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 JANUARY 1, 2022

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.

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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

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 July 3, 2021	$	6,695,294,586
Number of shares of common stock outstanding as of February 17, 2022		137,689,935

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 2021 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
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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 impacts of the COVID-19 pandemic, including as a result of actions by governments, businesses, and individuals in response to the situation, on consumer, industrial, labor, and financial markets, our business operations, supply chain and partners, financial performance, results of operations, financial position, and the achievement of our strategic objectives; our business strategy; 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 beliefs about who we may compete with and how we are differentiated from those competitors; our expectations regarding our customer base; our expectations regarding product offerings; our gross margin growth and our strategies to achieve gross margin growth and other financial results; our future investments in research and development, and our research and development expense efficiency; our ability to take advantage of the process technology development efforts of semiconductor foundries and apply those technologies when they become most economically beneficial to us and to our customers; whether we will experience seasonality or cyclicality; our expectations about our patent portfolio, including the expiration of patents, whether, when and where we will make future filings, and the value of the patents generally and to our business; our ability to attract and retain personnel and their importance to our performance; future financial results or accounting treatments; our judgments involved in accounting matters, including revenue recognition, inventories and cost of revenue, and income taxes; actions we may take regarding the design and continued effectiveness of our internal controls over financial reporting; our use of cash; our beliefs regarding the adequacy of our liquidity, capital resources and facilities; whether we will consider and act upon acquisition opportunities to extend our product, technology and product offerings; expected synergies from the acquisition of Mirametrix, Inc.; the expected costs of our restructuring plans; our expectations regarding taxes, including unrecognized tax benefits, and tax adjustments and allowances; whether we will pursue future stock repurchases and how any future repurchases will be funded; our ability to prevent and respond to information technology system failures, security breaches and incidents, cyber-attacks or fraud; the impact of laws and regulations addressing privacy, data protection, and cybersecurity and our ability to comply with the same; 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 include the effects of the COVID-19 pandemic and the actions by governments, businesses, and individuals in response to the situation, the effects of which may give rise to or amplify the risks associated with many of these factors listed here; 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; our failure to prevent or adequately respond to information technology system failures, security breaches and incidents, cyber-attacks, or fraud; 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 ("SEC"), including, but not limited to, the items discussed in Part I, Item 1A, “Risk Factors,” in 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 the 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 enable us to provide our customers 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 datacenters, our “processor agnostic” solutions are ideal for control and connect functions in enterprise and datacenter server applications.
- With the expected continued Communications infrastructure build-out from 5G deployment and beyond, 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 vision.
- With the increase in artificial intelligence ("AI"), machine learning, and a multitude of applications at the network edge, Lattice devices support applications that often act independently and need to make instantaneous decisions. Our solutions provide the computing and machine 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 solutions require power efficiency, 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.

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

Our Communications and Computing customers need to address a variety of challenges.

- As client compute devices become smaller and smarter, there is a need for small form factor devices with power efficiency to interface with a variety of sensors and add intelligence.
- As server architectures become increasingly complex, 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 cellular sites 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 input/output ("I/O") expansion, hardware acceleration, and hardware management. Our FPGAs consume power at very low rates, which reduces operating costs and supports the continued miniaturization of consumer devices. 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 where our products enable intelligent automation in the **Industrial and Automotive Market** include Industrial Internet of Things ("IoT"), machine vision, robotics, factory automation, advanced driver assistance systems ("ADAS"), and automotive infotainment.

Our Industrial and Automotive customers face numerous challenges:

- As factories automate to improve efficiency and employee safety, sensors, machine vision, and robotics are proliferating, 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 motor control, complete High Definition ("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 into 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 most power efficient 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. Four product families anchor our FPGA offerings:

- The Certus™ and ECP™ device 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 latest introduction in our general purpose family, CertusPro™, is the CertusPro-NX™ FPGA, which offers the highest logic density of any Lattice Nexus™ platform device and delivers advanced system bandwidth and memory capabilities to Edge applications.
- The Mach™ device family are our “Control & Security FPGAs” and are designed for platform management and security applications. They are control-oriented and offer optimized cost per I/O and cost per look-up table. Mach FPGAs are widely used across our three end market groups: Communications and Computing, Industrial and Automotive, and Consumer. Our latest generation MachXO3D™ and Mach-NX™ FPGAs come with pre-verified cryptographic functions to enable Hardware Root-of-Trust functionality, which is needed for systems to have platform firmware resiliency, i.e. the ability to protect, detect, and recover from unauthorized firmware attacks.

- The iCE™ device family are our “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, the iCE40 UltraPlus™ device, is focused on IoT Edge devices with its AI capabilities, low power, and small form factor.
- The Lattice CrossLink™ device family are our "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. Lattice CrossLinkPlus™ devices provide users with instant-on capabilities for video display. Lattice CrossLink-NX™ FPGAs, 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 our FPGAs with IP cores, reference designs, development kits, and design software. We are investing in our design software, such as Lattice Radiant™, to deliver best-in-class tools that enable predictable design convergence, and Lattice Propel™ for unparalleled ease in creating embedded processor-based designs. We have developed integrated system-level solution stacks, such as Lattice sensAI™ for Edge AI applications, as well as Lattice mVision™ for low power embedded vision, Lattice Sentry™ for implementing hardware security, and Lattice Automate™ for industrial automation and robotics. 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. Further, we have application software such as Glance by Mirametrix™ that allows users to control the AI experience of their end systems.

Depending on the application, we may compete with other FPGA 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.

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 High-Definition Multimedia Interface™ ("HDMI") and Mobile High-Definition Link™ ("MHL") standard technologies to customers who adopt the technology into their products and voluntarily report their usage and royalties. The royalties are split among 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. We believe that continued investment in research and development is required to maintain and improve our competitive position. Our research and development activities are focused on new proprietary products, advanced packaging, existing product enhancements, software development tools, soft IP cores, and application focused hardware and software solutions. These research and development activities occur primarily at our sites in Hillsboro, Oregon; San Jose, California; Montreal, Canada; Shanghai, China; and Muntinlupa City, Philippines.

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

Operations

We operate as a fabless semiconductor provider and, therefore, 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 eliminate the fixed cost of owning and operating manufacturing facilities. We are able to take advantage of the ongoing advanced process technology development efforts of semiconductor foundries and apply those technologies when they become most economically beneficial to us and to our customers.

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, which include order fulfillment, inventory management and warehousing, and the shipment of inventory to third party distributors.

Wafer Fabrication

Lattice partners with Samsung Semiconductor ("Samsung") to develop and manufacture the first low-power FPGA on 28nm fully depleted silicon-on-insulator ("FD-SOI") technology, which is used in our Nexus platform of FPGA 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, and 40nm CMOS process technologies, as well as embedded flash memory in these process nodes. Taiwan Semiconductor Manufacturing Company Ltd. (“TSMC”) manufactures our 350nm, 130nm, 55nm and 40nm products. Seiko Epson ("Epson") manufactures our 500nm, 350nm, 250nm and 180nm products.

We source silicon wafers from our foundry partners, Samsung, UMC, USJC, TSMC, and Epson, 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

All of our assembly and test operations are performed by industry-leading outsourced assembly and test suppliers ("OSATs") with our primary supplier being Advanced Semiconductor Engineering, Inc. ("ASE"). We perform certain test operations as well as reliability and quality assurance processes internally during the development process. 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 in addition to ISO26262 certification on both Automotive products and software.

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, 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 ASE in Taiwan and Malaysia, 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.

Sales and Revenue

We generate revenue by monetizing our technology designs and patents through product and technology sales. This involves distribution channel and direct sales of silicon-based hardware and silicon-enabling products, as well as the licensing or sale of IP 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 customers from Lattice Semiconductor Corporation or our wholly-owned subsidiary, Lattice SG Pte. Ltd. Independent distributors are significant customers, and a substantial portion of our sales are made into this channel. Additionally, we sell both directly and through a network of independent manufacturers' representatives. We also employ a direct sales management and field applications engineering organization to support our end customers and indirect sales resources. End customers for our products are primarily Original Equipment Manufacturers ("OEMs") in the Communications and Computing, Industrial and Automotive, and Consumer end markets. Our sales team attempts to drive multi-generational design wins within these OEMs and leverages our distribution partners 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 2021, 2020, and 2019, sales to distributors accounted for approximately 87%, 83%, and 82%, 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, and Israel, and we sell through three major on-line distributors. Revenue from foreign sales as a percentage of total revenue was 88%, 89%, and 89% for fiscal 2021, 2020, and 2019, respectively. We assign revenue to geographies based on ship-to location of our customers. Both foreign and domestic sales are denominated in U.S. dollars.

Backlog

Our backlog consists of orders from distributors and certain OEMs that generally 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, generally can be revised or canceled up to 60 days before the scheduled delivery date without significant penalty.
- A sizable portion of our revenue comes from our "turns business," where the product is ordered and delivered within the same quarter.

Seasonality

We 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.

IP, Patents, and Licensing

We seek to protect our products, technologies, and IP 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 from the implementation of the HDMI standard. Our current patents will expire at various times between 2022 and 2040, 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.

Human Capital Management

We provide a safe and positive work environment for our employees that emphasizes respect for individuals and ethical conduct, learning and development, facilitated by a direct employee engagement model. The health and safety of our employees is of utmost important to us. During the COVID-19 pandemic, we have taken actions to safeguard the health and well-being of our employees and our business. We implemented social distancing policies at our locations around the world as appropriate, including working from home and eliminating substantially all travel. Recognizing and respecting our global presence, we strive to maintain a diverse and inclusive workforce everywhere we operate. As of January 1, 2022, we had 856 employees worldwide.

We believe our employees are the foundation of our success and that our future growth depends, in part, on our ability to continue to attract and retain key technical, sales, and management personnel, particularly highly-skilled engineers involved in the design, development, and support of new and existing products and processes. In order for us to attract the best talent, we provide a collaborative, diverse, inclusive, and innovative work environment, competitive compensation, and recognition to give our employees the opportunity to grow. We are focused on developing diverse teams and continuing to build an inclusive culture that inspires leadership, encourages innovative thinking, and supports the development and advancement of all.

Our human capital management objectives include identifying, recruiting, incentivizing, and integrating our existing and future employees. We strive to attract and retain talented employees by offering competitive compensation and benefits that support their health, financial, and emotional well-being. Our compensation philosophy is based on rewarding each employee’s individual contributions and striving to achieve equal pay for equal work. We use a combination of fixed and variable pay including base salary, bonuses, performance awards, and stock-based compensation. The principal purposes of our equity incentive plans are to attract, retain, and motivate employees through the granting of stock-based compensation awards. We offer employees benefits that vary by country and are designed to address local laws and cultures and to be competitive in the marketplace.

Corporate Information and Public Information Availability

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.

We make available, free of charge through the Investor Relations section of our website at ir.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.

Our Investor Relations website also provides notifications of news or announcements regarding our financial performance and other items that may be material or of interest to our investors, including SEC filings, press releases, earnings releases, and webcasts of our earnings calls. Further, corporate governance information, including our corporate governance policies, director code of ethics, code of conduct, board committee charters, conflict minerals report and conflict minerals policy, is also available on the investor relations section of our website.

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 all of the other information included in this Annual Report on Form 10-K should be carefully considered in their entirety 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, and the trading price of our common stock could decline. 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 to be immaterial also may materially adversely affect our business, financial condition, and operating results. Continuing effects from the COVID-19 pandemic and containment measures, and related impacts to economic and operating conditions, may further affect the volatility or degree of known and unknown risks.

Risk Factor Summary

Factors Related to Economic, Legal, Regulatory & Political Business Conditions

- The impact of the COVID-19 pandemic on our business.
- Economic, legal, regulatory, political, and business conditions related to our global business.
- The impact of tariffs, trade sanctions or similar actions on our business.

Factors Related to Manufacturing our Products

- The concentration of subcontractors that we rely on to supply and fabricate silicon wafers for our semiconductor products.
- Our achievement of continued yield improvement.
- The impacts of shortages in, or increased costs of, wafers and other materials.
- Potential warranty claims and other costs related to our products.

Factors Related to Intellectual Property and Litigation

- Fluctuations in our revenue and margins caused by the intellectual property licensing component of our business strategy.
- Material fluctuations in our revenue and gross margins caused by our sale of patents and intermittent significant licensing transactions.
- The impact of actual and potential litigation and unfavorable results of legal proceedings on our business.
- Variability in our share of adopter fees and royalties for the HDMI standard as a result of our evolving participation in the HDMI standard.
- Our ability to protect our new and existing intellectual property rights.

Factors Related to Overall General Business & Operations

- Proper functioning of our internal processes and information technology systems, including in response to data breaches, cyber-attacks, or cyber-fraud.
- Goodwill impairments and other impairments under U.S. GAAP that may impact our business.
- Changes to financial accounting standards applicable to us and any related changes to our business practices.
- Exposure to unanticipated tax consequences as a result of changes in effective tax rates, tax laws and our global organizational structure and operations.
- Weakness in our internal control over financial reporting.
- Our ability to compete with others to attract and retain key personnel, and any loss of, or inability to attract, such personnel.
- Our failure to adequately foresee and insure against risks related to our business.
- Limitations to our flexibility caused by our outstanding indebtedness.

Factors Related to Our Markets and Product Development

- Cyclical market patterns and potential downturns in our industry or our end markets.
- Our ability to develop and introduce new products that achieve customer and market acceptance.
- Competition with companies that have significantly greater resources than us and numerous other product solutions.
- Our reliance on independent contractors and third parties to provide key services in our product development and operations.

Factors Related to Our Sales and Revenue

- Our dependence on our distributors and a concentrated group of end customers.
- Fluctuations in and the unpredictability of our business and our sales cycles.
- Accounting requirements related to sales through our distribution channel.

Factors Related to Strategic Transactions

- Disruption in and impacts of acquisitions, divestitures, strategic investments and strategic partnerships on our business.

Factors Related to Economic, Legal, Regulatory & Political Business Conditions

The ongoing COVID-19 pandemic could adversely affect our business, results of operations, and financial condition in a material way.

The COVID-19 pandemic continues to mutate and affect the populations of the United States as well as many countries around the world. The outbreak has resulted in significant governmental measures to control the spread of the COVID-19 variants, including, among others, restrictions on travel, manufacturing and the movement of employees in many regions of the world, and the imposition of remote or work-from-home mandates in many of the countries in which we operate, including the United States and the Philippines. The majority of our products are manufactured, assembled, and tested by third parties in Asia. We also have other operations in China, the Philippines, and the United States. In addition, we rely on third party vendors for certain logistics and shipping operations throughout the world, including in Malaysia, Singapore, South Korea, Japan, and Taiwan. As remote and work-from-home conditions in our offices continue, we face new challenges, including the integration of new employees, current employees moving to new geographies and time zones, and uncertainty with respect to future work arrangements. Due to these and other challenges and uncertainties related to the makeup and structure of our workforce and workplace, we may experience delays in product development, a decreased ability to support our customers, reduced design win activity, and overall lack of productivity.

Pandemics and epidemics such as the current COVID-19 outbreak or other widespread public health problems could negatively impact our business. If, for example, the COVID-19 pandemic continues to progress in ways that significantly disrupt the manufacture, shipment, and buying patterns of our products or the products of our customers, this may materially negatively impact our operating results, including revenue, gross margins, operating margins, cash flows and other operating results, and our overall business. Disruptions to manufacturing and shipping could also constrain our supplies, leading to operational delays, disruptions and, potentially, inflation. Our customers may also experience closures of their manufacturing facilities or inability to obtain other components, either of which could negatively impact demand for our solutions. The COVID-19 pandemic has negatively impacted the overall economy and, as a result of the foregoing, could negatively impact our operating results and may do so in a material way. In particular, the COVID-19 pandemic may increase or change the severity of our other risks reported in this Annual Report on Form 10-K, including that:

- Our subcontractor suppliers who manufacture silicon wafers, packaging and testing to deliver our semiconductor products may be unable to meet delivery expectations to meet customer demand;
- Our distributors and customers may experience adverse performance and any reduction in the use of our products by our end customers could harm our sales and significantly decrease our revenue;
- The semiconductor industry could experience a cyclical downturn, which could cause a meaningful reduction in demand for our products and adversely affect our operating results;
- Countries may adopt tariffs and trade sanctions or similar actions;
- We may be delayed in our development and introduction of new products that achieve customer and market acceptance;
- Our operations may be disrupted if employees are unavailable due to illness, risk of illness, travel restrictions, work from home requirements, or other factors that may limit our access to key personnel or critical skills, or reduce productivity;
- Shortages in or increased costs for silicon wafers, packaging materials, testing and shipping could adversely impact our gross margin and lead to reduced revenue;
- We may experience difficulty in maintaining the uninterrupted operation of our information technology systems, or be exposed to increased risk of a cyber-security incident or fraud, due to an increased reliance on remote work;
- We may incur impairments of goodwill and other assets as required under U.S. GAAP; and
- Our outstanding indebtedness could reduce our strategic flexibility and liquidity and may have other adverse effects on our results of operations.

The impact of COVID-19 may exacerbate the risk factors listed in this Annual Report on Form 10-K, or cause them to change in importance. Developments related to the pandemic and to vaccine rollout have been rapidly changing, and additional impacts and risks may arise that we are not aware of or able to appropriately respond to currently. The ultimate impact of the COVID-19 pandemic on our operations and financial performance depends on many factors that are not within our control, including, but not limited, to: governmental, business, and individuals’ actions that have been and continue to be taken in response to the pandemic; general economic uncertainty in key global markets; volatility in financial markets, labor markets, and supply chains; global economic conditions and levels of economic growth; and the pace of recovery when the COVID-19 pandemic subsides. As of the filing of this Annual Report, the extent to which the COVID-19 pandemic will affect our business continues to be highly uncertain and dependent on future developments that are inherently unpredictable, which makes forecasting demand and providing guidance especially difficult. Accordingly, our expectations are subject to change without warning and investors are cautioned not to place undue reliance on them.

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 international service providers 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; labor markets; 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.

The COVID-19 pandemic prompted precautionary government regulations limiting certain travel and business as well as precautionary business measures, such as those we adopted, like remote work-from-home operations for many employees. The COVID-19 pandemic and related responses have exacerbated many of the risks listed above, including but not limited to, causing fluctuations in consumer liquidity and volatility in financial markets, increases in inflation, interruptions in transportation and infrastructure, and disruptions to labor markets. Although our business has not been materially impacted by supply chain constraints, inflation, or labor market disruptions due to the COVID-19 pandemic, the pandemic may still lead to events outside of our control which could have a material adverse impact on our business, operating results, and financial condition. Additionally, in the future, the operations of customers and of the Company may be affected by this and similar public health matters.

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. In November 2020, California voters approved the California Privacy Rights Act, which extends and expands the CCPA. Other states in the United States have proposed, and in certain cases enacted, legislation similar to the CCPA. Other countries outside of the European Union, including the United Kingdom, China, and Brazil, also have enacted robust legislation addressing privacy, data protection, and cybersecurity and providing for substantial penalties for noncompliance. We anticipate that our efforts to comply with evolving laws and regulations addressing privacy, data protection, and cybersecurity will be a rigorous and time-intensive process that may increase our cost of doing business and may require us to change our policies and practices.

Any inability or perceived inability to adequately comply with applicable laws or regulations could result in claims, demands, and litigation by private actors or governmental authorities, investigations and other proceedings by governmental authorities, injunctive relief, fines, penalties, and other liabilities, any of which may harm our reputation and market position and could adversely affect our business, financial condition, and results of operations.

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, in 2019 the U.S. Justice Department filed criminal charges against one of our customers in China and imposed a licensing requirement on this customer with a policy of denial for some items, which has limited our ability to do business with this customer. In 2020, the U.S. imposed additional regulatory restrictions on the sale of U.S. controlled technology to customers in China, including establishing additional licensing requirements for the sale of U.S.-originated technology for certain applications or to companies that participate in the Chinese national security supply chain and limiting the fabrication of devices for certain Chinese companies where U.S. technology is involved in the fabrication process. Furthermore, in August 2020 the U.S. established additional licensing requirements for one of our China customers and its affiliates that limit any sales of products to that customer or for that customer's products absent a license. The U.S. government may add additional Chinese companies to its restricted entity list or impose additional licensing requirements that we may be unable to meet in a timely manner or at all.

Where license requirements are imposed, there can be no assurance that the U.S. government will grant licenses to permit the continuation of business with these customers. Future sanctions similar to those imposed in the past and to those recently imposed 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. Further, the Chinese government has developed an unreliable entity list, which limits the ability of companies on the list to engage in business with Chinese customers. 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, if our customers are affected by tariffs or other government trade restrictions, or if we become subject to retaliatory regulatory measures, our business and financial condition could be adversely affected.

Factors Related to Manufacturing our Products

We rely on a concentrated number of subcontractors to supply and fabricate silicon wafers and to perform assembly and test operations 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 and OSAT partners and their ability to produce wafers and finished semiconductor products with competitive prices and performance attributes, including smaller process geometries, which ability may be impacted by labor market disruptions and rising inflation. Establishing, maintaining and managing multiple foundry and OSAT relationships requires the investment of management resources and costs.

If we fail to maintain our foundry and OSAT relationships, if these partners do not provide facilities and support for our development efforts, if they are insolvent or experience financial difficulty, if their operations are interrupted by the COVID-19 pandemic, or if we elect or are required to change foundries or OSATs, we may incur significant costs and delays. If our foundry or OSAT 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 or OSATs, which could adversely affect our customer relationships and operating results.

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 that such cost reductions and new product introductions do not occur in a timely manner, because of inflation, increases in personnel costs, employee turnover, or other factors, 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, or if suppliers increase prices to cover the cost of rising inflation, 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, due to supply constraints, inflation, or other factors, our financial condition and results of operations will be adversely affected.

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.

Factors Related to Intellectual Property and Litigation

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 in the past, 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 may be difficult to complete and which may have complex terms for the payment which affects 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.

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 "Note 15 - 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.

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, which are subject to variability in economic trends particularly in the market for consumer electronics.

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.

Factors Related to Overall General Business & 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 environments surrounding information security, data privacy, and data protection are complex and evolving. We continue to commit significant resources to implementing new systems to standardize our processes worldwide and to develop our capabilities in these areas. 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 security breaches and incidents, cyber-attacks, or fraud. We may also encounter errors in corruption or loss of 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. Moreover, the proper functioning of the internal processes that the IT systems and networks support relies on qualified employees. Competition for qualified employees has generally increased across the economy in the United States, which, if we experience employee turnover, could lead to disruptions in our processes, inadequate end user training or difficulty updating our IT systems and networks.

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, malware, ransomware, and other attempts to gain unauthorized access to systems or data, or to 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 on a timely basis 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 security breaches and incidents, 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 data, including sensitive data, or the ability to access or otherwise process such data. These third parties also face substantial security risks from a variety of sources. There can be no assurance that any security measures that we or our third-party service providers have implemented will be effective against current or future security threats, and we cannot guarantee that our systems and networks or those of our third-party service providers have not been breached or otherwise compromised, or that they and any software in our or their supply chains do not contain bugs, vulnerabilities, or compromised code that could result in a breach of or disruption to our systems and networks or the systems and networks of third parties that support us and our services. If any of our third-party providers fails to adopt or adhere to adequate data security practices, or suffers a security breach or incident, any data, including sensitive data, that we provide them or that they otherwise may access or process for us may be improperly accessed, used, disclosed, modified, lost, destroyed, or rendered unavailable. Any security breaches or incidents that we or our third-party providers may suffer could compromise our intellectual property, expose sensitive business information and otherwise result in unauthorized access to or disclosure, modification, misuse, loss or destruction of sensitive information. We may need to expend significant financial and development resources to analyze, correct, eliminate, or work around errors or defects or to eliminate or otherwise address security vulnerabilities, and we and our third-party service providers may face difficulties or delays in identifying or otherwise responding to any potential security breach or incident.

Further, the increase in cyber-attacks has resulted in an increased focus on cybersecurity by certain government agencies. Any cyber-attack or other security breach or incident that we or our third-party providers may suffer, or the perception that any such attack, breach, or incident has occurred, could result in a loss of customer confidence in our security measures, damage to our brand, reputation, and market position, result in unauthorized access to or disclosure, modification, misuse, loss, corruption, unavailability, or destruction of our data or other sensitive data that we or our third-party providers process or maintain, disrupt normal business operations, require us to spend material resources to investigate or correct any breach or incident and to prevent future security breaches and incidents, expose us to legal claims and liabilities, including litigation, regulatory investigations and enforcement actions, and indemnity obligations, and adversely affect our revenues and operating results. Further, any such actual or perceived breach or incident, and any claims, demands, litigation, or investigations or enforcement actions 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 or disruptions of our IT systems or difficulties or delays in maintaining, managing, and integrating them could adversely affect our controls and procedures and could impact our ability to perform necessary operations, which could materially adversely affect our business.

We cannot be certain that our insurance coverage will be adequate for data security liabilities incurred and, will cover any indemnification claims against us relating to any incident, that insurance will continue to be available to us on economically reasonable terms, or at all, or that any insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could have a material adverse effect on our business, including our financial condition, operating results, and reputation.

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 years 2021, 2020, or 2019. Impairment charges related to amortizable intangible assets from the Silicon Image acquisition totaled approximately $12.5 million in fiscal 2018. There is no certainty 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.

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. 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 842 - Leases* in fiscal 2019, has had a material effect on our financial results and affected portions of our business differently. Future changes to these rules, 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.

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. Certain tax positions may remain open to examination for several years. Challenges by tax authorities to our previous tax positions and intercompany transfer pricing arrangements, and continuing assessments of our tax exposures may have an adverse effect on our provision for income taxes and cash tax liability. 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. We may choose to consolidate or integrate certain of these entities, and these integration activities, as well as changes in composition of our earnings in jurisdictions with different tax rates, may impact the taxes we pay or tax provision we record, which could adversely affect our results of operations. Furthermore, various levels of government are focused on tax reform and other legislative actions to increase tax revenue. The current U.S. administration has various proposals that, if enacted, would increase U.S. federal income taxes on corporations. Further changes in the tax laws of foreign jurisdictions could arise as a result of the base erosion and profit shifting project undertaken by the Organisation for Economic Co-operation and Development, which represents a coalition of member countries and recommended changes to numerous long-standing tax principles. If implemented by taxing authorities, such changes, as well as changes in taxing jurisdictions’ administrative interpretations, decisions, policies, and positions, could have a material adverse effect on our business, results of operations, or financial condition. In addition, future effective tax rates could be affected by changes in the valuation of deferred tax assets and liabilities.

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. For example, 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. 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 has been increasing generally throughout the economy, 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.

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.

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

As of January 1, 2022, we had approximately $158.8 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.

Factors Related to Our Markets and Product Development

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 selling 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, these factors could materially and adversely affect our business, financial condition, and operating results.

Our success and future revenue depend 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 customers. 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.

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 than us. Consolidation in our industry may increasingly mean that our competitors have greater consolidated resources, or other synergies, including the ability to attract qualified employee or incorporate higher costs into product and service prices, 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.

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, inflation, labor market disruptions, or any other reason, our financial condition and results of operations could be adversely affected.

Factors Related to Our Sales and Revenue

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 2021, revenue attributable to sales to distributors accounted for 87% of our total revenue, with two distributors accounting for 64% 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.

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, including as a result of inflation or labor market disruptions, 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.

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, which could be exacerbated by rising inflation, 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.

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 record 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.

Factors Related to Strategic Transactions

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.

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 October 2028. 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 50,503 square feet through May 2025 for research and development and operations facilities. In Shanghai, China, we lease 68,027 square feet through May 2024 for research and development operations. 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

The information contained under the heading "Legal Matters" in Note 15 - Contingencies to our Consolidated Financial Statements in Part II, Item 8 is incorporated by reference into this Part I, Item 3. Also, 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.

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 17, 2022, we had approximately 182 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

On February 19, 2021, our Board of Directors approved a stock repurchase program pursuant to which up to $60.0 million of outstanding common stock could be repurchased from time to time (the "2021 Repurchase Program"). The duration of the 2021 Repurchase Program is twelve months. Under the 2021 Repurchase Program during the fourth quarter of fiscal 2021, we repurchased approximately 60,800 shares for approximately $4.9 million, or an average price paid per share of $80.55. All shares repurchased pursuant to the 2021 Repurchase Program were retired by the end of the 2021 fiscal year.

On November 8, 2021, we announced that our Board of Directors had approved a stock repurchase program pursuant to which up to an additional $100.0 million of outstanding common stock could be repurchased from time to time (the "2022 Repurchase Program"). The duration of the 2022 Repurchase Program is through the end of December 2022. Under the 2022 Repurchase Program during the fourth quarter of fiscal 2021, we repurchased approximately 125,400 shares for $10.1 million, or an average price paid per share of $80.55. All shares repurchased pursuant to the 2022 Repurchase Program were retired by the end of the 2021 fiscal year.

The following table contains information regarding our repurchases of our common stock that is registered pursuant to Section 12 of the Securities Exchange Act of 1934 during the fourth quarter of fiscal 2021:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (a)	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs ($M) (b)
October 3, 2021 through October 30, 2021	—	$ —	—	$ 4.9
October 31, 2021 through November 27, 2021	186,200	$ 80.55	186,200	$ 89.9
November 28, 2021 through January 1, 2022	—	$ —	—	$ 89.9
Total	186,200	$ 80.55	186,200	$ 89.9

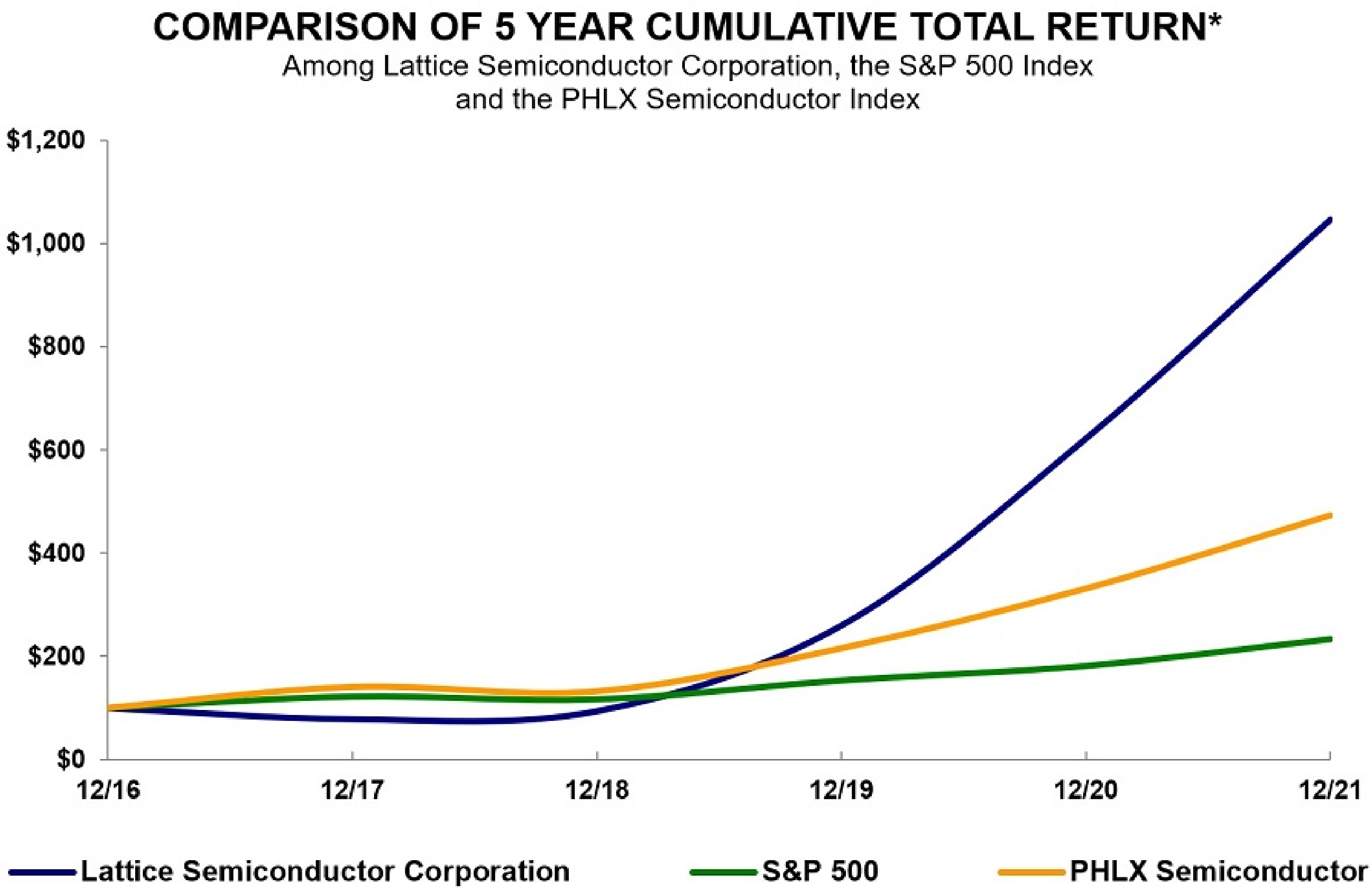
(a) All repurchases during the quarter were open-market transactions funded from available working capital made under the authorization from our board of directors to purchase up to $60.0 million of LSCC common stock announced February 19, 2021 and under the authorization from our board of directors to purchase up to $100.0 million of LSCC common stock announced November 8, 2021.

(b) As of January 1, 2022 this amount consisted of the remaining portion of the $100.0 million program authorized through the end of December 2022 that was announced November 8, 2021. We do not plan to make further repurchases pursuant to the 2021 Repurchase Program, which was due to expire in February 2022, because as of November 27, 2021 we had repurchased the maximum dollar value of shares authorized under the 2021 Repurchase Program.

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 2016 through December 2021. 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



*$100 invested on 12/31/16 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

	12/16	12/17	12/18	12/19	12/20	12/21
Lattice Semiconductor Corporation	100.00	78.53	94.02	260.05	622.55	1047.01
S&P 500	100.00	121.83	116.49	153.17	181.35	233.41
PHLX Semiconductor	100.00	140.54	132.05	215.58	331.27	473.22

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

Item 6. Reserved

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, silicon-enabling 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 the growing communications, computing, industrial, automotive, and consumer markets. Our technology, long-standing relationships, and commitment to world-class support lets our customers quickly and easily unleash their innovation to create a smart, secure, and connected world.

Lattice has focused its strategy on delivering programmable logic products and related solutions based on low power, small size, and ease of use. We also serve our customers with IP licensing and various other services. Our product development activities include new proprietary products, advanced packaging, existing product enhancements, software development tools, soft IP, and system solutions for high-growth applications such as Edge AI, 5G infrastructure, platform security, and factory automation.

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 2020 compared to fiscal 2019) are incorporated by reference from our Annual Report on Form 10-K for the year ended January 2, 2021.

Impact of the COVID-19 pandemic on our Business

The COVID-19 pandemic has caused, and may continue to cause, a global slowdown of economic activity (including the decrease in demand for certain goods and services), and volatility in and disruption to financial markets, labor markets, and supply chains. The severity, magnitude and duration of the COVID-19 pandemic and its economic consequences have been and continue to be uncertain, evolving and difficult to predict, and the pandemic's impact on our operations and financial performance, as well as its impact on our ability to successfully execute our business strategy and initiatives, remains uncertain. We continue to take actions to safeguard the health and well-being of our employees and our business. We implemented social distancing policies at our locations around the world, including working from home and eliminating substantially all travel. Furthermore, we continue to manage our cash position and liquidity needs in light of the rapidly changing environment, and we have additional resources available under our Current Credit Agreement, if needed.

The full extent of the effects of the COVID-19 pandemic and the related governmental, business and travel restrictions in order to contain the virus are continuing to evolve globally, including in response to variants of the virus. We anticipate that these actions and the global health crisis caused by the COVID-19 pandemic will continue to negatively impact business activity across the globe. Demand for our products may be impacted given the global reach and economic impact of the virus. For example, governmental actions or policies or other initiatives to contain the virus could lead to reductions in our end customers' demand for our products, which could have a negative impact on our revenue. We have previously seen and could again see delays or disruptions in our supply chain due to governmental restrictions or voluntary precautionary measures adopted by our suppliers. If our suppliers experience similar impacts, we may have difficulty sourcing materials necessary to fulfill customer production requirements and transporting completed products to our end customers. It is difficult for us to predict the scope, magnitude, and length of supply chain disruptions. Supply chain delays and disruptions may also affect the ability of our customers to obtain materials or products from other suppliers which may constrain or delay their demand for our products.

We will continue to actively monitor the situation and may take further actions altering our business operations that we determine are in the best interests of our employees, customers, partners, suppliers, and stakeholders, or as required by federal, state, or local authorities. It is not clear what the potential effects of any such alterations or modifications may have on our business, including the effects on our customers, employees, and prospects, or on our financial condition or results of operations. The potential impact of the COVID-19 pandemic on our business, results of operations and financial position is currently uncertain and will depend on many factors that are not within our control, including, but not limited to: the duration and scope of the pandemic; governmental, business and individuals' actions that have been and continue to be taken in response to the pandemic; general economic uncertainty in key global markets and financial market volatility; global economic conditions and levels of economic growth; and the pace of recovery when the COVID-19 pandemic subsides. See the section entitled "Risk Factors" in Item 1A of Part I of this report for further information about related risks and uncertainties.

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 of operations, 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 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 materially 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 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 and other 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 stated at the lower of actual cost (determined using the first-in, first-out method) or net realizable value. We review and set standard costs quarterly to approximate current actual manufacturing costs. Our manufacturing overhead standards for product costs are calculated assuming full absorption of actual spending over actual costs. The valuation of inventory requires us to estimate excess or obsolete inventory. Material assumptions we use to estimate necessary inventory carrying value adjustments can be unique to each product and are based on specific facts and circumstances. In determining provisions for excess or obsolete products, we consider assumptions such as changes in business and economic conditions, projected customer demand for our products, and changes in technology or customer requirements. The creation of such provisions results in a write-down of inventory to net realizable value and a charge to Cost of revenue. If in any period we anticipate a change in assumptions such as future market or economic conditions to be less favorable than our previous estimates, additional inventory write-downs may be required and would be reflected in Cost of revenue, resulting in a negative impact to our gross margin in that period. If in any period we are able to sell inventories that had been written down to a level below the ultimate realized selling price in a previous period, related revenue would be recorded with a lower or no offsetting charge to Cost of revenue resulting in a net benefit to our gross margin in that period.

Business Combinations

Business combinations are accounted for using the acquisition method of accounting, under which we allocate the purchase price paid for a company to identifiable assets acquired and liabilities assumed based on their estimated fair values at the date of acquisition. Goodwill is measured as the excess of purchase price over the fair value of identifiable assets acquired and liabilities assumed. Determining the fair value of assets acquired and liabilities assumed requires management to make assumptions, estimates, and judgments that are based on all available information, including comparable market data and information obtained from our management and the management of the acquired companies. These judgments affect the amount of consideration paid that is allocable to identified tangible and intangible assets acquired and liabilities assumed in the business combination. The estimation of the fair values of the intangible assets requires significant judgment and the use of valuation techniques including primarily the income approach. Consideration is given to all relevant factors that might affect the fair value such as estimates of future revenues and costs, present value factors, and the estimated useful lives of intangible assets.

Accounting for Income Taxes

We are required to estimate our provision for income taxes and amounts ultimately payable or recoverable in numerous tax jurisdictions around the world. These estimates involve significant judgment and interpretations of regulations and are inherently complex. Resolution of income tax treatments in individual jurisdictions may not be known for many years after completion of the applicable year. 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 regularly 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 regular financial review process, we also assess the likelihood that our tax reporting positions will ultimately be sustained on examination by the taxing authorities, based on the technical merits of the position. 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. We recognize the tax impact of including certain foreign earnings in U.S. taxable income as a period cost.

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)	January 1, 2022		January 2, 2021		December 28, 2019	
Revenue	$ 515,327	100.0%	$ 408,120	100.0%	$ 404,093	100.0%
Gross margin	321,675	62.4	245,306	60.1	238,422	59.0
Research and development	110,518	21.4	89,223	21.9	78,617	19.5
Selling, general and, administrative	105,617	20.5	95,331	23.4	82,542	20.4
Amortization of acquired intangible assets	2,613	0.5	4,449	1.1	13,558	3.4
Restructuring charges	940	0.2	3,937	1.0	4,664	1.2
Acquisition related charges	1,171	0.2	—	—	—	—
Income from operations	$ 100,816	19.6%	$ 52,366	12.8%	$ 59,041	14.6%

** The year ended January 2, 2021 was a 53-week year as compared to the other years presented, which were based on our standard 52-week year.*

Revenue

	Year Ended			% Change in	
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019	2021	2020
Revenue	$ 515,327	$ 408,120	$ 404,093	26.3%	1.0%

Revenue increased $107.2 million, or 26.3%, in fiscal 2021 compared to fiscal 2020, primarily driven by increased demand for products used in client computing solutions, 5G wireless infrastructure, and industrial and robotics applications.

Revenue by End Market

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

Within these end markets, there are multiple segment drivers, including:

- Communications and Computing: 5G infrastructure deployments, client computing platforms, and cloud and enterprise servers,
- Industrial and Automotive: industrial IoT, factory automation, robotics, and automotive electronics,
- Consumer: smart home, and prosumer.

We also generate revenue from the licensing of our 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 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 the remainder to the end markets based on either historical usage for each product family or industry application data for certain product types.

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)	January 1, 2022		January 2, 2021		December 28, 2019		2021	2020
Communications and Computing	$ 217,960	42.3%	$ 174,656	42.8%	$ 155,821	38.6%	24.8%	12.1%
Industrial and Automotive	226,240	43.9	168,323	41.2	151,607	37.5	34.4	11.0
Consumer	50,652	9.8	45,523	11.2	75,120	18.6	11.3	(39.4)
Licensing and Services	20,475	4.0	19,618	4.8	21,545	5.3	4.4	(8.9)
Total revenue	$ 515,327	100.0%	$ 408,120	100.0%	$ 404,093	100.0%	26.3%	1.0%

Revenue from the Communications and Computing end market increased by 25% in fiscal 2021 compared to fiscal 2020 primarily due to increased demand for applications in data center servers, client computing platforms, and 5G infrastructure.

Revenue from the Industrial and Automotive end market increased by 34% in fiscal 2021 compared to fiscal 2020, primarily due to increased demand for our products across multiple applications such as industrial automation and robotics, as well as in Automotive led by adoption in ADAS and infotainment applications.

Revenue from the Consumer end market increased by 11% in fiscal 2021 compared to fiscal 2020 primarily due to increased demand for our products in Consumer end market applications.

Revenue from the Licensing and Services end market increased by 4% in fiscal 2021 compared to fiscal 2020 primarily due to increased licensing and IP royalties.

Revenue by Geography

We assign revenue to geographies based on ship-to location of the customer.

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

	Year Ended						% Change in	
(In thousands)	January 1, 2022		January 2, 2021		December 28, 2019		2021	2020
Asia	$ 384,568	74.6%	$ 305,183	74.8%	$ 298,765	73.9%	26.0%	2.1%
Americas	80,870	15.7	62,137	15.2	57,936	14.4	30.1	7.3
Europe	49,889	9.7	40,800	10.0	47,392	11.7	22.3	(13.9)
Total revenue	$ 515,327	100.0%	$ 408,120	100.0%	$ 404,093	100.0%	26.3%	1.0%

Revenue from Customers

We sell our products to independent distributors and directly to customers. Distributors have historically accounted for a significant portion of our total revenue, and the two distributor groups noted below individually accounted for more than 10% of our total revenue in the periods covered by this report.

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

	% of Total Revenue Year Ended		
	January 1, 2022	January 2, 2021	December 28, 2019
Weikeng Group	37.2%	34.8%	29.8%
Arrow Electronics Inc.	27.1	25.1	25.4
Other distributors	23.0	23.2	26.9
All distributors	87.3	83.1	82.1%
Direct customers	8.7	12.1	12.6
Licensing and services revenue	4.0	4.8	5.3
Total revenue	100.0%	100.0%	100.0%

Gross margin

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

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Gross margin	$ 321,675	$ 245,306	$ 238,422
Gross margin percentage	62.4%	60.1%	59.0%
Product gross margin %	60.9%	58.1%	56.7%
Licensing and services gross margin %	100.0%	100.0%	100.0%

Gross margin percentage increased 230 basis points from fiscal 2020 to fiscal 2021. Improved margins were driven by benefits from our pricing optimization and gross margin expansion strategy.

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)	January 1, 2022	January 2, 2021	December 28, 2019	2021	2020
Research and development	$ 110,518	$ 89,223	$ 78,617	23.9%	13.5%
Percentage of revenue	21.4%	21.9%	19.5%		

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 increase in Research and development expense for fiscal 2021 compared to fiscal 2020 was due primarily to increased headcount-related costs as we continue to invest in the expansion of our product portfolio and the acceleration of our new product introduction cadence.

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 increase our investment in Research and development, particularly with expanded investment in the development of software 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:

(In thousands)	Year Ended January 1, 2022	Year Ended January 2, 2021	Year Ended December 28, 2019	% Change in 2021	% Change in 2020
Selling, general, and administrative	$ 105,617	$ 95,331	$ 82,542	10.8%	15.5%
Percentage of revenue	20.5%	23.4%	20.4%		

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 increase in Selling, general, and administrative expense for fiscal 2021 compared to fiscal 2020 was due primarily to increased stock compensation, salaries, and variable compensation related expenses.

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:

(In thousands)	Year Ended January 1, 2022	Year Ended January 2, 2021	Year Ended December 28, 2019	% Change in 2021	% Change in 2020
Amortization of acquired intangible assets	$ 2,613	$ 4,449	$ 13,558	(41.3)%	(67.2)%
Percentage of revenue	0.5%	1.1%	3.4%		

The decrease in Amortization of acquired intangible assets for fiscal 2021 compared to fiscal 2020 was due to the end of the amortization period for the majority of our legacy acquired intangible assets during the first quarter of fiscal 2020, partially offset by amortization expense for new intangible assets added in the fourth quarter of fiscal 2021 through the acquisition of Mirametrix, Inc.

Restructuring Charges

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

(In thousands)	Year Ended January 1, 2022	Year Ended January 2, 2021	Year Ended December 28, 2019	% Change in 2021	% Change in 2020
Restructuring charges	$ 940	$ 3,937	$ 4,664	(76.1)%	(15.6)%
Percentage of revenue	0.2%	1.0%	1.2%		

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 discussed in "Note 9 - Restructuring" to our Consolidated Financial Statements in Part II, Item 8 of this report.

Restructuring charges decreased in fiscal 2021 compared to fiscal 2020, as we had no significant restructuring activity in the current year.

Acquisition Related Charges

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

(In thousands)	Year Ended January 1, 2022	Year Ended January 2, 2021	Year Ended December 28, 2019	% Change in 2021	% Change in 2020
Acquisition related charges	$ 1,171	$ —	$ —	100+%	—%
Percentage of revenue	0.2%	—%	—%		

Acquisition related charges include legal and professional fees directly related to acquisitions. For fiscal 2021, Acquisition related charges were entirely attributable to our acquisition of Mirametrix in November 2021 and were comprised primarily of professional services including legal and accounting fees, as well as closing costs.

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)	**January 1, 2022**	**January 2, 2021**	**December 28, 2019**	**2021**	**2020**
Interest expense	$ (2,738)	$ (3,702)	$ (11,731)	(26.0)%	(68.4)%
Percentage of revenue	(0.5)%	(0.9)%	(2.9)%		

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 2021 compared to fiscal 2020 was driven by the significant reduction in the effective interest rate on our long term debt coupled with the reduction in the principal balance of our long-term debt.

Other (Expense) Income, net

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

	Year Ended			% Change in	
(In thousands)	**January 1, 2022**	**January 2, 2021**	**December 28, 2019**	**2021**	**2020**
Other (expense) income, net	$ (452)	$ (208)	$ (2,245)	117.3%	(90.7)%
Percentage of revenue	(0.1)%	(0.1)%	(0.6)%		

For fiscal 2021 compared to fiscal 2020, the increase in Other (expense) income, net was largely driven by higher foreign currency exchange losses.

Income Taxes

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

	Year Ended			% Change in	
(In thousands)	**January 1, 2022**	**January 2, 2021**	**December 28, 2019**	**2021**	**2020**
Income tax expense	$ 1,704	$ 1,064	$ 1,572	60.2%	(32.3)%

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 ("UTP") due to statute of limitation expirations that occurred in the respective periods. The increase in expense in fiscal 2021 as compared to fiscal 2020 is primarily due to changes in uncertain tax positions and increased worldwide income.

We updated our evaluation of the valuation allowance position in the United States through January 1, 2022 and concluded that we should continue to maintain a full valuation allowance against the net federal and state deferred tax assets. We continue to evaluate future projected financial performance to determine whether such performance is sufficient evidence to support a reduction in or reversal of the valuation allowance. We will continue to evaluate both positive and negative evidence in future periods to determine if we will realize the deferred tax assets. The amount of the deferred tax asset considered realizable could be adjusted if sufficient positive evidence exists. Details of our deferred tax assets and valuation allowance are discussed in "Note 13 - Income Taxes" to our Consolidated Financial Statements in Part II, Item 8 of this report.

Liquidity and Capital Resources

The following sections discuss material changes in our financial condition from the end of fiscal 2020, 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. There is significant uncertainty around the extent and duration of the disruption to our business from the COVID-19 pandemic, and our liquidity and working capital needs may be impacted in future periods as a result of the effects of the COVID-19 pandemic.

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, including current cash and cash equivalents, cash flow from operating activities, and our credit facilities, will be sufficient to meet our liquidity and working capital needs through at least the next 12 months. As of January 1, 2022, we did not have significant long-term commitments for capital expenditures. For further information on our cash commitments for operating lease liabilities and required future principal payments on our long-term debt, see Note 10 - Leases and Note 8 - Long-Term Debt, respectively, under Part II, Item 8 of this report.

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. 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.

Liquidity

Cash and cash equivalents

(In thousands)	January 1, 2022	January 2, 2021	$ Change	% Change
Cash and cash equivalents	$ 131,570	$ 182,332	$ (50,762)	(27.8)%

As of January 1, 2022, we had Cash and cash equivalents of $131.6 million, of which approximately $59.1 million in Cash and cash equivalents was held by our foreign subsidiaries.

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 January 1, 2022, we could access all cash held by our foreign subsidiaries without incurring significant additional expense.

The net decrease in Cash and cash equivalents of $50.8 million between January 2, 2021 and January 1, 2022 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 was $167.7 million in fiscal 2021 compared to $91.7 million in fiscal 2020. This increase of $76.0 million was primarily driven by an increase of $54.2 million provided by improved operating performance, coupled with $21.8 million of favorable changes in working capital. We are using cash provided by operating activities to fund our operations.

Investing activities — Investing cash flows consist primarily of transactions related to capital expenditures and payments for software and intellectual property licenses, and a business acquisition in fiscal 2021. Net cash used by investing activities in fiscal 2021 was $89.8 million compared to $20.9 million in fiscal 2020. This $68.9 million increase was primarily due to the acquisition of Mirametrix in the current year, which used cash, net of cash acquired, of $68.1 million. Total cash used for capital expenditures and payments for software and intellectual property licenses increased $0.8 million to $21.7 million in fiscal 2021 from $20.9 million in fiscal 2020.

Financing activities — Financing cash flows consist primarily of activity on our long-term debt, proceeds from the exercise of options to acquire common stock, tax payments related to the net share settlement of restricted stock units, and repurchases of common stock. Net cash used by financing activities in fiscal 2021 was $128.6 million compared to $8.1 million in fiscal 2020. This $120.5 million increase was due to the following mix of activities. During fiscal 2021, we paid required quarterly installments on our long-term debt totaling $13.1 million. During fiscal 2020, we drew $50.0 million on our revolving loan facility to further strengthen our liquidity position, and we paid quarterly installments totaling $26.3 million on our long-term debt, which fulfilled the required quarterly installments through the first quarter of fiscal 2021. Payments for tax withholdings on vesting of RSUs partially offset by employee exercises of stock options used net cash flows of $45.4 million in fiscal 2021, an increase of approximately $28.5 million from the net $16.9 million used in fiscal 2020. During fiscal 2021, we also repurchased approximately 1.3 million shares of common stock for $70.1 million compared to repurchases in fiscal 2020 of approximately 0.4 million shares of common stock for $15.0 million.

Accounts receivable, net

(In thousands)	January 1, 2022	January 2, 2021	Change	% Change
Accounts receivable, net	$ 79,859	$ 64,581	$ 15,278	23.7%
Days sales outstanding - Overall	51	55	(4)	

Accounts receivable, net as of January 1, 2022 increased by approximately $15.3 million, or approximately 24%, compared to January 2, 2021. This resulted primarily from increased shipments in the fourth quarter of fiscal 2021 compared to the fourth quarter of fiscal 2020. We calculate Days sales outstanding on the basis of a 365-day year as Accounts receivable, net at the end of the quarter divided by sales during the quarter annualized and then multiplied by 365.

Inventories

(In thousands)	January 1, 2022	January 2, 2021	Change	% Change
Inventories	$ 67,594	$ 64,599	$ 2,995	4.6%
Days of inventory on hand	122	139	(17)	

Inventories as of January 1, 2022 increased $3.0 million, or approximately 5%, compared to January 2, 2021 primarily to meet the increased demands of our customers.

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. We calculate Days of inventory on hand on the basis of a 365-day year as Inventories at the end of the quarter divided by Cost of sales during the quarter annualized and then multiplied by 365.

Credit Arrangements

On May 17, 2019, we entered into our Current Credit Agreement with Wells Fargo Bank, National Association, as administrative agent, and other lenders. The details of this arrangement are described in "Note 8 - Long-Term Debt" in the accompanying Notes to Consolidated Financial Statements. As of January 1, 2022, we had no used or unused credit arrangements beyond the secured revolving loan facility described in the Current Credit Agreement.

Share Repurchase Program

See "Issuer Purchases of Equity Securities" under Part II, Item 5 of this Annual Report on Form 10-K for more information about the share repurchase program.

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.

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, our financial position and results of operations are subject to foreign currency exchange rate risk as a result of having various international subsidiary and branch operations. Historically, exposure to foreign currency exchange rate risk has not had a material impact on our results from operations. At times in the past, we have entered into foreign currency forward exchange contracts in relation to certain activities, which mitigated the foreign currency exchange rate exposure from an economic perspective, but these were not designated as "effective" hedges under U.S. GAAP.

Interest Rate Risk

We are exposed to interest rate risk related to our indebtedness. At January 1, 2022, we had $158.8 million outstanding under our Current 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

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended		
(In thousands, except per share data)	January 1, 2022	January 2, 2021	December 28, 2019
Revenue	$ 515,327	$ 408,120	$ 404,093
Cost of revenue	193,652	162,814	165,671
Gross margin	321,675	245,306	238,422
Operating expenses:			
Research and development	110,518	89,223	78,617
Selling, general, and administrative	105,617	95,331	82,542
Amortization of acquired intangible assets	2,613	4,449	13,558
Restructuring charges	940	3,937	4,664
Acquisition related charges	1,171	—	—
Total operating expenses	220,859	192,940	179,381
Income from operations	100,816	52,366	59,041
Interest expense	(2,738)	(3,702)	(11,731)
Other (expense) income, net	(452)	(208)	(2,245)
Income before income taxes	97,626	48,456	45,065
Income tax expense	1,704	1,064	1,572
Net income	$ 95,922	$ 47,392	$ 43,493
Net income per share:			
Basic	$ 0.70	$ 0.35	$ 0.33
Diluted	$ 0.67	$ 0.34	$ 0.32
Shares used in per share calculations:			
Basic	136,619	135,220	132,471
Diluted	142,143	141,276	137,274

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

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Net income	$ 95,922	$ 47,392	$ 43,493
Other comprehensive income (loss):			
Translation adjustment	(75)	1,533	341
Change in actuarial valuation of defined benefit pension, net of tax	372	(678)	(602)
Unrealized gain related to marketable securities, net of tax	—	—	42
Reclassification adjustment for gains related to marketable securities included in Other expense, net of tax	—	—	(53)
Comprehensive income	$ 96,219	$ 48,247	$ 43,221

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)	January 1, 2022	January 2, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 131,570	$ 182,332
Accounts receivable, net of allowance for credit losses	79,859	64,581
Inventories, net	67,594	64,599
Prepaid expenses and other current assets	22,328	22,331
Total current assets	301,351	333,843
Property and equipment, net	38,094	39,666
Operating lease right-of-use assets	23,818	22,178
Intangible assets, net	29,782	6,321
Goodwill	315,358	267,514
Other long-term assets	18,091	10,545
Total assets	$ 726,494	$ 680,067
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 34,597	$ 27,530
Accrued expenses	26,444	21,411
Accrued payroll obligations	27,967	18,028
Current portion of long-term debt	17,173	12,762
Total current liabilities	106,181	79,731
Long-term debt, net of current portion	140,760	157,934
Long-term operating lease liabilities, net of current portion	19,248	18,906
Other long-term liabilities	48,672	39,069
Total liabilities	314,861	295,640
Contingencies (Note 15)		
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; 137,239,000 shares issued and outstanding as of January 1, 2022 and 136,236,000 shares issued and outstanding as of January 2, 2021	1,372	1,362
Additional paid-in capital	701,688	770,711
Accumulated deficit	(289,976)	(385,898)
Accumulated other comprehensive loss	(1,451)	(1,748)
Total stockholders' equity	411,633	384,427
Total liabilities and stockholders' equity	$ 726,494	$ 680,067

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

LATTICE SEMICONDUCTOR CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Cash flows from operating activities:			
Net income	$ 95,922	$ 47,392	$ 43,493
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Depreciation and amortization	24,429	25,140	33,056
Stock-based compensation expense	46,475	40,372	18,899
Amortization of right-of-use assets	6,587	5,960	5,797
Amortization of debt issuance costs and discount	362	400	1,659
Loss on refinancing of long-term debt	—	—	2,235
Impairment of operating lease right-of-use asset	—	—	977
Other non-cash adjustments	(601)	(256)	(374)
Changes in assets and liabilities:			
Accounts receivable, net	(12,013)	336	(4,027)
Inventories, net	(2,995)	(9,619)	12,116
Prepaid expenses and other assets	1,918	(6,441)	3,740
Accounts payable	7,046	(16,820)	12,470
Accrued expenses	(2,855)	6,314	(3,047)
Accrued payroll obligations	9,692	4,624	4,039
Operating lease liabilities, current and long-term portions	(6,245)	(5,715)	(6,896)
Net cash provided by (used in) operating activities	167,722	91,687	124,137
Cash flows from investing activities:			
Cash paid for business acquisition, net of cash acquired	(68,099)	—	—
Capital expenditures	(9,835)	(12,121)	(15,590)
Cash paid for software and intellectual property licenses	(11,862)	(8,747)	(9,601)
Proceeds from sales of and maturities of short-term marketable securities	—	—	9,655
Net cash provided by (used in) investing activities	(89,796)	(20,868)	(15,536)
Cash flows from financing activities:			
Restricted stock unit tax withholdings	(54,191)	(26,965)	(10,084)
Proceeds from issuance of common stock	8,827	10,103	17,166
Repurchase of common stock	(70,124)	(14,989)	—
Proceeds from long-term debt	—	50,000	206,500
Original issue discount and debt issuance costs	—	—	(2,086)
Repayment of long-term debt	(13,125)	(26,250)	(321,408)
Net cash provided by (used in) financing activities	(128,613)	(8,101)	(109,912)
Effect of exchange rate change on cash	(75)	1,533	341
Net increase (decrease) in cash and cash equivalents	(50,762)	64,251	(970)
Beginning cash and cash equivalents	182,332	118,081	119,051
Ending cash and cash equivalents	$ 131,570	$ 182,332	$ 118,081
Supplemental disclosure of cash flow information and non-cash investing and financing activities:			
Interest paid	$ 2,313	$ 3,700	$ 10,995
Operating lease payments	$ 7,639	$ 7,713	$ 8,425
Income taxes paid, net of refunds	$ 3,304	$ 1,868	$ 3,393
Accrued purchases of plant and equipment	$ 1,360	$ 975	$ 826
Operating lease right-of-use assets obtained in exchange for lease obligations	$ 8,134	$ 2,645	$ 747

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 Income (Loss)	Total
Balances, December 29, 2018	129,728	$ 1,297	$ 736,274	$ (476,783)	$ (2,331)	$ 258,457
Components of comprehensive income, net of tax:						
Net income	—	—	—	43,493	—	43,493
Other comprehensive income (loss)	—	—	—	—	(272)	(272)
Total comprehensive income						43,221
Common stock issued in connection with employee equity incentive plans, net of shares withheld for employee taxes	4,155	42	7,040	—	—	7,082
Stock-based compensation expense	—	—	18,899	—	—	18,899
Balances, December 28, 2019	133,883	$ 1,339	$ 762,213	$ (433,290)	$ (2,603)	$ 327,659
Components of comprehensive income, net of tax:						
Net income	—	—	—	47,392	—	47,392
Other comprehensive income (loss)	—	—	—	—	855	855
Total comprehensive income						48,247
Common stock issued in connection with employee equity incentive plans, net of shares withheld for employee taxes	2,738	27	(16,889)	—	—	(16,862)
Stock-based compensation expense	—	—	40,372	—	—	40,372
Repurchase of common stock	(385)	(4)	(14,985)	—	—	(14,989)
Balances, January 2, 2021	136,236	$ 1,362	$ 770,711	$ (385,898)	$ (1,748)	$ 384,427
Components of comprehensive income, net of tax:						
Net income	—	—	—	95,922	—	95,922
Other comprehensive income (loss)	—	—	—	—	297	297
Total comprehensive income						96,219
Common stock issued in connection with employee equity incentive plans, net of shares withheld for employee taxes	2,270	23	(45,387)	—	—	(45,364)
Stock-based compensation expense	—	—	46,475	—	—	46,475
Repurchase of common stock	(1,267)	(13)	(70,111)	—	—	(70,124)
Balances, January 1, 2022	137,239	$ 1,372	$ 701,688	$ (289,976)	$ (1,451)	$ 411,633

The accompanying notes are an integral part of these 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") and pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). 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 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, the actual results that we experience may differ materially from these estimates under different assumptions or conditions. We evaluate our estimates and judgments on an ongoing basis.

Certain prior year balances have been reclassified to conform to the current year's presentation.

Fiscal Reporting Periods

We report based on a 52 or 53-week fiscal year ending on the Saturday closest to December 31. Our fiscal 2021 was a 52-week year that ended on January 1, 2022. Our fiscal 2020 was a 53-week year that ended on January 2, 2021, and our fiscal 2019 was a 52-week year that ended on December 28, 2019. 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.

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 more than 10% 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		
	January 1, 2022	January 2, 2021	December 28, 2019
Weikeng Group	37%	35%	30%
Arrow Electronics Inc.	27	25	25
Other distributors	23	23	27
Revenue attributable to distributors	87%	83%	82%

At January 1, 2022 and January 2, 2021, Weikeng accounted for 59% and 47%, respectively, and Arrow accounted for 28% and 45%, respectively, of net accounts receivable.

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 currencies that differ from the functional currency of that entity. Gains or losses from foreign exchange rate fluctuations on balances denominated in currencies that differ from the functional 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

Under the terms of ASC 606, *"Revenue from Contracts with Customers"*, we recognize revenue when we satisfy performance obligations as evidenced by the transfer of control of our products or services to customers. 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. Our revenue is derived primarily from sales of silicon-based products, with additional revenue from sales of silicon-enabling products. We consider customer purchase orders, which in some cases are governed by master sales agreements, to be the contracts with a customer. 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 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 rebate claims 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 Accrued expenses. Licensing and services revenue, which includes HDMI and MHL standards revenue, as well as certain IP licenses, includes 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.

Inventories and Cost of Revenue

Inventories are stated at the lower of actual cost (determined using the first-in, first-out method) or net realizable value. We review and set standard costs quarterly to approximate current actual manufacturing costs. Our manufacturing overhead standards for product costs are calculated assuming full absorption of actual spending over actual costs. The valuation of inventory requires us to estimate excess or obsolete inventory. Material assumptions we use to estimate necessary inventory carrying value adjustments can be unique to each product and are based on specific facts and circumstances. In determining provisions for excess or obsolete products, we consider assumptions such as changes in business and economic conditions, projected customer demand for our products, and changes in technology or customer requirements. The creation of such provisions results in a write-down of inventory to net realizable value and a charge to Cost of revenue. Lower of cost or net realizable value is based on assumptions such as recent historical sales activity and selling prices, as well as estimates of future sales activity and selling prices. 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, and one to three years for tooling. 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. Repair and maintenance costs are expensed as incurred.

Business Combinations

Business combinations are accounted for using the acquisition method of accounting, under which we allocate the purchase price paid for a company to identifiable assets acquired and liabilities assumed based on their estimated fair values at the date of acquisition. Goodwill is measured as the excess of purchase price over the fair value of identifiable assets acquired and liabilities assumed. Determining the fair value of identifiable tangible and intangible assets acquired and liabilities assumed requires management to make assumptions, estimates, and judgments that are based on all available information, including comparable market data and information obtained from our management and the management of the acquired companies. The estimation of the fair values of the intangible assets requires significant judgment and the use of valuation techniques including primarily the income approach. Consideration is given to all relevant factors that might affect the fair value such as estimates of future revenues and costs, present value factors, and the estimated useful lives of intangible assets. We expense acquisition-related costs in the period incurred.

Impairment of Long-Lived Assets

Long-lived assets, which consist primarily of property and equipment, amortizable intangible assets, and right-of-use 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.

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.

Leases

We account for leases under the terms of ASC 842, "*Leases*," which requires lessees to record assets and liabilities on the balance sheet for all leases with terms longer than 12 months. Upon adoption, 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 applied to all asset classes. Concurrent with our adoption of Topic 842, we early adopted ASU 2019-01, *Leases (Topic 842): Codification Improvements,* which granted 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 generally expensed as incurred, with certain licensed technology agreements capitalized as intangible assets and amortized to Research and development expense over their estimated useful lives.

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

We are required to estimate our provision for income taxes and amounts ultimately payable or recoverable in numerous tax jurisdictions around the world. These estimates involve significant judgment and interpretations of regulations and are inherently complex. Resolution of income tax treatments in individual jurisdictions may not be known for many years after completion of the applicable year. 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. We recognize the tax impact of including certain foreign earnings in U.S. taxable income as a period cost.

Stock-Based Compensation

We estimate the fair value of share-based awards consistent with the provisions of ASC 718, "*Compensation - Stock Compensation*." We value RSUs using the closing market price on the date of grant, and we value stock options using the Black-Scholes option pricing model. We have also granted RSUs with a market condition or a performance condition to certain executives. The terms of these grants, including achievement criteria and vesting schedules, are detailed under the heading "Market-Based and Performance-Based Awards — Grants" in "Note 11 - Stock-Based Compensation Plans" to our consolidated financial statements. Our current practice is to issue new shares to satisfy option exercises. For RSUs, we issue new shares when awards vest and withhold a portion of these shares on behalf of employees to satisfy the minimum statutory tax withholding requirements.

Segment Information

As of January 1, 2022, we had one operating segment: the core Lattice business, which includes silicon-based and silicon-enabling products, 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.

Note 2 - Net Income 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 number of shares included in the diluted share count as of the end of each period presented is determined by measuring the achievement of the market condition as of the end of the respective reporting periods. For equity awards with a performance condition, the number of shares that qualified for vesting as of the end of each period presented are included in the diluted share count when the condition for their issuance was satisfied by the end of the respective reporting periods. See "Note 11 - 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 per share is presented in the following table:

(in thousands, except per share data)	Year Ended January 1, 2022	January 2, 2021	December 28, 2019
Net income	$ 95,922	$ 47,392	$ 43,493
Shares used in basic Net income per share	136,619	135,220	132,471
Dilutive effect of stock options, RSUs, ESPP shares, and equity awards with a market condition or performance condition	5,524	6,056	4,803
Shares used in diluted Net income per share	142,143	141,276	137,274
Basic Net income per share	$ 0.70	$ 0.35	$ 0.33
Diluted Net income per share	$ 0.67	$ 0.34	$ 0.32

The computation of diluted Net income 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 to approximately the following number of shares:

(in thousands)	Year Ended January 1, 2022	January 2, 2021	December 28, 2019
Stock options, RSUs, ESPP shares, and equity awards with a market condition or performance condition excluded as they are antidilutive	638	646	890

Note 3 - Revenue from Contracts with Customers

Disaggregation of Revenue

The following tables provide information about revenue from contracts with customers disaggregated by channel and by geographical market, based on ship-to location of the customer:

Revenue by Channel *(In thousands)*	Year Ended January 1, 2022		January 2, 2021		December 28, 2019	
Product revenue - Distributors	$ 449,650	87%	$ 339,100	83%	$ 331,941	82%
Product revenue - Direct	45,202	9%	49,402	12%	50,607	13%
Licensing and services	20,475	4%	19,618	5%	21,545	5%
Total revenue	$ 515,327	100%	$ 408,120	100%	$ 404,093	100%
Revenue by Geographical Market						
(In thousands)						
United States	$ 60,176	12%	$ 43,945	11%	$ 44,330	11%
Other Americas	20,694	4%	18,192	4%	13,606	3%
Americas	80,870	16%	62,137	15%	57,936	14%
China	281,237	55%	213,714	52%	206,107	51%
Japan	47,915	9%	25,435	6%	42,658	11%
Other Asia	55,416	10%	66,034	17%	50,000	12%
Asia	384,568	74%	305,183	75%	298,765	74%
Europe	49,889	10%	40,800	10%	47,392	12%
Total revenue	$ 515,327	100%	$ 408,120	100%	$ 404,093	100%

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)		
Contract assets as of December 28, 2019	$	5,569
Revenues recorded during the period		15,860
Transferred to Accounts receivable or collected		(15,818)
Contract assets as of January 2, 2021	$	5,611
Revenues recorded during the period		15,587
Transferred to Accounts receivable or collected		(15,526)
Contract assets as of January 1, 2022	$	5,672

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

(In thousands)		
Contract liabilities as of December 28, 2019	$	2,313
Accruals for estimated future stock rotation and scrap returns		5,976
Less: Release of accruals for recognized stock rotation and scrap returns		(5,221)
Contract liabilities as of January 2, 2021	$	3,068
Accruals for estimated future stock rotation and scrap returns		4,613
Less: Release of accruals for recognized stock rotation and scrap returns		(2,913)
Contract liabilities as of January 1, 2022	$	4,768

Note 4 - Balance Sheet Components

Accounts Receivable

Accounts receivable do not bear interest and are shown net of an allowance for expected lifetime credit losses, which reflects our best estimate of probable losses inherent in the accounts receivable balance. We determine this allowance through an assessment of known troubled accounts, analysis of our accounts receivable aging, historical experience, expectations for future economic conditions, management judgment, and other available evidence.

(In thousands)		**January 1, 2022**		**January 2, 2021**
Accounts receivable	$	79,859	$	64,635
Less: Allowance for credit losses		—		(54)
Accounts receivable, net of allowance for credit losses	$	79,859	$	64,581

We had no material bad debt expense in fiscal 2021, 2020, or 2019.

Inventories

(In thousands)		**January 1, 2022**		**January 2, 2021**
Work in progress	$	43,546	$	34,724
Finished goods		24,048		29,875
Total inventories, net	$	67,594	$	64,599

Accrued Expenses

Included in Accrued expenses in the Consolidated Balance Sheets are the following balances:

(In thousands)	January 1, 2022	January 2, 2021
Liability for non-cancelable contracts	$ 9,930	$ 8,492
Current portion of operating lease liabilities	5,696	4,149
Contract liability under ASC 606	4,768	3,068
Other accrued expenses	6,050	5,702
Total accrued expenses	$ 26,444	$ 21,411

Cloud Based Computing Implementation Costs

Under the guidance in ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40)*, we are capitalizing the implementation costs for cloud computing arrangements, mainly for our integrated 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. The following table summarizes activity during the periods presented:

(In thousands)	
Cloud based computing implementation costs as of December 28, 2019	$ 2,543
Costs capitalized	983
Amortization	(695)
Cloud based computing implementation costs as of January 2, 2021	$ 2,831
Costs capitalized	324
Amortization	(775)
Cloud based computing implementation costs as of January 1, 2022	$ 2,380

Note 5 - Property and Equipment

(In thousands)	January 1, 2022	January 2, 2021
Production equipment and software	$ 133,039	$ 135,774
Leasehold improvements	12,960	12,913
Office furniture and equipment	2,000	2,161
	147,999	150,848
Accumulated depreciation and amortization	(109,905)	(111,182)
	$ 38,094	$ 39,666

For fiscal years 2021 and 2020, depreciation and amortization expense for property and equipment was $12.0 million and $11.8 million, respectively. For fiscal year 2019, depreciation and amortization expense for property and equipment was $11.6 million, including $0.4 million of restructuring expense.

Property and Equipment – Geographic Information

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

(In thousands)	January 1, 2022	January 2, 2021
United States	$ 26,509	$ 29,440
Taiwan	6,555	5,171
Philippines	2,498	2,912
China	1,643	1,537
Other	889	606
Total foreign property and equipment, net	11,585	10,226
Total property and equipment, net	$ 38,094	$ 39,666

Note 6 - Business Combination and Goodwill

On November 12, 2021, we acquired 100% of the outstanding shares of Mirametrix, Inc. ("Mirametrix"), an innovator in advanced AI software and computer vision ("CV") applications. This acquisition combines Mirametrix technology and expertise with Lattice's innovative hardware and software solution stacks to create an end-to-end AI and computer vision solution that spans from the hardware to the application layer. Total consideration to acquire Mirametrix was $68.5 million, paid 100% in cash to Mirametrix shareholders. There is no contingent consideration included in the determination of the purchase consideration.

Purchase consideration was allocated to the tangible and intangible assets and liabilities assumed on the basis of the respective estimated fair values on the acquisition date. The purchase price allocation has been substantially completed, but may be subject to revision as we perform and complete more detailed analysis of certain tax matters. The fair values of the assets acquired and liabilities assumed in the acquisition of Mirametrix, by major class, were recognized as follows:

(In thousands)	Estimated Fair Value
Assets acquired:	
Cash and cash equivalents	$ 437
Accounts receivable	3,265
Other current assets	262
Property and equipment	156
Intangible assets	24,800
Goodwill	47,844
Total assets acquired	76,764
Liabilities assumed	
Accounts payable	21
Accrued expenses	5
Accrued payroll obligations	247
Long-term liabilities	7,955
Total liabilities assumed	8,228
Fair value of net assets acquired	$ 68,536

The following table presents details of the identified intangible assets acquired through the acquisition of Mirametrix:

	Useful Life *(In years)*	Fair Value *(In thousands)*
Existing technology	7	$ 13,500
Customer relationships	7	9,800
Trade name / trademarks	10	1,500
Total identified intangible assets subject to amortization		$ 24,800

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.

Goodwill

Goodwill represents the excess of the purchase price over the fair value of the underlying net tangible and intangible assets. The goodwill recognized in the acquisition of Mirametrix was derived from expected benefits from cost synergies and the knowledgeable and experienced workforce who joined the Company after the acquisition. Goodwill resulting from the acquisition is not deductible for Canada income tax purposes.

The goodwill balance of approximately $315.4 million at January 1, 2022 is comprised of approximately $267.5 million from prior acquisitions combined with the approximately $47.8 million from the acquisition of Mirametrix. No impairment charges relating to goodwill were recorded for fiscal 2021, 2020, or 2019.

Note 7 - Intangible Assets

In connection with our acquisitions of Mirametrix, Inc. in November 2021, 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*." We are amortizing the intangible assets using the straight-line method over their estimated useful lives. Additionally, we have entered into license agreements for third-party technology and recorded them as intangible assets. These licenses are being amortized to Research and development expense over their estimated useful lives. No impairment charges relating to acquired intangible assets were recorded for fiscal 2021, 2020, or 2019.

The following tables summarize the details of our Intangible assets, net as of January 1, 2022 and January 2, 2021:

	January 1, 2022			
(In thousands)	Weighted Average Amortization Period (in years)	Gross	Accumulated Amortization	Intangible assets, net
Existing technology	5.1	$ 124,487	$ (111,090)	$ 13,397
Customer relationships	6.1	32,734	(22,947)	9,787
Trade name / trademarks	10.0	1,500	(19)	1,481
Licensed technology	6.3	6,551	(1,434)	5,117
Total identified intangible assets		$ 165,272	$ (135,490)	$ 29,782

	January 2, 2021			
(In thousands)	Weighted Average Amortization Period (in years)	Gross	Accumulated Amortization	Intangible assets, net
Developed technology	5.0	$ 110,987	$ (109,162)	$ 1,825
Customer relationships	5.8	22,934	(22,281)	653
Licensed technology	6.6	4,376	(533)	3,843
Total identified intangible assets		$ 138,297	$ (131,976)	$ 6,321

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

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Research and development	$ 901	$ 124	$ 55
Amortization of acquired intangible assets	2,613	4,449	13,558
	$ 3,514	$ 4,573	$ 13,613

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

Fiscal year	*(in thousands)*
2022	$ 4,771
2023	4,492
2024	4,280
2025	4,233
2026	4,233
Thereafter	7,773
Total	$ 29,782

Note 8 - Long-Term Debt

On May 17, 2019, we entered into a credit agreement (the "Current Credit Agreement"), which 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 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"), 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 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 January 1, 2022, the effective interest rate on the term loan was 1.57%, and the effective interest rate on the revolving loan was 1.35%. 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.

During fiscal 2021, we made principal payments totaling $13.1 million. The fair value of our long-term debt approximates the carrying value, which is reflected in our Consolidated Balance Sheets as follows:

(In thousands)	**January 1, 2022**	**January 2, 2021**
Principal amount	$ 158,750	$ 171,875
Unamortized original issuance discount and debt costs	(817)	(1,179)
Less: Current portion of long-term debt	(17,173)	(12,762)
Long-term debt, net of current portion and unamortized debt issue costs	$ 140,760	$ 157,934

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

	Year Ended		
(In thousands)	**January 1, 2022**	**January 2, 2021**	**December 28, 2019**
Contractual interest	$ 2,304	$ 3,319	$ 10,278
Amortization of original issuance discount and debt costs	362	400	1,659
Total interest expense related to long-term debt	$ 2,666	$ 3,719	$ 11,937

Expected future principal payments are based on the schedule of required quarterly installments. As of January 1, 2022, expected future principal payments on our long-term debt were as follows:

Fiscal year	*(in thousands)*
2022	17,500
2023	17,500
2024	123,750
	$ 158,750

Note 9 - Restructuring

In March 2020, our management approved and executed an internal restructuring plan (the “Q1 2020 Plan”), which included a workforce reduction in order to reduce our operating cost structure by leveraging our low-cost regions as well as enhancing efficiency. Under this plan, we incurred restructuring expense of approximately $0.2 million and $2.0 million, respectively, during fiscal 2021 and 2020. Approximately $2.2 million of total expense has been incurred through January 1, 2022 under the Q1 2020 Plan. Substantially all actions planned under the Q1 2020 Plan have been implemented.

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, no restructuring expense was incurred during fiscal 2021, and we incurred restructuring expense of approximately $0.1 million and $2.0 million, respectively, during fiscal 2020 and 2019. Approximately $2.1 million of total expense has been incurred through January 1, 2022 under the Q2 2019 Sales Plan. All actions planned under the Q2 2019 Sales 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 plan, we incurred restructuring expense of approximately $0.7 million, $1.9 million, and $2.7 million, respectively, during fiscal 2021, 2020, and 2019. We have incurred approximately $21.6 million of total expense through January 1, 2022 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 $22.0 million to $23.5 million as ROU asset amortization 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 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**
Accrued Restructuring 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)
Accrued Restructuring at December 28, 2019	$ 160	$ 6,585	$ —	$ 865	$ 7,610
Restructuring charges	1,669	1,896	—	372	3,937
Costs paid or otherwise settled	(1,583)	(248)	—	(573)	(2,404)
Accrued Restructuring at January 2, 2021	$ 246	$ 8,233	$ —	$ 664	$ 9,143
Restructuring charges	250	690	—	—	940
Costs paid or otherwise settled	(245)	(1,793)	—	(664)	(2,702)
Accrued Restructuring at January 1, 2022	$ 251	$ 7,130	$ —	$ —	$ 7,381

(1) Includes employee relocation costs and outplacement 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) Includes termination fees on the cancellation of certain contracts under the Q2 2019 Sales Plan

Note 10 - Leases

We have operating leases for corporate offices, sales offices, research and development facilities, storage facilities, and a data center, all of which are leased under operating leases that expire at various times through 2028. In the first quarter of fiscal 2021, we extended the leases for our Hillsboro, Oregon and Shanghai, China facilities, which resulted in approximately $7.2 million of the increase in right-of-use assets and operating lease liabilities. Our leases have remaining lease terms of 1 to 7 years, some of which include options to extend for up to 5 years, and some of which include options to terminate within 1 year. The weighted-average remaining lease term was 4.1 years and the weighted-average discount rate was 5.4% as of January 1, 2022. We recorded fixed operating lease expense of $7.9 million, $7.6 million, and $7.7 million, respectively, for fiscal 2021, 2020, and 2019.

The following table presents the lease balance classifications within the Consolidated Balance Sheets and summarizes their activity during fiscal 2021:

Operating lease right-of-use assets		*(in thousands)*
Balance as of January 2, 2021	$	22,178
Right-of-use assets obtained for new and modified lease contracts during the period		8,134
Amortization of right-of-use assets during the period		(6,587)
Adjustments for present value and foreign currency effects		93
Balance as of January 1, 2022	$	23,818

Operating lease liabilities		*(in thousands)*
Balance as of January 2, 2021	$	23,055
Lease liabilities incurred for new lease contracts during the period		8,134
Accretion of lease liabilities		1,305
Operating cash used by payments on lease liabilities		(7,639)
Adjustments for present value and foreign currency effects		89
Balance as of January 1, 2022		24,944
Less: Current portion of operating lease liabilities (included in Accrued expenses)		(5,696)
Long-term operating lease liabilities, net of current portion	$	19,248

Lease obligations for facilities restructured prior to the adoption of Topic 842 totaled approximately $7.1 million at January 1, 2022 and continued to be recorded in Other long-term liabilities on our Consolidated Balance Sheets.

Maturities of operating lease liabilities as of January 1, 2022 are as follows:

Fiscal year		*(in thousands)*
2022		6,917
2023		7,446
2024		5,408
2025		3,651
2026		2,532
Thereafter		2,082
Total lease payments		28,036
Less: amount representing interest		(3,092)
Total lease liabilities	$	24,944

Note 11 - Stock-Based Compensation Plans

Employee and Director Stock Options, Restricted Stock, and ESPP Plans

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 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. At January 1, 2022, a total of 1.1 million shares of our common stock were available for future purchases under the 2012 ESPP.

At January 1, 2022, a total of 7.5 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 2021, a total of 2.3 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.

Stock-Based Compensation Expense

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

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Cost of revenue	$ 3,049	$ 3,179	$ 1,422
Research and development	14,563	10,124	5,640
Selling, general, and administrative	28,863	27,069	11,837
Total stock-based compensation	$ 46,475	$ 40,372	$ 18,899

ESPP and Stock Options

The fair values of the shares expected to be issued under the employee stock purchase plan and of each option award on the date of grant were estimated using the Black-Scholes valuation model and the assumptions noted in the following table. No new stock options were granted during fiscal 2021, 2020, or 2019. The expected volatility of both ESPP shares and stock options is based on the daily historical volatility of our stock price, measured over the ESPP purchase period or the expected term of the option. 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 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. Dividend yield has no valuation impact, as 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 ESPP compensation for the periods presented:

	Year Ended		
	January 1, 2022	January 2, 2021	December 28, 2019
Employee Stock Purchase Plan			
Weighted average expected volatility	39.9%	48.2%	31.6%
Weighted average risk-free interest rate	0.07%	0.89%	2.51%
Expected term (in months)	6	6	6

The weighted average fair values for the ESPP, calculated using the Black-Scholes option pricing model with the noted assumptions for the ESPP, were $13.04, $6.62, and $1.69 for fiscal years 2021, 2020, and 2019, respectively.

At January 1, 2022, there was no unrecognized compensation cost related to unvested employee and director stock options. Compensation expense for all stock-based compensation awards is recognized using the straight-line method. In fiscal 2021, 2020, and 2019, we recorded stock compensation expense of approximately $1.2 million, $1.0 million, and $0.5 million, respectively, related to the ESPP, and approximately $1.0 million, $2.0 million, and $2.4 million, respectively, related to stock options.

The following table summarizes our stock option activity and related information for the year ended January 1, 2022:

(Shares and aggregate intrinsic value in thousands)	Shares	Weighted average exercise price	Weighted average remaining contractual term (years)	Aggregate Intrinsic Value
Balance, January 2, 2021	2,200	$ 6.40		
Granted	—	—		
Exercised	(822)	6.02		
Forfeited or expired	(11)	5.73		
Balance, January 1, 2022	1,367	$ 6.62		
Vested and expected to vest at January 1, 2022	1,367	$ 6.62	2.92	$ 96,315
Exercisable, January 1, 2022	1,367	$ 6.62	2.92	$ 96,315

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 2021, 2020, and 2019 was $44.7 million, $21.5 million, and $17.8 million, respectively.

Time-Based Restricted Stock Unit Awards

The following table summarizes the activity for our time-based RSUs for the year ended January 1, 2022:

(Shares in thousands)	Shares	Weighted average grant date fair value
Balance, January 2, 2021	2,998	$ 16.76
Granted	1,176	56.29
Vested	(1,392)	14.66
Forfeited or expired	(98)	19.71
Balance, January 1, 2022	2,684	$ 35.06

At January 1, 2022, there was $62.4 million of unrecognized compensation expense related to unvested time-based RSUs. Compensation expense for RSUs is recognized using the straight-line method over the related vesting period. In fiscal 2021, 2020, and 2019, we recorded stock compensation expense related to time-based RSUs of approximately $21.7 million, $16.6 million, and $10.3 million, respectively.

Market-Based and Performance-Based Awards

In 2019 through 2021, we granted awards of RSUs with either a market condition or a performance condition to certain executives.

Market-Based and Performance-Based Awards — Grants

In the first quarters of fiscal 2021 and 2020, we granted awards of RSUs with a market condition to certain executives. Under the terms of these grants, the RSUs with a market condition vest over a three-year period based on the Company’s total shareholder return ("TSR") relative to the Russell 2000 index, which condition is measured for the 2021 grants on the third anniversary of the grant date, and measured for one-half of the 2020 grants on the second and third anniversary of the grant date. The awards may vest at 250% or 200%, depending upon the executive, if the 75th percentile of the market condition is achieved, with 100% of the units vesting at the 55th percentile, zero vesting if relative TSR is below the 25th percentile, and vesting scaling for achievement between the 25th and 75th percentile.

In the first quarter of fiscal 2021, we also granted awards of RSUs with a performance condition to certain executives, to specifically drive additional executive attention and focus on the Company’s revenue growth priorities. Under the terms of these grants, the RSUs with a performance condition will vest based on the Company generating specified levels of year-over-year revenue growth, which will be measured annually for one-fourth of the grants after each fiscal year-end through the end of fiscal 2024. Vesting of these awards scales for achievement of year-over-year revenue growth compared to certain targets, with maximum vesting up to 200%. Vesting of these awards occurs 13 months after the end of each measurement period and the entire award cannot be fully earned until five years from grant.

In fiscal 2019, we granted inducement awards outside of, but subject to the terms and conditions of the 2013 Incentive Plan to certain executives consisting of RSUs with a market condition. These awards vest over a three-year period based on the Company's TSR relative to the PHLX Semiconductor Sector Index, with either 250% or 200% of the units vesting at the 75th percentile, depending upon the executive, 100% of the units vesting at the 50th percentile and zero vesting if relative TSR is below the 25th percentile, and vesting scaling linearly for achievement between the 25th and 75th percentile. Prior to fiscal 2019, we granted inducement awards outside of, but subject to the terms and conditions of the 2013 Incentive Plan to our Chief Executive Officer consisting of RSUs with a performance condition. These awards vest based upon the Company's achievement of Adjusted EBITDA targets on a trailing four quarter basis in any two consecutive trailing four-quarter periods.

Market-Based and Performance-Based Awards — Vesting

During the first quarter of fiscal 2021, the market condition for awards granted to certain executives in the first quarter of fiscal 2019 exceeded the 75th percentile of their TSR condition, and the second tranche of these awards vested at 200%. During the third and fourth quarters of fiscal 2021, the market condition for awards granted to certain executives in previous years exceeded the 75th percentile of their TSR condition, and the second and third tranches of these awards vested at 250% or 200%, as applicable for the respective executive.

As of the end of the second and third quarters of fiscal 2021, the second and third tranches, respectively, each 33.3% of the base number of the awards with an EBITDA performance condition vested, as the Company had met the adjusted EBITDA performance criteria on a trailing four-quarter basis for two consecutive trailing four-quarter periods as of the end of the respective previous quarters. As of January 1, 2022, the Company had met the next adjusted EBITDA performance criteria on a trailing four-quarter basis for two consecutive trailing four-quarter periods, and the fourth tranche of the awards with an EBITDA performance condition qualified for vesting at 40% of the base number.

During the first quarter of fiscal 2020, the market condition for awards granted to certain executives in the first quarter of fiscal 2019 exceeded the 75th percentile of their TSR condition, and the first tranche of these awards vested at 200%. As of the end of the first quarter of fiscal 2020, the first tranche of 33.3% of the base number of the awards with an EBITDA performance condition vested, as the Company had met the adjusted EBITDA performance criteria on a trailing four-quarter basis for two consecutive trailing four-quarter periods as of the end of the previous quarter. During the third and fourth quarters of fiscal 2020, the market condition for awards granted in previous years exceeded the 75th percentile of the condition, and one-third of these awards vested at 250% or 200%, as applicable for the respective executive.

Market-Based and Performance-Based Awards — Compensation Expense

During the first quarter of fiscal 2020, the Board of Directors approved a modification to the market condition measurement periods associated with the unvested portions of certain of the Company's awards with a market condition that were granted prior to fiscal 2020. The modification extended the duration of the measurement period by adjusting the beginning date of each measurement period to the original grant date, resulting in approximately $1.8 million additional stock compensation expense during the first quarter of fiscal 2020.

For our awards with a market condition or a performance condition, we incurred stock compensation expense, including the effect of the modification in the first quarter of fiscal 2020, of approximately $22.1 million, $20.8 million, and $5.7 million in fiscal years 2021, 2020, and 2019, respectively. At January 1, 2022, there was $25.3 million of unrecognized compensation expense related to unvested RSUs with a market condition or a performance condition. Awards with a TSR market condition were valued using a Monte Carlo simulation model.

The following table summarizes the assumptions used at the grant date in the valuation of RSUs with a market or performance condition:

	Year Ended		
	January 1, 2022	**January 2, 2021**	**December 28, 2019**
Executive RSUs with a market condition or performance condition			
Weighted average expected volatility	50.37% to 52.11%	42.38%	40.15% to 41.10%
Weighted average risk-free interest rate	0.22% to 0.77%	1.40%	1.66% to 2.55%
Expected term (years)	3.00 to 5.00	3.00	3.00

The following table summarizes the activity for our awards with a market condition or performance condition:

(Shares in thousands)	Shares	Weighted average grant date fair value
Balance, January 2, 2021	1,021	$ 20.42
Granted	630	57.29
Effect of vesting multiplier	479	—
Vested	(884)	13.87
Balance, January 1, 2022	1,246	$ 41.23

Note 12 - Common Stock Repurchase Program

On February 19, 2021, our Board of Directors approved a stock repurchase program pursuant to which up to $60.0 million of outstanding common stock could be repurchased from time to time (the "2021 Repurchase Program"). The duration of the 2021 Repurchase Program is twelve months. Under the 2021 Repurchase Program during the fourth quarter of fiscal 2021, we repurchased approximately 60,800 shares for approximately $4.9 million, or an average price paid per share of $80.55. As of January 1, 2022, the amount authorized for the twelve-month 2021 Repurchase Program had been fully utilized. All repurchases were open market transactions funded from available working capital. All shares repurchased pursuant to the 2021 Repurchase Program were retired by the end of the 2021 fiscal year.

On November 8, 2021, we announced that our Board of Directors had approved a stock repurchase program pursuant to which up to an additional $100.0 million of outstanding common stock could be repurchased from time to time (the "2022 Repurchase Program"). The duration of the 2022 Repurchase Program is through the end of December 2022. Under the 2022 Repurchase Program during the fourth quarter of fiscal 2021, we repurchased approximately 125,400 shares for $10.1 million, or an average price paid per share of $80.55. As of January 1, 2022, the remaining portion of the amount authorized for the 2022 Repurchase Program is approximately $89.9 million. All repurchases were open market transactions funded from available working capital. All shares repurchased pursuant to the 2022 Repurchase Program were retired by the end of the 2021 fiscal year.

Note 13 - 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 before income taxes were as follows:

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Domestic	$ 24,003	$ 11,772	$ 33,417
Foreign	73,623	36,684	11,648
Income before taxes	$ 97,626	$ 48,456	$ 45,065

The components of Income tax expense are as follows:

	Year Ended		
(In thousands)	January 1, 2022	January 2, 2021	December 28, 2019
Current:			
Federal	$ 445	$ 54	$ 499
State	45	68	45
Foreign	1,538	1,025	1,345
	2,028	1,147	1,889
Deferred:			
Federal	—	—	—
State	—	—	—
Foreign	(324)	(83)	(317)
	(324)	(83)	(317)
Income tax expense	$ 1,704	$ 1,064	$ 1,572

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		
	January 1, 2022	January 2, 2021	December 28, 2019
	%	%	%
Statutory federal rate	21	21	21
Adjustments for tax effects of:			
State taxes, net	(4)	(4)	3
Federal tax credits	(3)	(3)	3
Excess tax benefit for stock compensation	(8)	(10)	(6)
Foreign rate differential	(14)	(12)	(2)
U.S. tax on foreign operations	3	15	—
Foreign withholding taxes	1	3	3
Capital loss expiration	3	—	1
Other deferred tax asset adjustment	—	3	—
Valuation allowance	8	(13)	(19)
Change in uncertain tax benefit accrual	(5)	2	—
Effective income tax rate	2	2	4

We updated our evaluation of the valuation allowance position in the United States through January 1, 2022 and concluded that we should continue to 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. 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 components of our net deferred tax assets and liabilities are as follows:

(In thousands)	January 1, 2022	January 2, 2021
Deferred tax assets:		
Intangible assets	$ 8,236	$ 10,082
Net operating loss carry forwards	88,254	87,443
Tax credit carry forwards	93,095	83,534
Accrued expenses and reserves	6,590	5,464
Stock-based and deferred compensation	4,477	3,851
Other	6,615	9,493
Total deferred tax assets	207,267	199,867
Less: valuation allowance	(200,438)	(192,478)
Net deferred tax assets	6,829	7,389
Deferred tax liabilities:		
Fixed assets	2,379	2,809
Unremitted earnings	2,128	1,746
Other	9,969	4,003
Total deferred tax liabilities	14,476	8,558
Net deferred taxes	$ (7,647)	$ (1,169)
Reported as:		
Deferred tax assets (included in Other long-term assets)	$ 953	$ 577
Deferred tax liabilities (included in Other long-term liabilities)	(8,600)	(1,746)
Net deferred taxes	$ (7,647)	$ (1,169)

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**
January 1, 2022	$ 192,478	$ 7,960	$ —	$ 200,438
January 2, 2021	$ 198,499	$ (6,021)	$ —	$ 192,478
December 28, 2019	$ 207,108	$ (8,609)	$ —	$ 198,499

At January 1, 2022, we had U.S. federal net operating loss ("NOL") carryforwards (pretax) of approximately $361.5 million, of which $345.4 million expire at various dates between 2022 and 2037, and the remaining do not expire. We had state NOL carryforwards (pretax) of approximately $152.8 million that substantially all expire at various dates from 2022 through 2037. We also had federal credit carryforwards of $55.3 million that expire at various dates from 2022 through 2041, and $68.9 million state credit carryforwards, of which substantially all do not expire.

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, which has not occurred through fiscal 2021. However, if there is a significant change in ownership, future tax attribute utilization may be limited 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. At January 1, 2022, U.S. income taxes and foreign withholding taxes were not provided for on a cumulative total of approximately $3.2 million of the undistributed earnings of our foreign subsidiaries. We intend to reinvest these earnings indefinitely.

At January 1, 2022 and January 2, 2021, our unrecognized tax benefits associated with uncertain tax positions were $56.2 million and $55.7 million, respectively, of which $54.0 million and $53.6 million, respectively, if recognized, would affect the effective tax rate, subject to valuation allowance. As of January 1, 2022 and January 2, 2021, interest and penalties associated with unrecognized tax benefits were $9.6 million and $9.1 million, respectively, which are not reflected in the table below. We accrue interest and penalties related to uncertain tax positions in Income tax expense.

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

	(in thousands)
Balance at December 29, 2018	$ 58,285
Additions based on tax positions related to the current year	238
Additions based on tax positions of prior years	1,084
Reduction 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	56,962
Additions based on tax positions related to the current year	548
Additions based on tax positions of prior years	628
Reductions for tax positions of prior years	—
Reduction as a result of lapse of applicable statute of limitations	(2,401)
Balance at January 2, 2021	55,737
Additions based on tax positions related to the current year	1,156
Additions based on tax positions of prior years	1,130
Additions due to acquisition	977
Settlements	(51)
Reduction as a result of lapse of applicable statute of limitations	(2,718)
Balance at January 1, 2022	$ 56,231

Our liability for uncertain tax positions (including penalties and interest) was $21.6 million and $22.3 million at January 1, 2022 and January 2, 2021, 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 $44.2 million and $42.5 million at January 1, 2022 and January 2, 2021, respectively, is netted against deferred tax assets.

At January 1, 2022, it is reasonably possible that $0.8 million of unrecognized tax benefits and $0.1 million of associated interest and penalties could be recognized during the next twelve months.

The years that remain subject to examination are 2017 for federal and state income taxes, and 2015 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 2019 and 2020 income tax returns are currently under examination.

Note 14 - 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 $2.6 million, $2.4 million, and $0.8 million in fiscal years 2021, 2020, and 2019, respectively.

Cash Incentive Plans

For 2021, 2020, and 2019, 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 $18.0 million, $7.9 million, and $5.8 million of expense under the Cash Plans in fiscal 2021, 2020, and 2019, respectively.

Note 15 - 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.

From time to time, we are exposed to certain additional asserted and unasserted potential claims. 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.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Lattice Semiconductor Corporation

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Lattice Semiconductor Corporation (the Company) as of January 1, 2022 and January 2, 2021, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the two years in the period ended January 1, 2022, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at January 1, 2022 and January 2, 2021, and the results of its operations and its cash flows for each of the two years in the periods ended January 1, 2022, 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 January 1, 2022, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 23, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

	Inventory Valuation
Description of the Matter	The Company's net inventory totaled $67.6 million as of January 1, 2022. As explained in "Note 1 - Basis of Presentation and Significant Accounting Policies" within the consolidated financial statements, the Company records inventory at the lower of cost or net realizable value, and writes down inventories to net realizable value if it is obsolete or if quantities are in excess of projected customer demand. Auditing management's estimates of excess and obsolete inventory was challenging because the estimate is judgmental and considers a number of factors that are affected by market and economic conditions that are outside of the Company's control. In particular, excess and obsolete inventory calculations are sensitive to significant assumptions that relate to projected customer demand for the Company's products.
How We Addressed the Matter in Our Audit	We evaluated and tested the design and operating effectiveness of the Company's internal controls over the calculation of excess and obsolete inventory, including the determination of projected customer demand and related application against on-hand inventory. Our audit procedures included, among others, evaluating the significant assumptions stated above and the underlying data used in management's excess and obsolete inventory assessment. We evaluated inventory levels compared to projected customer demand, historical sales, and specific product considerations. We also assessed the historical accuracy of management's estimates and performed sensitivity analyses to evaluate the changes in inventory valuation that would result from changes in significant assumptions.

Business Combinations

Description of the Matter	The Company acquired 100% of the outstanding shares of Mirametrix, Inc. for total consideration of $68.5 million. As explained in “Note 6 – Business Combination and Goodwill” within the consolidated financial statements, the transaction was accounted for as a business combination. Auditing management’s accounting for the Mirametrix acquisition was complex and required judgment due to the significant estimation applied by management to determine the fair value of the acquired intangible assets, which consist primarily of existing technology of $13.5 million and customer relationships of $9.8 million. The estimation of the fair values of the intangible assets required the use of valuation techniques including primarily the income approach. Significant assumptions used to estimate the fair value of these intangible assets included revenue growth rates, operating expenses, technology obsolescence, customer attrition, and discount rates. These assumptions are forward-looking and could be affected by future economic and market conditions.
How We Addressed the Matter in Our Audit	We evaluated and tested the design and operating effectiveness of the Company's internal controls over the Company's accounting for acquisitions. For example, we tested controls over management's review of the valuation of acquired intangible assets, including the review of the valuation models and significant assumptions used in the valuation models. To test the estimated fair value of these intangible assets, our audit procedures included, among others, evaluating the Company's valuation methodology, evaluating the significant assumptions used by the Company and evaluating the completeness and accuracy of the underlying data supporting the significant assumptions and estimates. For example, we compared the significant assumptions used to current industry, market, and economic trends, to the assumptions used to value similar assets in other acquisitions, and to the historical results of both the Company and the acquiree. We also involved our valuation specialists to assist with our evaluation of the methodology used by the company and significant assumptions included in the fair value estimates.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2020.

San Jose, California
February 23, 2022

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Lattice Semiconductor Corporation

Opinion on Internal Control Over Financial Reporting

We have audited Lattice Semiconductor Corporation's internal control over financial reporting as of January 1, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Lattice Semiconductor Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of January 1, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheet of the Company as of January 1, 2022 and January 2, 2021, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the two years in the period ended January 1, 2022, and the related notes and our report dated February 23, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with 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 included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

San Jose, California
February 23, 2022

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 statements of operations, comprehensive income, stockholders' equity, and cash flows of Lattice Semiconductor Corporation and subsidiaries (the Company) for the year 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 results of operations of the Company and its cash flows for the year ended December 28, 2019, in conformity with U.S. generally accepted accounting principles.

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 audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audit 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 audit 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 audit provides a reasonable basis for our opinion.

/s/ KPMG LLP

We served as the Company's auditor from 2007 to 2020.

Portland, Oregon
February 24. 2020 except for Note 13, as to which the date is February 26, 2021

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 Annual Report on 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 January 1, 2022. 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 January 1, 2022.

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.

We do not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. 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. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

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 January 1, 2022. 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 January 1, 2022, the Company's internal control over financial reporting was effective.

Ernst & Young 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 60 in this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

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 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We do not believe there has been any material impact to our internal controls over financial reporting notwithstanding that most of our employees are working remotely due to the COVID-19 pandemic. We continue to monitor and assess the COVID-19 situation on our internal controls to address any potential impact on their design and operating effectiveness.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Certain information required by Part III is incorporated by reference from our definitive proxy statement (the "Proxy Statement") for the 2021 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. In fiscal 2021, we revised our Code of Conduct by integrating certain standalone policies and providing clarifications on a variety of covered topics. 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, 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 (Incorporated by reference to Exhibit 4.1 filed with the Company's Annual Report on Form 10-K for the fiscal year ended December 28, 2019).
10.1*	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).
10.2*	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).
10.3*	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).
10.4*	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).
10.5*	Lattice Semiconductor Corporation 2013 Incentive Plan, as amended and restated (incorporated by reference to Annex A of the Company's Definitive Proxy Statement filed with the Securities and Exchange Commission on March 23, 2020).
10.6	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).

* *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.*

Exhibit Number	Description
10.7*	Lattice Semiconductor Corporation 2019 Cash Incentive Plan (incorporated by reference to Exhibit 10.14 filed with the Company's Annual Report on Form 10-K filed on February 24, 2020).
10.8*	Lattice Semiconductor Corporation 2020 Cash Incentive Plan (incorporated by reference to Exhibit 10.9 filed with the Company's Annual Report on Form 10-K filed on February 26, 2021).
10.9*	Lattice Semiconductor Corporation 2021 Cash Incentive Plan.
10.10*	Amended Employment Agreement, by and between Lattice Semiconductor Corporation and James R. Anderson, effective February 21, 2020. (Incorporated by reference to Exhibit 10.23 of the Company's Annual Report on Form 10-K filed on February 24, 2020).
10.11*	Form of Amended Employment Agreement (Incorporated by reference to Exhibit 10.24 of the Company's Annual Report on Form 10-K filed on February 24, 2020).
10.12*	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).
10.13*	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).
10.14*	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).
10.15*	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.).
10.16	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).
10.17	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).
16.1	Letter from KPMG LLP dated May 8, 2020 (Incorporated by reference to Exhibit 16.1 of the Company's Current Report on Form 8-K filed on May 8, 2020).
21.1	Subsidiaries of the Registrant.
23.1	Consent of Independent Registered Public Accounting Firm (Ernst & Young LLP).
23.2	Consent of Independent Registered Public Accounting Firm (KPMG LLP)
24.1	Power of Attorney (reference is made to the signature page hereto).

* *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.*

Exhibit Number	Description
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	Inline XBRL Instance Document (the Instance Document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document)
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File - formatted in Inline XBRL and included in Exhibit 101

Table of Contents

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 23, 2022

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 23, 2022
James Anderson	President, Chief Executive Officer, and Director	
Principal Financial and Accounting Officer		
/s/ Sherri Luther		February 23, 2022
Sherri Luther	Chief Financial Officer	
Directors		
/s/ Robin Abrams		February 23, 2022
Robin Abrams	Director	
/s/ Mark Jensen		February 23, 2022
Mark Jensen	Director	
/a/ Anjali Joshi		February 23, 2022
Anjali Joshi	Director	
/s/ James Lederer		February 23, 2022
James Lederer	Director	
/s/ Krishna Rangasayee		February 23, 2022
Krishna Rangasayee	Director	
/s/ Jeff Richardson		February 23, 2022
Jeff Richardson	Director	

LATTICE SEMICONDUCTOR CORPORATION

2021 Cash Incentive Plan Summary

Purpose

The Lattice Cash Incentive Plan (the “Plan” or "CIP") 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.

Performance Metrics

The table below contains the three (3) performance metrics and their respective weights that are applied to determine the 2021 CIP pool funding. 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.

2021 Performance Metric	Metric Weight
1 - Financial Metric: Operating Income	33.3%
2 - Financial Metric: 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 2021 Corporate MBOs have a maximum payout factor of 200%.

Once each financial metric achieves its threshold, the metric will fund the plan on a linear basis starting with a payout factor of 0% and continuing until 100% target is reached; and once each financial metric achieves its Target, the metric will fund the plan on a linear basis above 100% until the maximum payout factor of 200%.

Operating Income is defined as Non-GAAP Operating Income.

The Compensation Committee of the Board of Directors 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.

New for 2021, 50% of an employee’s incentive is variable based upon management discretion and is variable based on the CIP funding % and employee’s individual target.

*Employee Payout = {[Employee’s Eligible Wages * Individual CIP Target]*
x [50% x Weighted Company CIP Funding] + [50% x Weighted Company CIP Funding x 0-200% Manager Discretion]}

Note: Lattice's Board Compensation Committee maintains the right to reduce or increase any amount payable under this Plan, including without limitation, any 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, allowances, 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.

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.

Manager Discretion

50% of each employee’s CIP award is subject to manager discretion, which can vary from 0 – 200%. Manager discretion is based upon an assessment of each employee’s relative contributions to Lattice’s success in 2021.

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 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 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
21.	Lattice Semiconductor Canada Corporation	Canada
22.	Mirametrix Inc.	Canada
23.	Latticesemiconductor Malaysia Sdn. Bhd.	Malaysia

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements (No. 333-176133, No. 333-182047, No. 333-188455, No. 333-195888, No. 333-220987, No. 333-224933, No. 333-227153, No. 333-232337, and No. 333-253594) of Lattice Semiconductor Corporation of our reports dated February 23, 2022, with respect to the consolidated financial statements of Lattice Semiconductor Corporation and the effectiveness of internal control over financial reporting of Lattice Semiconductor Corporation included in this Annual Report (Form 10-K) of Lattice Semiconductor Corporation for the year ended January 1, 2022.

/s/ Ernst & Young LLP

San Jose, California
February 23, 2022

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the registration statements (No. 333-176133, No. 333-182047, No. 333-188455, No. 333-195888, No. 333-220987, No. 333-224933, No. 333-227153, No. 333-232337, and No. 333-253594) on Form S-8 of our report dated February 24, 2020, except for Note 13, as to which the date is February 26, 2021, with respect to the consolidated financial statements of Lattice Semiconductor Corporation and subsidiaries.

/s/ KPMG LLP

Portland, Oregon
February 23, 2022

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 23, 2022

/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 23, 2022

/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 January 1, 2022 (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 23, 2022

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 January 1, 2022 (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 23, 2022