro-rata payments of Base Salary no less frequently than once per month. Executive's Base Salary will be subject to review by the Compensation Committee of the Board (the "Committee") not less than annually, and adjustments will be made in the discretion of the Committee.

(b) **Incentive Bonuses**. Executive shall be a participant in a Cash Incentive Plan, as established by the Company (the "CIP"). Under the CIP, Executive shall be eligible to be considered for an annual fiscal year incentive payment based on a percentage of Executive's Base Salary as of the beginning of such fiscal year or such higher figure that the Committee may select (such annual amount is the "Target Amount"), provided Executive is employed at the end of the annual fiscal year. Executive's initial target percentage amount is __% of the Executive's Base Salary ("Initial Target Amount"). The Target Amount shall be awarded based upon the achievement of specific milestones that will be established by the Committee no later than 60 days after the start of each fiscal year (the "Target Amount Milestones"). For superior achievement of the Target Amount Milestones, as determined in the Company's sole discretion, Executive may earn a maximum annual fiscal year incentive bonus of up to 200% of Executive's Target Amount. Cash payment for each fiscal year's variable compensation actually earned shall be made to Executive no later than 45 days after the end of the applicable fiscal year for which the annual incentive was earned; provided, however, that the Company shall have no obligation to make such payment for a fiscal year until such time as the audit of the Company's financial statements for such fiscal year has been completed and the Company has publicly reported its financial results for such fiscal year as long as such payment is made within 70 days of the end of the applicable fiscal year. For avoidance of doubt, if Executive is not employed through the final day of the fiscal year for which the annual incentive was earned, Executive will have earned no bonus. For the first fiscal year in that Executive participates in the CIP, the annual fiscal year bonus earned by Executive under the CIP will be prorated for the partial year measured from the Effective Date. All awards of incentive compensation to executive officers of the Company are subject to the Company's policy (including any amendments or such policy or any successor policy) to seek recovery, at the direction of the Company's Board of Directors, to the extent permitted or required by applicable law, of incentive compensation awarded or paid to an executive officer of the Company for a fiscal period if the result of a performance measure upon which the award was based or paid is subsequently restated or otherwise adjusted in a manner that would reduce the size of the award or payment.

(c) **Terms of Company Compensatory Equity Awards**. Executive shall be eligible for grants of equity compensation pursuant to a stockholder-approved equity compensation plan (the “Plan”) or in the case of initial grants to the Executive under rules applicable to inducement equity grants, at times and in such amounts as determined by the Committee (any prior or future compensatory equity grants to Executive shall be collectively referred to herein as “Compensatory Equity”). The equity awards granted to Executive prior to the date of this Agreement, including without limitation any grants made upon the initial hiring of Executive by the Company, and grants made in ______________, shall vest based on the terms of such awards except as hereafter provided.

(i) All grants of Compensatory Equity (and the issuance of any underlying shares) to Executive shall be: (a) issued pursuant to the Plan or rules applicable to inducement equity grants and (b) issued pursuant to an effective registration statement filed with the Securities and Exchange Commission under the Securities Act of 1933 as amended. Accelerated vesting of Compensatory Equity may occur: (x) pursuant to the terms of this Agreement and in addition (y) pursuant to the terms of the Plan and any applicable Compensatory Equity agreement.

(ii) Executive may elect to establish a trading plan in accordance with Rule 10b5-1 of the Securities Exchange Act of 1934 for any of his Compensatory Equity shares, provided, however, that such trading plan must comply with all of the requirements for the safe harbor under Rule 10b5-1 and must be approved in accordance with any Rule 10b5-1 Trading Plan Policy of the Company.

(iii) In the event of a Change in Control, as hereafter defined, Executive’s entitlement to vesting under all awards of Compensatory Equity that vest based on performance shall vest based on the terms of such awards; provided, however, if no treatment has been set forth in such award then for purposes of determining performance under any relative TSR awards outstanding on or granted after the Effective Date, the ending average stock price will be determined as the price per share paid for the Company’s stock in the Change in Control and the peer group ending average stock price will be determined based on the average closing stock prices for the component members of the peer group for the 30-trading days ending prior to the date of the Change in Control. For purposes of any tranche where the determination period has not commenced as of the date of the public announcement of the proposed Change in Control, the Company stock price for the initial date of such determination period shall be deemed to be the price of the Company’s stock as of the date of the original performance grant. This calculation will be applied to any tranches of the relative TSR awards that were eligible to vest for measurement periods ending on or after the date of the Change in Control and those tranches be converted to restricted stock units and will vest on the originally scheduled measurement dates, subject to Executive remaining a service provider to the Company or its successor through such dates and such awards being afforded the same protection under this Agreement as Compensatory Equity that vests solely based on Service.

(d) **Service Definition**. For purposes of this Agreement and Executive’s Compensatory Equity, “Service” shall mean service by the Executive as an employee and/or consultant of the Company (or any subsidiary or parent or affiliated entity of the Company) and/or service by the Executive as a member of the Board.

3. **Vacation and Employee Benefits**. During the term of their Employment, the Executive shall be entitled to vacation in accordance with the Company’s standard vacation policy. During the term of their Employment, the Executive shall be eligible to participate in any employee benefit plans or arrangements maintained by the Company on no less favorable terms than for other Company executives, subject in each case to the generally applicable terms and conditions of the plan or arrangement in question and to the determinations of any person or committee administering such plan or arrangement.

4. **Business Expenses**. During the term of their Employment, the Executive shall be authorized to incur necessary and reasonable travel, entertainment and other business expenses in connection with their duties hereunder. The Company shall promptly reimburse the Executive for such expenses upon presentation of appropriate supporting documentation, all in accordance with the Company’s generally applicable policies. All such payments shall be made by the end of Executive’s next tax year. The amount eligible for reimbursement in one year will not affect the amount eligible for reimbursement in any other year, and the right to reimbursement is not subject to liquidation or exchange for another benefit.

5. **Term of Employment.**

(a) **Term of Agreement**. This Agreement will have an initial term of three (3) years commencing on the Effective Date (the “Initial Term”). On the 3rd anniversary of the Effective Date and each one year anniversary thereafter, this Agreement will renew automatically for additional, one (1) year terms (each, an “Additional Term”) unless either party provides the other party with written notice of nonrenewal at least six (6) months prior to the date automatic renewal. For the avoidance of doubt, neither the lapse of this Agreement by its terms nor non-renewal of this Agreement will by itself constitute termination of employment or grounds for resignation for Good Reason. Notwithstanding the foregoing, if a Change of Control occurs (a) when there are fewer than 24 months remaining during the Initial Term or (b) during an Additional Term, the term of this Agreement will extend automatically through the date that is 24 months following the date of the Change of Control. Further, notwithstanding the foregoing, if during the term of this Agreement, an initial occurrence of an act or omission by the company constituting the grounds for “Good Reason” in accordance with Section 6(h) has occurred (the “Initial Grounds”), and the expiration date of the Remedial Period (as such term is used in Section 6(h)) with respect to such Initial Grounds could occur following the expiration of the Initial Term or the Additional Term then in effect, as applicable, the term of this Agreement will extend automatically through the date that is 30 days following the expiration of the Remedial Period, but such extension of the term will only apply with respect to the Initial Grounds. Notwithstanding anything herein to the contrary, if the Executive becomes entitled to the benefits under Section 6 of this Agreement, then the Agreement will not terminate until all of the obligations of the parties hereto with respect to this Agreement have been satisfied.

(b) **Basic Rule**. The Company may terminate the Executive’s Employment with or without Cause, by giving the Executive 30 days’ advance notice in writing. Provided, however, where the termination is for Cause constituting events such as fraud, willful violation of insider trading rules, willful violation of conflict of interest policies, willful or unauthorized use or disclosure of trade secrets or other confidential information or conviction of a felony, the Company may terminate Executive’s Employment effective immediately upon notice. The Executive may terminate their Employment by giving the Company 30 days’ advance notice in writing. The Executive’s Employment shall terminate automatically in the event of their death. For avoidance of doubt, as Executive is an at-will employee, as outlined below, the definition of Cause is solely included for purposes of determining entitlement to severance.

(c) **Employment at Will**. The Executive’s Employment with the Company shall be “at will,” meaning that either the Executive or the Company shall be entitled to terminate the Executive’s employment at any time and for any reason, with or without Cause. This Agreement shall constitute the full and complete agreement between the Executive and the Company on the “at will” nature of the Executive’s Employment, which may only be changed in an express written agreement signed by the Executive and a member of the Board.

(d) **Rights Upon Any Termination**. Upon the termination of the Executive’s Employment, the Executive shall be entitled to the compensation, benefits and reimbursements described in this Agreement for the period ending as of the effective date of the termination (the “Termination Date”). Upon termination of Executive’s Employment for any reason, the Executive shall receive the following payments on the Termination Date: (i) all unpaid salary, and unpaid vacation accrued (if applicable), through the Termination Date, (ii) any unpaid, but earned and accrued incentive payments for any completed applicable determination period under the CIP (whether paid quarterly, annually or as might otherwise be established under the CIP) which was to have been paid under the terms of the CIP prior to but has not yet been paid on the Termination Date and (iii) any unreimbursed business expenses. Executive may also be eligible for other post-Employment payments and benefits as provided in this Agreement.

6. **Termination Benefits**.

(a) **Severance Pay**. If there is an Involuntary Termination (as defined below) of Executive’s Employment, then the Company shall pay the Executive an amount equal to 1.0 times Executive’s then Base Salary, plus up to 1.0 times Executive’s then Target Amount (adjusted pro rata on a monthly basis depending upon the month in which the Involuntary Termination may occur and for the amount estimated by the Company’s Finance group to be the anticipated CIP payment percentage based on the performance of the Company anticipated for the applicable fiscal year which estimate shall be evidenced by the Finance group’s accrual for the same in the books of the Company) (collectively in the aggregate, the “Cash Severance”). Such Cash Severance shall be made in a single lump sum cash payment to Executive on the effective date of the separation agreement referenced in Section 8(a), provided Executive executes the separation agreement and general release in favor of the Company (“Release”) and such Release becomes effective. Executive shall also be entitled to receive the benefits provided in Sections 6(b) and 6(c) and, if applicable, 6(d).

(b) **Health Insurance**. If Subsection (a) above applies, such that Executive is entitled to Severance Pay, but subject to applicable law, and if Executive properly and timely elects to continue coverage under the Company’s group health plan pursuant to Section 4980B(f) of the Internal Revenue Code of 1986, as amended (“COBRA”) for Executive and his eligible covered dependents following the termination of their Employment, then the Company shall reimburse Executive’s monthly premium under COBRA until the earliest of (i) twelve (12) months after the Termination Date, (ii) the date when Executive commences receiving substantially equivalent health insurance coverage in connection with new employment, or (iii) the date Executive is no longer entitled to COBRA continuation coverage under the Company’s group health plan. Notwithstanding the foregoing, Company may unilaterally amend this Section 6(b) or eliminate the benefit provided hereunder to the extent it deems necessary to avoid the imposition of excise taxes, penalties or similar charges on Company or any of its affiliates, including, without limitation, under Section 4980D of the Internal Revenue Code of 1986, as amended (the “Code”). Nothing herein is entitled to warranty or guarantee entitlement to COBRA and Executive acknowledges and agrees that he shall be solely responsible for paying such premiums as any obligation of the Company hereunder, if any, is to reimburse such premiums to Executive.

(c) **Equity Vesting**. If Subsection (a) above applies, then Executive will be vested only in that number of shares of Company common stock under all of Executive's outstanding Compensatory Equity as are actually vested as of the Termination Date according to the terms of such Compensatory Equity arrangements.

(d) **Effect of Change in Control**. If the Company is subject to a Change in Control (as defined below) and if there is an Involuntary Termination of Executive's Employment in connection with such Change in Control (it will automatically be deemed to be in connection with the Change in Control if there is an Involuntary Termination during the period commencing immediately prior to the Change in Control and extending through the date that is 24 months after the Change in Control): (w) Executive shall immediately vest in (and the Company's right to repurchase, if applicable, shall lapse immediately as to) all of Executive's Compensatory Equity that vests solely based on Service, including any Compensatory Equity after giving effect to Section 2(c)(iii) above (x) the amount of the Cash Severance in Section 6(a) shall be increased such that the Executive shall receive 1.0 times Base Salary and they shall receive in addition 1.0 times Target Amount (with no pro ration or other adjustment), and (y) the duration of the subsidized COBRA coverage in Section 6(b) shall be for 12 months.; provided, however, that Company may unilaterally amend clause (y) of this sentence or eliminate the benefit provided thereunder to the extent it deems necessary to avoid the imposition of excise taxes, penalties or similar charges on Company or any of its affiliates, including, without limitation, under Section 4980D of the Code.

(e) **Excise Tax**. Notwithstanding anything herein to the contrary, in the event that Executive becomes entitled to receive or receives any payment or benefit provided for under this Agreement or under any other plan, agreement, or arrangement with the Company, or from any person whose actions result in a Change in Control or any person affiliated with the Company or any such person (all such payments and benefits being referred to herein as the "Total Payments") and it is determined that any of the Total Payments (i) constitute "parachute payments" within the meaning of Section 280G of the Code and (ii) but for this Subsection (e), would be subject to the excise tax imposed by Section 4999 of the Code, then the Total Payments shall be payable either (1) in full, or (2) as to such lesser amount which would result in no portion of the Total Payments being subject to excise tax under Section 4999 of the Code, whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by the Executive on an after-tax basis, of the greatest amount of the Total Payments, notwithstanding that all or some portion of the Total Payments may be taxable under Section 4999 of the Code. Unless Executive and the Company agree otherwise in writing, the determination of Executive's excise tax liability, if any, and the amount, if any, required to be paid under this Subsection (e) will be made in writing by the independent auditors who are primarily used by the Company immediately prior to the Change in Control (the "Accountants"). For purposes of making the calculations required by this Subsection (e), the Accountants may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. Executive and the Company agree to furnish such information and documents as the Accountants may reasonably request in order to make a determination under this Subsection (e). The Company will bear all costs the Accountants may reasonably incur in connection with any calculations contemplated by this Subsection (e). Any reduction of the Total Payments shall be made first to any payments or benefits that are exempt from the application of Section 409A of the Code, and thereafter to any payments or benefits that are subject to Section 409A of the Code; provided that in applying this reduction methodology, the reduction shall be made in a manner consistent with the requirements of Section 409A of the Code, and where more than one of the Total Payments in a category has the same economic cost to Executive and such Total Payments are payable at different times, such Total Payments will be reduced on a pro-rata basis.

(f) **Change in Control Definition**. For purposes of this Agreement, "Change in Control" shall mean the occurrence of any of the following events: (i) the consummation of a merger or consolidation of the Company with or into another entity or any other corporate reorganization, if persons who were not stockholders of the Company immediately prior to such merger, consolidation or other reorganization own immediately after such merger, consolidation or other reorganization more than 50% of the voting power of the outstanding securities of each of (A) the continuing or surviving entity and (B) any direct or indirect parent corporation of such continuing or surviving entity, (ii) the sale, transfer or other disposition of all or substantially all of the Company's assets, or (iii) solely with respect to determining the treatment of Compensatory Equity under the terms of this Agreement, the terms of any applicable definition provided by the Plan and the applicable Compensatory Equity agreement. A transaction shall not constitute a Change in Control if its sole purpose is to change the state of the Company's incorporation or to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(g) **Cause Definition**. For purposes of this Agreement, "Cause" shall mean (i) Executive's material breach of this Agreement that is not corrected within a 30 day correction period that begins upon delivery to Executive of a written demand from the Company that describes the basis for the Company's belief that Executive has materially breached this Agreement; (ii) any refusal to comply with the reasonable and lawful instructions of the Board; (iii) any willful act of fraud or dishonesty that causes material damage to the Company; (iv) any willful violation of the Company's insider trading policy; (v) any willful violation of the Company's conflict of interest policies; (vi) any willful unauthorized use or disclosure of trade secrets or other confidential information; or (vii) Executive's conviction of a felony.

The foregoing shall not be deemed an exclusive list of all acts or omissions that the Company may consider as grounds for the termination of Executive's Employment, but it is an exclusive list of the acts or omissions that shall be considered "Cause" for entitlement to Severance Pay. Executive's employment is at-will, as defined above.

(h) **Good Reason Definition**. For all purposes under this Agreement, "Good Reason" shall mean the occurrence of any of the following, without Executive's express written consent: (i) a material diminution of Executive's duties or responsibilities; (ii) a material diminution in Executive's Base Salary or Target Amount; (iii) the Company's material breach of this Agreement; or (iv) the Company requiring Executive to relocate their primary place of employment to a facility or location that is more than 30 miles from their principal place of employment as of the Effective Date; provided, however, that Executive will only have Good Reason if (i) they notify the Board in writing of the existence of the condition which they believe constitutes Good Reason within ninety (90) days of the initial existence of such condition (which notice specifically identifies such condition), (ii) Company fails to remedy such condition within thirty (30) days after the date on which the Board receives such notice (the "Remedial Period"), and (iii) their resignation is effective within thirty (30) days after the expiration of the Remedial Period.

(i) **Involuntary Termination Definition**. For all purposes under this Agreement, "Involuntary Termination" shall mean any of the following that occur without Executive's prior written consent: (i) termination of Executive's Employment by the Company without Cause, or (ii) Executive's resignation of Employment for Good Reason.

7. **Successors**.

(a) **Company's Successors**. This Agreement shall be binding upon any successor (whether direct or indirect and whether by purchase, lease, merger, consolidation, liquidation or otherwise) to all or substantially all of the Company's business and/or assets. For all purposes under this Agreement, the term "Company" shall include any successor to the Company's business and/or assets which becomes bound by this Agreement.

(b) **Executive's Successors**. This Agreement and all rights of the Executive hereunder shall inure to the benefit of, and be enforceable by, the Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees.

8. **Conditions to Receipt of Severance; No Duty to Mitigate**.

(a) **Separation Agreement and Release of Claims**. The receipt of any severance benefits pursuant to Section 6 will be subject to Executive signing and not revoking a Release in substantially the form attached hereto as Exhibit A, but with any appropriate modifications, reflecting changes in applicable law or other considerations (e.g., number of days to consider such release), as are necessary or appropriate to provide the Company with the protection it would have if the release were executed as of the Effective Date. No severance benefits will be paid or provided until the Release becomes effective. The Release must in all cases be effective by the 60th day following Executive's termination of Employment (or such earlier date as is provided in the release) or no severance benefits will be paid or provided under this Agreement. Notwithstanding anything herein to the contrary if the maximum period during which Executive can consider and revoke the Release begins in one calendar year and ends in the subsequent calendar year, payment and provision of severance benefits under this Agreement shall not be made or commence to be made until the later of the effective date of the Release and the first business day of the subsequent calendar year, regardless of when the release becomes effective.

(b) **Non-solicitation**. The receipt of any severance benefits will be subject to the Executive agreeing that during Employment and for the 12 month period after the Termination Date (the "Continuance Period"), the Executive will not (i) solicit any employee of the Company for employment other than at the Company, or (ii) in light of Executive's access to confidential and proprietary information of the Company, solicit any customer, vendor, supplier, independent contractor or others having a business relationship with the Company that has the effect or purpose of decreasing or taking away the business or relationship with the Company. "Company" in this Section 8 refers to the Company and its subsidiaries.

(c) **Non-disparagement**. During Employment and the Continuance Period, the Executive will not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Company, its directors, or its officers. The Company's then and future directors will not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Executive during his Employment or the Continuance Period. The Company will also instruct its officers to not knowingly publicly disparage, criticize, or otherwise make any derogatory statements regarding the Executive during their Employment or the Continuance Period. Notwithstanding the foregoing, nothing contained in this Agreement will be deemed to restrict the Executive, the Company or any of the Company's current or former officers and/or directors from providing information to any governmental or regulatory agency (or in any way limit the content of such information) to the extent they are requested or required to provide such information pursuant to any applicable law or regulation. Further, nothing contained in this Agreement will be deemed to restrict Executive, the Company or any of the Company's current or former officers and/or directors from communicating or filing a complaint with any government agency or otherwise participating in any investigation or proceeding that may be conducted by any government agency, including providing documents or other information, without notice to the Company.

(d) **No Duty to Mitigate**. No payments or benefits provided to Executive (except as expressly provided in Section 6(b)) shall be subject to mitigation or offset.

9. **Miscellaneous Provisions**.

(a) **Indemnification**. The Company shall indemnify Executive to the maximum extent permitted by any applicable indemnification agreement, applicable law and the Company's bylaws with respect to Executive's Service (including timely advancing and/or reimbursing costs as incurred by Executive) and the Executive shall also be covered under a directors and officers liability insurance policy(ies) paid for by the Company.

(b) **Notice**. All notices and other communications required or permitted under the Agreement must be in writing and will be effectively given (i) upon actual delivery to the party to be notified, (ii) 24 hours after confirmed facsimile transmission, (iii) 1 business day after deposit with a recognized overnight courier or (iv) 3 business days after deposit with the U.S. Postal Service by first class certified or registered mail, return receipt requested, postage prepaid, addressed (A) if to the Executive, at the address the Executive shall have most recently furnished to the Company in writing, (B) if to the Company, at its corporate headquarters and directed to the attention of its General Counsel.

(c) **Arbitration**. With the exception of any claims for workers compensation, unemployment insurance, claims before any governmental administrative agencies as required by applicable law, or claims related to the National Labor Relations Act, any controversy relating to this Agreement or the Executive's employment, including any dispute or controversy arising out of or relating to any interpretation, construction, performance or breach of this Employment Agreement, or the Proprietary Rights Agreement, including, without limitation, employment claims, breach of contract claims, tort claims, wrongful termination claims, discrimination/harassment claims, claims for unpaid wages or other amounts, including pursuant to the California Labor Code, or any disputes related to this Arbitration provision (including its creation, terms, and enforceability), shall be settled by Company and Executive by binding arbitration. The arbitration proceeding will be administered by JAMS pursuant to its Employment Arbitration Rules & Procedures in effect as of the date the arbitration is initiated. The arbitrator shall have the authority to determine the enforceability of this Agreement as well as whether a claim is arbitrable, both of which shall be decided under the Federal Arbitration Act. A copy of the JAMS Employment Arbitration Rules & Procedures is available online at http://www.jamsadr.com/rules-employment-arbitration and also by calling JAMS at 213-620-1133 if you have questions about the arbitration process. This Arbitration policy, any arbitration proceedings held pursuant to this Arbitration policy, and any state court, federal court, or other proceeding concerning arbitration under this Arbitration policy are expressly subject to and governed by the Federal Arbitration Act, 9 U.S.C. § 1 et seq. ("FAA"). Such arbitration shall be presided over by a single arbitrator in San Francisco Bay Area, California. The Company shall bear all costs uniquely associated with the arbitration process, including the arbitrator's fees, where required by applicable law. The arbitrator shall have the authority to award any damages authorized by law. This agreement to arbitrate shall apply to both the Company and Executive. The parties understand that they are giving up their right to a trial in a court of law.

(d) **Modifications and Waivers**. No provision of this Agreement shall be modified, waived or discharged unless the modification, waiver or discharge is agreed to in writing and signed by the Executive and by an authorized officer of the Company (other than the Executive). No waiver by either party of any breach of, or of compliance with, any condition or provision of this Agreement by the other party shall be considered a waiver of any other condition or provision or of the same condition or provision at another time.

(e) **Whole Agreement**. This Agreement contains the entire understanding of the parties with respect to the subject matter hereof and supersedes any other agreements, representations or understandings (whether oral or written and whether express or implied) with respect to the subject matter hereof. In the event of any conflict in terms between this Agreement and/or the Plan and/or any agreement executed by and between Executive and the Company, the terms of this Agreement shall prevail and govern.

(f) **Legal Fees**. Each party shall pay its own legal fees and expenses incurred in connection with the preparation and execution of this Agreement or any effort to enforce its rights under the Agreement; provided, however, that the Company shall reimburse Executive for reasonable legal fees in the event Company seeks to modify the Agreement during its term without the consent of the Executive.

(g) **Withholding Taxes**. All payments made under this Agreement shall be subject to reduction to reflect taxes or other charges required to be withheld by law.

(h) **Choice of Law**. This Agreement will be governed by the laws of the State of California without regard to California's conflicts of law rules that may result in the application of the laws of any jurisdiction other than California. To the extent that any lawsuit is permitted under this Agreement, the Executive hereby expressly consents to the personal and exclusive jurisdiction and venue of the state and federal courts located in California for any lawsuit filed against the Executive by the Company.

(i) **Severability**. The invalidity or unenforceability of any provision or provisions of this Agreement shall not affect the validity or enforceability of any other provision hereof, which shall remain in full force and effect.

(j) **Code Section 409A**. The parties intend that this Agreement and the payments and benefits provided hereunder, including, without limitation, those provided pursuant to Section 6 hereof, be exempt from the requirements of Section 409A of the Code ("Section 409A") to the maximum extent possible, whether pursuant to the short-term deferral exception described in Treasury Regulation Section 1.409A-1(b)(4), the involuntary separation pay plan exception described in Treasury Regulation Section 1.409A-1(b)(9)(iii), or otherwise. To the extent Section 409A is applicable to this Agreement, the parties intend that this Agreement and any payments and benefits thereunder comply with the deferral, payout and other limitations and restrictions imposed under Section 409A. Notwithstanding anything herein to the contrary, this Agreement shall be interpreted, operated and administered in a manner consistent with such intentions; provided, however that in no event shall the Company or any of its parents, subsidiaries or affiliates be liable to Executive or any other person for any additional tax, interest or penalty that may be imposed on Executive or any other person under, or as a result of, Section 409A or for any damages incurred by Executive or any other person as a result of this Agreement's (or the payments' or benefits' provided hereunder) failure to comply with, or be exempt from, Section 409A. Without limiting the generality of the foregoing, and notwithstanding any other provision of this Agreement to the contrary (other than the proviso in the immediately preceding sentence):

(i) if at the time Executive's employment hereunder terminates, Executive is a "specified employee," as defined in Section 409A(a)(2)(B)(i) of the Code, any and all amounts payable under this Agreement on account of such termination of employment that would (but for this provision) be payable within six (6) months following the date of termination, shall instead be paid in a lump sum on the first day of the seventh month following the date on which Executive's employment terminates or, if earlier, upon Executive's death, except (i) to the extent of amounts that do not constitute a deferral of compensation within the meaning of Treasury Regulation Section 1.409A-1(b) (including without limitation by reason of the safe harbor set forth in Treasury Regulation Section 1.409A-1(b)(9)(iii), as determined by the Company in its reasonable good faith discretion); (ii) benefits which qualify as excepted welfare benefits pursuant to Treasury Regulation Section 1.409A 1(a)(5); and (iii) other amounts or benefits that are not subject to the requirements of Section 409A;

(ii) a termination of employment shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of amounts or benefits upon or following a termination of employment unless such termination is also a "separation from service," as defined in Treasury Regulation Section 1.409A-1(h) after giving effect to the presumptions contained therein, and, for purposes of any such provision of this Agreement, references to a "terminate," "termination," "termination of employment," "resignation" and like terms shall mean separation from service; and

(iii) each payment made under this Agreement shall be treated as a separate payment and the right to a series of installment payments under this Agreement shall be treated as a right to a series of separate payments.

(k) **No Assignment**. This Agreement and all rights and obligations of the Executive hereunder are personal to the Executive and may not be transferred or assigned by the Executive at any time. The Company may assign its rights under this Agreement to any entity that expressly in writing assumes the Company's obligations hereunder in connection with any sale or transfer of all or substantially all of the Company's assets to such entity.

(l) **Counterparts**. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by its duly authorized officer, as of the Effective Date.

____

Lattice Semiconductor Corporation

By:____

Name:____

Title:____

EXHIBIT A

GENERAL RELEASE

RECITALS

This Separation Agreement and Release ("Agreement") is made by and between ______________________ ("Employee") and Lattice Semiconductor Corporation (the "Company") (jointly referred to as the "Parties"):

WHEREAS, Employee is employed by the Company;

WHEREAS, the Company and Employee entered into an Employment Agreement dated _______________ (the "Employment Agreement");

WHEREAS, the Parties agree that Employee's employment with the Company will terminate on ________________ (the "Termination Date");

WHEREAS, the Company and Employee entered into a Proprietary Rights Agreement dated [__________] regarding intellectual property and confidential information (the "Proprietary Rights Agreement");

WHEREAS, the Company and Employee entered into an Indemnification Agreement, dated [_______], regarding Employee's rights to indemnification (the "Indemnification Agreement");

WHEREAS, the Company and Employee entered into Equity Agreements dated [____] granting Employee the option to purchase shares of the Company's common stock subject to the terms and conditions of the Company's Stock Option Plan(s) and the Stock Option Agreements and is the grantee of restricted stock units and performance shares representing shares of the Company's common stock pursuant to the terms of Notice(s) of Grant and related equity incentive plans (the "Equity Agreements");

WHEREAS, the Parties wish to resolve any and all disputes, claims, complaints, grievances, charges, actions, petitions and demands that Employee may have against the Company as defined herein, arising out of, or related to, Employee's employment with, or separation from, the Company;

NOW THEREFORE, in consideration of the promises made herein, the Parties hereby agree as follows:

COVENANTS

1. **Consideration.**

(a) Pursuant to Section 8(a) of the Employment Agreement, Employee's receipt of severance is subject to Employee executing and not revoking this Release. In consideration of Employee executing and not revoking this Release, the Company agrees to pay (or provide, as applicable) Employee a cash payment of $_________ on the Effective Date and also the benefits specified in the Employment Agreement. Employee acknowledges that such cash payment and the provision of such benefits will be in full satisfaction of the payments and obligations provided under the Employment Agreement and they will not be entitled to any additional salary, wages, bonuses, accrued vacation, housing allowances, relocation costs, interest, severance, stock, stock options, outplacement costs, fees, commissions or any other benefits and compensation, except as provided in any Company employee welfare or pension benefit plans as defined by the Employee Retirement Income Security Act of 1974, as amended ("ERISA") (such plans, the "Benefit Plans"), this Agreement, the Indemnification Agreement, the Deferred Compensation Plan and/or the Equity Agreements.

(b) Stock. Employee acknowledges that as of the Termination Date, and after taking into account any accelerated vesting provided by the Employment Agreement or Stock Agreements, they will then hold vested stock options to acquire [______] shares of Company common stock and no more, and will hold vested restricted stock units that will be settled for [______] shares of Company common stock and no more. The exercise of any stock options and the settlement of any restricted stock units shall continue to be subject to the terms and conditions of the Equity Agreements and the Employment Agreement.

(c) Benefits. Employee's health insurance benefits will cease on the last day of the month of the Termination Date, subject to Employee's right to continue their health insurance as provided in the Employment Agreement (with such premiums to be paid by the Company as provided in the Employment Agreement). Subject to the Employment Agreement, the Deferred Compensation Plan, the Indemnification Agreement, the Equity Agreements and/or the Benefit Plans, Employee's participation in all other benefits and incidents of employment (including, but not limited to, the accrual of vacation and paid time off, and the vesting of stock options and restricted stock units) will cease on the Termination Date.

2. **Confidential Information.** Employee shall continue to comply with the terms and conditions of the Proprietary Rights Agreement, and maintain the confidentiality of all of the Company's confidential and proprietary information. Employee also shall return to the Company all of the Company's property, including all confidential and proprietary information, in Employee's possession, on or before the Effective Date.

3. **Release of Claims.** Employee agrees that the foregoing consideration represents settlement in full of all outstanding obligations owed to Employee by the Company. Employee, on his own behalf and on behalf of his respective heirs, family members, executors, agents, and assigns, hereby fully and forever releases the Company and its current and former: officers, directors, employees, agents, investors, attorneys, shareholders, administrators, affiliates, divisions, subsidiaries, predecessor and successor corporations and assigns (the "Releasees") from, and agrees not to sue any of the Releasees concerning, any claim, duty, obligation or cause of action for monetary damages relating to any matters of any kind arising out of or relating to his employment by the Company (except as provided in the Employment Agreement), or his service as an officer of the Company and/or a director of the Company, whether presently known or unknown, suspected or unsuspected, that Employee may possess arising from any omissions, acts or facts that have occurred up until and including the Effective Date, excluding the "Excluded Claims" (as defined below) and including, without limitation:

(a) any and all claims relating to or arising from Employee's employment with the Company, or the termination of that employment;

(b) any and all claims relating to, or arising from, Employee's right to purchase, or actual purchase of, shares of Company stock, including, but not limited to, any claims for fraud, misrepresentation, breach of fiduciary duty, breach of duty under applicable state corporate law, and securities fraud under any state or federal law;

(c) any and all claims under the law of any jurisdiction, including, but not limited to, wrongful discharge of employment; constructive discharge from employment; termination in violation of public policy; discrimination; breach of contract, both express and implied; breach of a covenant of good faith and fair dealing, both express and implied; promissory estoppel; negligent or intentional infliction of emotional distress; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; unfair business practices; defamation; libel; slander; negligence; personal injury; assault; battery; invasion of privacy; false imprisonment; and conversion;

(d) any and all claims for violation of any federal, state or municipal statute, including, but not limited to, Title VII of the Civil Rights Act of 1964; the Civil Rights Act of 1991; the Age Discrimination in Employment Act of 1967; the Americans with Disabilities Act of 1990; the Fair Labor Standards Act; ERISA; the Worker Adjustment and Retraining Notification Act; the Older Workers Benefit Protection Act; the Family and Medical Leave Act; and the Fair Credit Reporting Act;

(e) any and all claims for violation of the federal, or any state, constitution;

(f) any and all claims arising out of any other laws and regulations relating to employment or employment discrimination; and

(g) any and all claims for attorney fees and costs.

For purposes of this Agreement, the "Excluded Claims" shall include any claims pursuant to the Benefit Plans, the Deferred Compensation Plan, the Indemnification Agreement, the non-disparagement clause of Section 8(c) of the Employment Agreement, the right to indemnification under Section 9(a) of the Employment Agreement, and any right to exercise stock options or receive restricted stock units pursuant to the relevant provisions of the Equity Agreements.

4. **Acknowledgement of Waiver of Claims Under ADEA.** Employee acknowledges that they are waiving and releasing any rights they may have against the Releasees for monetary damages under the Age Discrimination in Employment Act of 1967 ("ADEA") and that this waiver and release is knowing and voluntary. Employee and the Company agree that this waiver and release does not apply to any rights or claims that may arise under the ADEA after the Effective Date. Employee acknowledges that the consideration given for this waiver and release Agreement is in addition to anything of value to which Employee was already entitled. Employee further acknowledges that they have been advised by this writing that:

(a) they should consult with an attorney prior to executing this Release;

(b) they have up to twenty-one (21) days within which to consider this Release;

(c) they have seven (7) days following their execution of this Release to revoke this Release;

(d) this ADEA waiver shall not be effective until the revocation period has expired; and,

(e) nothing in this Release prevents or precludes Employee from challenging or seeking a determination in good faith of the validity of this waiver under the ADEA, nor does it impose any condition precedent, penalties or costs for doing so, unless specifically authorized by federal law.

5. **Unknown Claims**. Employee acknowledges that they have been advised by legal counsel and are familiar with the principle that a general release does not extend to claims which the releasor does not know or suspect to exist in his favor at the time of executing the Release, which if known by them must have materially affected his settlement with the Releasee. Employee, being aware of said principle, agrees to expressly waive any rights Employee may have to that effect, as well as under any other statute or common law principles of similar effect. For avoidance of doubt, it is a condition hereof, and it is Employee's intention in the execution of the General Release herein that the same shall be effective as a bar to each and every claim specified above, and in furtherance of this intention, Employee hereby expressly waives any and all rights and benefits conferred upon him by Section 1542 of the California Civil Code which provides: A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in their favor at the time of executing the release and that, if known by them, would have materially affected their settlement with the debtor or released party.

Employee agrees to waive the right to receive future monetary recovery directly from the Company, including Company payments that result from any complaints or charges that Employee files with any governmental agency or that are filed on his behalf.

6. **Application for Employment.** Employee understands and agrees that, as a condition of this Release, they shall not be entitled to any employment with the Company, its subsidiaries, or any successor, and they hereby waive any alleged right of employment or re-employment with the Company, its subsidiaries or related companies, or any successor.

7. **No Cooperation.** Employee agrees that they will not knowingly counsel or assist any attorneys or their clients in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints by any third party against any of the Releasees for monetary damages, unless requested by a governmental agency or unless under a subpoena or other court order to do so. Employee agrees both to immediately notify the Company upon receipt of any such subpoena or court order, and to furnish, within three (3) business days of its receipt, a copy of such subpoena or court order to the Company. If otherwise approached by anyone for counsel or assistance in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints against any of the Releasees, Employee shall state no more than that they cannot provide such counsel or assistance. Nothing in this Agreement is intended to or will be used in any way to limit Employee's right to communicate with a government agency, as provided for, protected under or warranted under applicable law.

8. **Costs.** The Parties shall each bear their own costs, expert fees, attorney fees and other fees incurred in connection with the preparation of this Release.

9. **Arbitration.** The Parties agree that any and all disputes arising out of, or relating to, the terms of this Release, their interpretation, and any of the matters herein released, shall be subject to binding arbitration as described in Section 9(c) of the Employment Agreement.

10. **No Representations.** Each Party represents that it has had the opportunity to consult with an attorney, and has carefully read and understands the scope and effect of the provisions of this Release. Neither Party has relied upon any representations or statements made by the other Party hereto which are not specifically set forth in this Release.

11. **No Oral Modification.** Any modification or amendment of this Release, or additional obligation assumed by either Party in connection with this Release, shall be effective only if placed in writing and signed by both Parties or their authorized representatives.

12. **Entire Agreement.** This Release, the Employment Agreement, the Indemnification Agreement, the Deferred Compensation Plan, the Benefit Plans, the Proprietary Rights Agreement and the Equity Agreements represent the entire agreement and understanding between the Company and Employee concerning the subject matter of this Release and Employee's relationship with the Company, and supersede and replace any and all prior agreements and understandings between the Parties concerning the subject matter of this Release and Employee's relationship with the Company.

13. **Governing Law.** This Release shall be governed by the laws of the State of California, without regard for choice of law provisions.

14. **Effective Date.** This Release is only effective after it has been signed by both parties and after eight (8) days have passed following the date Employee signed the Agreement without Employee revoking this Agreement (the "Effective Date").

15. **Voluntary Execution of Release.** This Release is executed voluntarily and with the full intent of releasing all claims, and without any duress or undue influence by any of the Parties. The Parties acknowledge that:

(a) They have read this Release;

(b) They have been represented in the preparation, negotiation, and execution of this Release by legal counsel of their own choice or that they have voluntarily declined to seek such counsel;

(c) They understand the terms and consequences of this Release and of the releases it contains; and

(d) They are fully aware of the legal and binding effect of this Release.

IN WITNESS WHEREOF, each of the Parties has executed this Release, in the case of the Company by a duly authorized officer, as of the day and year written below.

COMPANY:

LATTICE SEMICONDUCTOR CORPORATION

By:____ Date:________________________________

Title:____

EMPLOYEE:

____ Date:________________________________

[EXECUTIVE]

[**<u>DO NOT SIGN PRIOR TO THE TERMINATION DATE</u>**]

Exhibit 21.1

LATTICE SEMICONDUCTOR CORPORATION
SUBSIDIARIES OF THE REGISTRANT

	Name	Jurisdiction of Incorporation
1.	Lattice Semiconductor Limited	Bermuda
2.	Lattice Semiconductor (Shanghai) Co. Ltd.	China
3.	Lattice Semiconducteurs SARL	France
4.	Lattice Semiconductor GmbH	Germany
5.	Lattice Semiconductor (India) Pvt. Ltd.	India
6.	Lattice Semiconductor SRL	Italy
7.	Lattice Semiconductor Japan KK	Japan
8	Lattice Semiconductor Korea Co. Ltd.	Korea
9.	Lattice Semiconductor B.V.	Netherlands
10.	Lattice Semiconductor (PH) Corporation	Philippines
11.	Lattice SG Pte. Ltd.	Singapore
12.	HDMI Licensing, LLC	Delaware, USA
13.	MHL, LLC	Delaware, USA
14.	SiBEAM, Inc.	Delaware, USA
15.	Lattice Connectivity, LLC	Delaware, USA
16.	Lattice Semiconductor International LLC	Delaware, USA
17.	Lattice Semiconductor Operations LLC	Delaware, USA
18.	SPMT, LLC	Delaware, USA
19.	WirelessHD, LLC	Delaware, USA
20.	Lattice Semiconductor UK Limited	United Kingdom

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Lattice Semiconductor Corporation:

We consent to the incorporation by reference in the registration statements (No. 333-176133, No. 333-182047, No. 333-188455, No. 333-195888, No. 333-202736, No. 333-220987, No. 333-224933, No. 333-227153, and No. 333-232337) on Form S-8 of Lattice Semiconductor Corporation of our reports dated February 24, 2020, with respect to the consolidated balance sheets of Lattice Semiconductor Corporation as of December 28, 2019 and December 29, 2018, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, the consolidated financial statements), and the effectiveness of internal control over financial reporting as of December 28, 2019, which reports appear in the December 28, 2019 Annual Report on Form 10-K of Lattice Semiconductor Corporation.

Our report refers to a change in the method of accounting for leases and revenue recognition.

/s/ KPMG LLP

Portland, Oregon

February 24, 2020

Exhibit 31.1

CERTIFICATION

I, James Anderson, certify that:

1. I have reviewed this Annual Report on Form 10-K of Lattice Semiconductor Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 24, 2020

/s/ James Anderson

James Anderson

Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Sherri Luther, certify that:

1. I have reviewed this Annual Report on Form 10-K of Lattice Semiconductor Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 24, 2020

/s/ Sherri Luther

Sherri Luther

Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Lattice Semiconductor Corporation (the Company) on Form 10-K for the year ended December 28, 2019 (the Report), I, James Anderson, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement has been provided to the Company and will be retained by the Company and furnished to the SEC or its staff upon request.

/s/ James Anderson
James Anderson
Chief Executive Officer

Date: February 24, 2020

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Lattice Semiconductor Corporation (the Company) on Form 10-K for the year ended December 28, 2019 (the Report), I, Sherri Luther, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement has been provided to the Company and will be retained by the Company and furnished to the SEC or its staff upon request.

/s/ Sherri Luther

Sherri Luther

Chief Financial Officer

Date: February 24, 2020