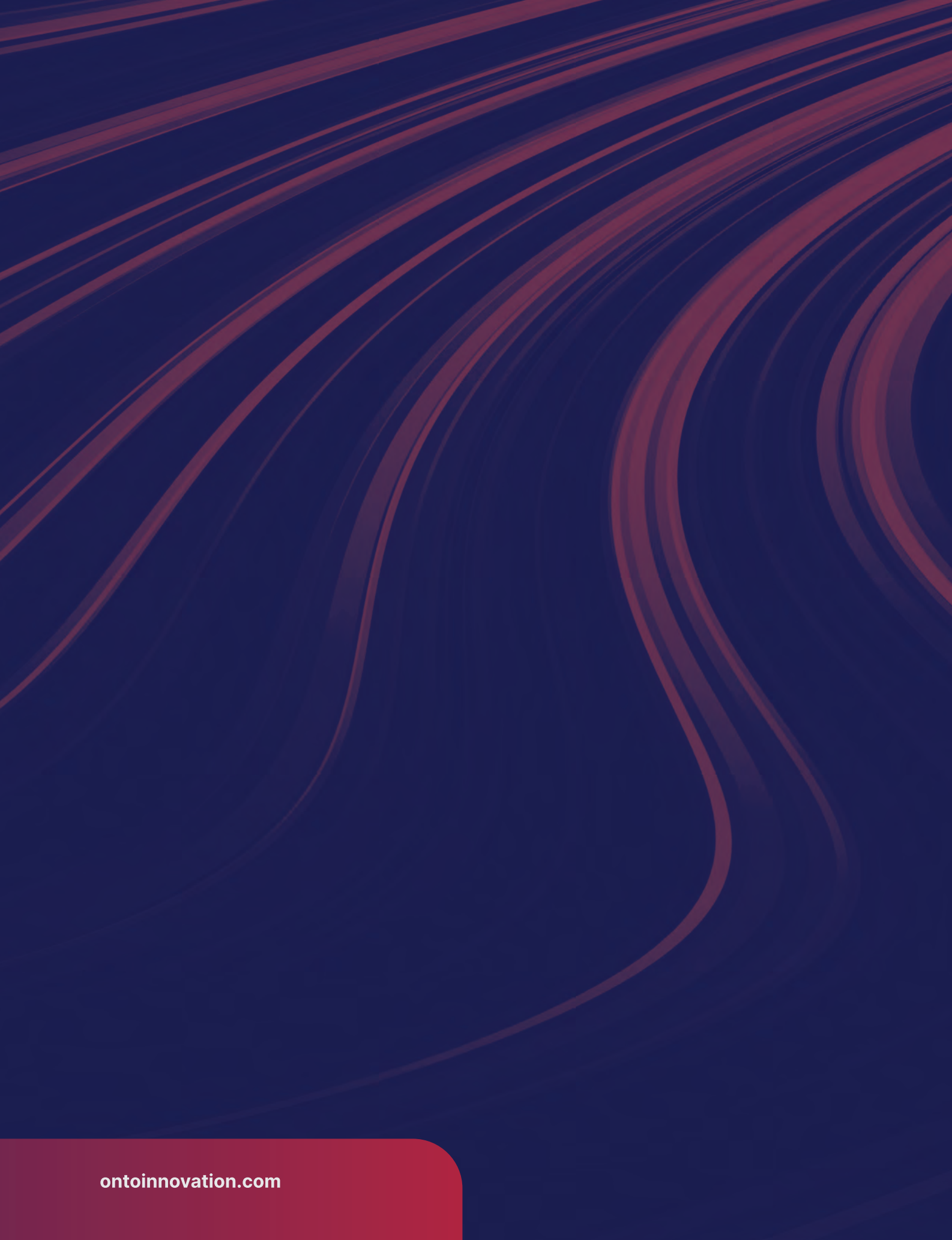




2022

Annual Report



Dear Fellow Stockholders

We are incredibly pleased to report that Onto Innovation had another record year with systems revenue growth of 32% significantly exceeding industry estimates of 8-10% growth in wafer fab equipment for 2022. With relentless focus on driving operational efficiencies, our GAAP earnings per share increased 57% over the prior year.

Financial Highlights

While growing earnings over the prior year, we simultaneously increased our investments in R&D, expanded manufacturing capacity, and added infrastructure that established new training centers closer to our customers in Asia. These investments are in preparation for an expected return to growth beyond 2023 when markets stabilize.

Our balance sheet remains quite strong, with \$548 million in total cash and investments with no debt. We believe this gives us at a competitive advantage as we continue to look toward growth through M&A. In addition, our strong balance sheet allows us to return capital to stockholders. In 2022, we evaluated opportunistic market conditions for potential repurchases of our stock. Our total share repurchases were just over one million shares resulting in a return of capital to stockholders of \$65.3 million dollars. The share repurchases were executed under our existing \$100 million dollar authorization by the board of directors, with the balance remaining in place.

Secular Trends Driving Sustainable Growth

The electronics and semiconductor markets continue to experience accelerated adoption of several industry growth drivers that enable the technology that is transforming how we live and work. That transformative technology is enabling secular demand drivers such as

high-performance computing (HPC), artificial intelligence (AI), machine learning (ML), rapid growth in new automotive electronics, and 5G communication expansions. These secular trends are driving our logic and memory customers to continuously manufacture next-generation semiconductor wafers as well as new and increasingly more complex advanced packaging that includes multiple devices in a single package to support the increasing global demand for data driven information. In addition, our automotive and compound semiconductor customers continue to expand their power and specialty device manufacturing to support the growth of automotive electronic content, electric vehicles, rapid charging, and renewable energy infrastructure. We continue to see secular growth coming from each of these high growth markets as our customers install new technologies within their existing fabs and build new fabs to keep up with demand in the future.

Perhaps just as important as long-term market growth is the increasing need for process control solutions that are developed by Onto Innovation's engineering teams. Our diverse and unique product portfolio, which spans bare wafer manufacturing, wafer fabs, and advanced packaging, provides a broad understanding of innovative ways to improve processes across the value chain. Many of those process steps will have increased complexity associated with the anticipated new transistor architectures and advanced packaging methods that require significantly more metrology and inspection equipment to optimize the manufacturing yields.

Our Environmental Focus

We made important strides in our environmental, social and governance (ESG) commitments as we continued to outpace

our yearly milestones for greenhouse gas reductions and renewable energy usage in our facilities. We recognize that a healthy environment is a necessary foundation for a stable economy and society. By increasing yields and decreasing cycle times, Onto facilitates higher output while helping customers reduce their carbon footprint through reductions in overall power consumption per wafer and other necessary utilities.

In addition to helping customers reduce their impact on the environment we also seek to reduce our own carbon footprint by at least 30% by 2025. In 2022 we achieved significant progress toward that goal as, compared to 2021, we reduced our water consumption by 55%, increased our use of renewable energy to 32%, and reduced our carbon footprint per person by 29%.

Looking Ahead

Perhaps the most exciting company record we set in 2022 was for awards we received from customers. Customers presented four awards to Onto Innovation ranging from a “best supplier” award to a “novel technology” award. In addition, the Atlas® V metrology system was acknowledged by the industry as the best new product launch at SEMICON® West by SEMI® and Semiconductor Digest magazine.

We are becoming a more strategic and critical partner for our customers and our role in the industry is growing. With processes increasing in complexity across that value chain, the demand for our process control solutions has been growing faster than industry. We are excited to contribute to our customers’ innovations, which are enabling global transitions to HPC, AI, ML, electrification of vehicles, and the creation of next-generation technologies that

continuously change how we are all connected to our families, communities, and the world. As we continue to grow, we remain confident in the leverage of our business model and financial structure with a commitment to our long-term operating model and an expectation to generate robust cash flow and returning capital to our stockholders.

And finally, on behalf of the entire team at Onto Innovation and the board of directors, we thank you for your dedicated support and investment.

Sincerely,



Michael P. Plisinski
Chief Executive Officer



Christopher A. Seams
Chairman of the Board



Safe Harbor

Certain statements in this document may be considered "forward-looking statements" or may be based on "forward-looking statements," including, but not limited to, those concerning: our business momentum and future growth; technology development, product introduction and acceptance of our products and services; our manufacturing practices and ability to both deliver products and services consistent with our customers' demands and expectations and to strengthen our market position, including our ability to source components, materials, and equipment due to supply chain delays or shortages; our expectations of the semiconductor market outlook; future revenue, gross profits, research and development and engineering expenses, selling, general and administrative expenses, and cash requirements; the effects of political, economic, legal, and regulatory changes or conflicts on our global operations; the effects of natural disasters or public health emergencies, such as the current COVID-19 pandemic, on the global economy and on our customers, suppliers, employees, and business; our dependence on certain significant customers and anticipated trends and developments in and management plans for our business and the markets in which we operate; our ability to be successful in managing our cost structure and cash expenditures and results of litigation; as well as other matters that are not purely historical data. Statements contained or incorporated by reference in this document that are not purely historical are forward-looking statements and are subject to safe harbors created under Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as, but not limited to, "anticipate," "believe," "continue," "estimate," "expect," "intend," "plan," "should," "may," "could," "will," "would," "forecast," "project" and words or phrases of similar meaning, as they relate to our management or us. Forward-looking statements contained herein reflect our current expectations, assumptions and projections with respect to future events and are subject to certain risks, uncertainties and assumptions, such as those identified in Part I, Item 1A. "Risk Factors" of our Form 10-K for the fiscal year ended December 31, 2022. Actual results may differ materially and adversely from those included in such forward-looking statements. Forward-looking statements reflect our position as of the date hereof and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.



Stockholder Information

LOCATION

HEADQUARTERS

Onto Innovation
16 Jonspin Road
Wilmington, Massachusetts 01887
Phone 978.253.6200
ontoinnovation.com

OTHER LOCATIONS

View all locations on our website:
<https://ontoinnovation.com/company/locations>

TRANSFER AGENT

MAIL CORRESPONDENCE TO

Computershare Trust Company, N.A.
Stockholder Services
P.O. Box 43078
Providence RI 02940-3078

SEND OVERNIGHT CORRESPONDENCE TO

Computershare
150 Royall St., Suite 101
Canton, MA 02021

ONLINE INQUIRIES

www-us.computershare.com/investor/contact

PHONE

781.575.4223 or 800.368.5948

INVESTOR INFORMATION

GENERAL STOCKHOLDER AND INVESTOR QUESTIONS MAY
BE DIRECTED TO

Mike Sheaffer
Investor Relations, ESG Reporting
Onto Innovation
16 Jonspin Road
Wilmington, Massachusetts 01887
investors@ontoinnovation.com

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Ernst & Young, LLP
Iselin, New Jersey

STOCK SYMBOL

Common stock is traded on the New York Stock
Exchange under the symbol: ONTO

ANNUAL MEETING

Stockholders are invited to attend the Annual
Meeting at 12:00 p.m. (ET) on Tuesday,
May 9, 2023 at our offices, located at:
16 Jonspin Road
Wilmington, MA 01887

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**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549**

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Fiscal Year Ended December 31, 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 No. 001-39110

ONTO INNOVATION INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

94-2276314

(I.R.S. Employer
Identification Number)

16 Jonspin Road, Wilmington, MA 01887

(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (978) 253-6200

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

<u>Title of Each Class</u>	<u>Trading Symbol</u>	<u>Name of Exchange on Which Registered</u>
Common Stock, \$0.001 par value per share	ONTO	New York Stock Exchange (NYSE)

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 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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

The aggregate market value of the registrant's voting Common Stock held by non-affiliates of the registrant was approximately \$3,072,410,193 based on the closing price of the Common Stock on the New York Stock Exchange on July 2, 2022.

The number of shares of the registrant's Common Stock outstanding as of February 6, 2023 was 48,754,780.

DOCUMENTS INCORPORATED BY REFERENCE

Items 10, 11, 12, 13 and 14 of Part III of this Annual Report on Form 10-K incorporate by reference information from the definitive proxy statement for the registrant's annual meeting of stockholders scheduled to be held on May 9, 2023.

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FORWARD-LOOKING STATEMENTS

Certain statements in this Annual Report on Form 10-K (this “Form 10-K”), or incorporated by reference in this Form 10-K, of Onto Innovation Inc. (referred to in this Form 10-K, together with its consolidated subsidiaries, unless otherwise specified or suggested by the context, as the “Company,” “Onto Innovation,” “we,” “our” or “us”) may be considered “forward-looking statements” or may be based on “forward-looking statements,” including, but not limited to, those concerning:

- our business momentum and future growth;
- technology development, product introduction and acceptance of our products and services;
- our manufacturing practices and ability to deliver both products and services consistent with our customers’ demands and expectations and to strengthen our market position, including our ability to source components, materials, and equipment due to supply chain delays or shortages;
- our expectations of the semiconductor market outlook;
- future revenue, gross profits, research and development and engineering expenses, selling, general and administrative expenses, and cash requirements;
- the effects of political, economic, legal, and regulatory changes or conflicts on our global operations;
- the effects of natural disasters or public health emergencies, such as the current COVID-19 pandemic, on the global economy and on our customers, suppliers, employees, and business;
- our dependence on certain significant customers and anticipated trends and developments in and management plans for our business and the markets in which we operate; and
- our ability to be successful in managing our cost structure and cash expenditures and results of litigation.

Statements contained or incorporated by reference in this Form 10-K that are not purely historical are forward-looking statements and are subject to safe harbors created under Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as, but not limited to, “anticipate,” “believe,” “continue,” “estimate,” “expect,” “intend,” “plan,” “should,” “may,” “could,” “will,” “would,” “forecast,” “project” and words or phrases of similar meaning, as they relate to our management or us.

Forward-looking statements contained herein reflect our current expectations, assumptions and projections with respect to future events and are subject to certain risks, uncertainties and assumptions, such as those identified in Part I, Item 1A. “Risk Factors” and elsewhere in this Form 10-K. Actual results may differ materially and adversely from those included in such forward-looking statements. Forward-looking statements reflect our position as of the date of this report and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

PART I

Item 1. Business.

General

Onto Innovation is a worldwide leader in the design, development, manufacture and support of metrology and inspection tools for the semiconductor industry, including process control tools that perform optical metrology on patterned and unpatterned wafers, wafer macro-defect inspection, including macro-inspection of both 2D and 3D wafer features, wafer substrate and panel substrate lithography systems, and process control analytical software. Our products are primarily used by silicon wafer manufacturers, semiconductor device fabricators, and advanced packaging manufacturers operating in the semiconductor market. Our products are also used for process control in a number of other specialty device manufacturing markets, including light emitting diodes (“LED”), vertical-cavity surface-emitting lasers (“VCSEL”), micro-electromechanical systems (“MEMS”), CMOS image sensors (“CIS”), silicon and compound semiconductor (SiC and GaN) power devices, analog devices, RF filters, data storage, and certain industrial and scientific applications.

We provide process and yield management solutions used in bare silicon wafer production and wafer processing facilities, often referred to as “front-end” manufacturing, and advanced packaging of chips and test facilities, or “back-end” manufacturing, through a portfolio of standalone systems for optical metrology, macro-defect inspection, packaging lithography, as well as transparent and opaque thin film measurements. Our automated and integrated metrology systems measure critical dimensions, device structures, topography, shape, and various thin film compositions, including three-dimensional features and film thickness, as well as optical, electrical and material properties. Our primary areas of focus include products that provide critical yield-enhancing and actionable information, which is used by microelectronic device manufacturers to improve yield and time to market of their next-generation devices. Our systems feature sophisticated software and production-worthy automation. In addition, our advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, and factory-wide and enterprise-wide suites to enhance productivity and achieve significant cost savings. Our systems are backed by worldwide customer service and applications support.

2019 Merger

On October 25, 2019, we became Onto Innovation Inc. upon the effectiveness of the merger (the “2019 Merger”) between Nanometrics Incorporated (“Nanometrics”) and Rudolph Technologies, Inc. (“Rudolph”). We accounted for the 2019 Merger as a reverse acquisition using the acquisition method of accounting in accordance with generally accepted accounting principles (“GAAP”). GAAP requires that either Nanometrics or Rudolph is designated as the acquirer for accounting and financial reporting purposes (“Accounting Acquirer”). Based on the evidence available, Rudolph was designated as the Accounting Acquirer while Nanometrics was the acquirer for legal purposes. Therefore, Rudolph’s historical results of operations replaced Nanometrics’ historical results of operations for all periods prior to the 2019 Merger. However, ONTO stock price and volumes prior to October 25, 2019 are Nanometrics (NANO) stock data.

Industry Background

We participate in the sale, design, manufacture, marketing and support of process control systems for optical critical dimension (“OCD”) metrology, thin film metrology, silicon wafer inspection, 2D and 3D macro inspection and lithography tools for advanced packaging and advanced analytical software for semiconductor manufacturing as well as inspection systems for certain industrial applications and scientific research. Our principal market is semiconductor capital equipment. Semiconductors packaged as integrated circuits, or “chips”, are used in consumer electronics, server and enterprise systems, mobile computing (including smart phones and tablets), data storage devices, and embedded automotive and control systems. Our core focus is the measurement and control of the structure, composition, and geometry of semiconductor devices as they are fabricated on silicon wafers to improve device performance and manufacturing yields. Our end customers manufacture many types of integrated circuits for a multitude of applications, each having unique manufacturing challenges. This includes integrated circuits to enable information processing and management (logic integrated circuits), memory storage (NAND, 3D-NAND, and DRAM), analog devices (e.g., Wi-Fi and 5G radio integrated circuits, power devices), MEMS sensor devices (accelerometers, pressure sensors, microphones), CMOS image sensors, and other specialty end markets including components for hard disk drives, LEDs, and power management devices.

Current Trends

Business Environment

Our metrology systems and software are primarily used for controlling certain manufacturing processes utilized in the production of advanced, or leading-edge, wafer designs. The shrinking of features such as the constituents that form a single transistor are known as node reductions. The numeric identification of a specific node usually refers to a dimension associated with one of the transistor's constituents. Advanced nodes are associated with transistor dimensions less than 16nm. Our metrology systems used to measure and characterize these small features are generally purchased when a customer is beginning to manufacture at a new, smaller node, in order to set up and test new manufacturing equipment being installed for the new node. Our process control/metrology equipment is generally installed prior to the installation of the actual process equipment for that reason. Additional process control equipment is normally purchased when the initial process yields have been stabilized and more manufacturing capacity is required to meet production demands. Therefore, our sales to customers for advanced nodes is generally higher when manufacturing lines for new nodes are being established and may not represent continuous sales revenue until our initial systems reach high levels of utilization driven by the need for greater capacity. In 2022 several top semiconductor manufacturers entered pilot production at a 3nm node using our Atlas® V products.

Our inspection systems, lithography systems, and software are primarily used for processing and inspecting advanced packaging associated with back-end manufacturing. Advanced packaging techniques comprise a very wide variety of assembly methods in order to connect individual chips to a larger printed circuit ("PC") board, or connecting a group of chips together to form a "system in a package" ("SIP"), also known as heterogeneous integration ("HI"), or chiplets. Many of these advanced packages require lithographic imaging to produce copper interconnections between the chip and the PC Board or between chips in the case of SIP or HI advanced packages. Our inspection systems and software are used for process control and detection of potential reliability failures in nearly all of these packages. Unlike the cyclical nature of our metrology equipment associated with node shrinks, our sales revenue for advanced packaging is generally driven by assembly volumes. Inspection rates for advanced packages are high throughout the assembly process to avoid a single defective chip from being assembled into a relatively expensive package, making the inspection process control systems attach rates quite linear with production volumes of these devices.

Several macro-drivers continue to drive demand for sophisticated metrology and inspection systems. In 2020, a significant portion of the global workforce began working from home as part of corporate efforts to isolate and protect workers from COVID-19. This transition resulted in extremely high usage of data centers and cloud processing that drove higher demand for increased memory and HPC devices. In 2021, wireless 5G networks drove demand for new 5G phones and that demand continued in the first half of 2022 as new phones from Apple and Samsung were introduced to the market. The building of the 5G network over the next several years will also bring more machine-to-machine communications. In addition, the rise of electric vehicles and other industrial technologies is creating an increase in demand for power semiconductors. And semiconductor manufacturers are increasingly developing chiplets that include a series of smaller die rather than one larger monolithic die. These macro-drivers are increasing the need for high-performance semiconductors and advanced packaging, which are then driving the demand for sophisticated metrology and inspection systems in order to achieve the semiconductor performance required while achieving a profitable manufacturing yield.

Since the first fiscal quarter of 2020, Onto Innovation has launched twelve new products that include six new metrology systems, two new macro defect inspection system, a panel lithography tool and two new software products. These new products were introduced as logic integrated device manufacturers ("IDMs") and foundries were increasing their capacity while following aggressive plans to transition their manufacturing to smaller nodes. Other customer interactions at memory and specialty device manufacturers as well as providers of advanced packaging centered around satisfying the immediate demand for these devices with our existing product portfolio, while partnering with R&D groups to prepare for the process controls needed for the next generation of semiconductors and packaging that will require the latest systems from Onto Innovation. We believe our strong engineering teams have delivered, and will continue to deliver, new products to our customers, followed by our field engineers providing customer support, while simultaneously achieving our gross and operating margin targets that were established in our long-term operating models. Revenue reached \$1 billion in fiscal 2022 as customers transitioned to advanced nodes and increased advanced packaging volumes, and the Company was able to achieve operating margins and earnings at the high end of our quarterly guidance and analysts' estimates.

Markets

Advanced Nodes. “Advanced Nodes” refers to leading-edge integrated circuits where the feature sizes of transistors and other features continue to shrink in specified steps, or nodes measured in nanometers (nm). Demand for our products continues to be driven by our customers' desire for higher overall chip performance without increasing the chip size, while improving power efficiency, logic processing capability, data storage volume and manufacturing yield. To achieve these goals, our customers have increased their use of more complex materials and processing methods in their manufacturing flow. The primary paths for performance gains are geometric scaling, known as node shrinks, or scaling of transistor dimensions. In some cases, our customers are implementing new materials and methods in high volume manufacturing, including materials and device architectures to reduce power consumption, and stacked devices. To scale NAND memory, a 3D stacking architecture has been implemented at several customers with more than 150 storage cell layers for devices in production. Additional innovation continues in Data Storage, Power Devices, MEMS, and Image Sensors. We believe the use of these new materials and manufacturing methods has increased demand for our products such as the Atlas[®] product line that is capable of measuring these advanced nodes as certain features shrink beyond 7nm, to 5nm, 3nm and in the most advanced of cases, 2 nm.

To shrink features, new methods, including multiple patterning lithography and extreme ultra-violet (“EUV”) lithography, have been developed. The EUV process is driving significantly higher requirements for the silicon wafers that are entering the EUV chamber. Small, particles on the backside of the wafer measuring a few micrometers (microns) can distort the images being projected onto the top side. Our NovusEdge[®] inspection tool has been installed at major silicon wafer manufacturers to detect backside contamination and edge cracking as a final quality control mechanism before wafers are shipped to the semiconductor fabrication processes. The top side of wafers used for the EUV process is covered with an epitaxial layer, which must also be scanned for any impurities. This compositional analysis is measured using our Element[®] system using Fourier Transform Infrared (“FTIR”) algorithms.

Advanced Packaging. “Advanced Packaging” refers to a variety of technologies that enable the miniaturization of electronic products, such as portable consumer devices, including smartphones, watches, and tablets. Historically, integrated circuit packaging refers to the final stage of semiconductor device fabrication, in which a single circuit made from semiconducting material (a die or chip) is encased in a molded package using small wires to provide connections to a carrier that can be soldered to a printed circuit board and also prevents physical damage and corrosion to the chip. Advanced Packaging refers loosely to the multi-layer conductors and chip structures (other than wires) that often interconnect multiple die, feed them with electric power and create signal paths to and from the PC board, dissipate their heat, and protect them from damage. Today, the drive to pack more functions into a small space and reduce their power requirements demands that chip packages do much more than ever before to combine multiple chips and functions into a single molded package.

One example of the technology used in Advanced Packaging is the 3D integration of semiconductors. This technology involves stacking individual chips in one integrated package. Through-silicon vias (“TSVs”) are vertical copper interconnects that are embedded from the bottom surface of a die to the top surface and uses small copper/solder “bumps” to connect one chip to another, which allows power and communication to be shared among the individually stacked components. This offers the advantages of shorter signal paths and, in turn, reduced power consumption, enhanced bandwidths, integration of heterogeneous components such as memory and logic chips, and smaller surface area. The processes required for 3D integration vary from one manufacturer to another and many continue to be optimized for yield and to ensure the functioning of individual stacked chips.

Heterogeneous packages are another advanced packaging technology using copper pillars/bumps to vertically connect a wide variety of stacked die for 2.5D, and 3D integration techniques as well as horizontally connected chips and are considered the next disruptive technology for several reasons. First, heterogeneous integrated packages using 3D stacking can significantly reduce the space needed inside an electronic device, such as a smartphone, by combining multiple chips/functions into a SIP. Next, it improves the system's performance by reducing power and signal conductor lengths, which previously were routed from package to package through a PC board. Using thin redistribution layers (“RDLs”) to connect chips that are side-by-side or “fan out” power and signal connections to the larger contacts on the PC board, which accounts for 35 percent of the packaging cost. Lastly, the technology is currently considered the preferred vehicle for next generation uses, such as SIP, and package on package formats. As a result of the small overall form factor, heterogeneous integrated packages provide the functionality needed in high-end mobile and wearable products.

The current and projected adoption of 5G-enabled smartphones continues to grow. Even as overall sales of smartphones waned in 2022, the demand for 5G chipsets, which are used in both handsets and infrastructure, did not. This trend is driving semiconductor manufacturers to increase capacity to support the advanced packaging technologies that are used in production of 5G integrated circuits, which continues to create opportunities for our solutions.

Panel Substrate Manufacturing. One current process to manufacture advanced packaging involves attaching known good die to a 300mm wafer, used as a temporary carrier when adding components such as RDLs and copper pillars. SIP packages can often contain side-by-side die, meaning the package can be large and limit the number of packages being placed on a reconstituted wafer. In order to meet the growing demand at reduced average selling prices, manufacturers are looking to scalable technology. Advanced packaging facilities looking to improve Cost of Ownership and increase productivity are transitioning from 300mm wafers to large rectangular panels, which can be as large as 600mm x 600mm. This larger size enables companies manufacturing large area packages to increase the number of devices being processed at each step as they are no longer limited to operating within the constraints of a round wafer. By responding to market opportunities and addressing the stringent demands of customers' technical roadmaps, we believe that Onto Innovation is optimally positioned to capitalize on the emerging market of high-volume manufacturing of advanced IC substrates. For example, the JetStep® X500 lithography system, having emerged from the flat panel display market, is readily capable of processing RDLs on very thin advanced organic laminate panels in the semiconductor advanced packaging market. The Firefly® series of panel level macro inspection tools, designed for high resolution inspection, can provide defect detection and location information to the JetStep X500 tool for each die, which greatly improves lithography throughput using our exclusive StepFAST™ process. It also delivers a combination of defect classification and process throughput in a single software platform. It reduces capital investment requirements and provides a reliable pathway to transition from wafer to panel-based processes.

Technology

We believe that our expertise in our core technologies of optics and software and our combined investment in research and development will enable us to rapidly develop new technologies and products as we have demonstrated over the past three years of operation in order to quickly respond to emerging industry trends and competitive challenges. The breadth of our technology enables us to offer a diverse combination of metrology, inspection, and process control solutions. Unique features have been designed into our lithography systems to meet our customers' changing process requirements. Our metrology and inspection technologies provide process control for the majority of advanced node wafers processed today in a semiconductor wafer fab. In front-end processes, OCD metrology, thin film metrology, wafer stress metrology and macro defect detection and classification technologies allow yield enhancement for critical processes such as photolithography, diffusion, etch, chemical mechanical planarization ("CMP") and outgoing quality control. Within the back-end manufacturing processes, our 2D/3D advanced macro defect inspection provides our customers with critical quality assurance and process information. Defects may be created during probing, bumping, dicing, assembly processes (RDLs, TSVs, copper pillars, etc.) or general handling and can have a major impact on device and process quality. Lastly, we turn the gathered data into useful knowledge for our customers to make yield-enhancing decisions, which lower their scrap cost and environmental impact and improve their margins.

Onto Innovation's Products

Automated Metrology Systems. Our automated systems primarily consist of fully automated metrology systems that are employed in semiconductor production environments. The Atlas family of products represents our line of high-performance metrology systems providing OCD and thin film metrology and wafer stress metrology for transistor and interconnect metrology applications. The thin film and OCD technology is supported by our NanoCD™ suite of solutions including our latest introductions of AI Diffract™ software, SpectraProbe™ software and NanoGen™ scalable computing engine, which enables visualization, modeling, and analysis of complex structures.

AI Diffract is a modeling, visualization and analysis software that takes signals from the metrology systems, providing critical dimension, thickness, and optical properties from in-line measurements. The software has an intuitive three-dimensional modeling interface to provide visualization of today's advanced and complex semiconductor devices. There are proprietary fitting algorithms in AI Diffract that enable very accurate and very fast calculations for signal processing for high fidelity model-based measurements. SpectraProbe is a model-less fitting engine that enables fast time to solution for in-line excursion detection and control. SpectraProbe complements the high-fidelity modeling of AI Diffract with a simple machine learning interface for rapid recipe deployment. The software is supported by NanoGen, an enterprise scale computing hardware system that is deployed to run the computing intensive analysis software. NanoGen leverages commercial server chips and networking architecture and is optimized to support the workload of AI Diffract and SpectraProbe analysis.

Integrated Metrology Systems. Our integrated metrology ("IM") systems are installed directly onto wafer processing equipment to provide near real-time measurements for improved process control and maximum throughput. Our IM systems are sold directly to end user customers. The IMPULSE® family of products includes the latest technology for OCD, and thin film metrology, and have been successfully qualified on numerous independent wafer fabrication equipment suppliers' platforms.

Silicon Wafer All-surface Inspection/Characterization. “All-surface” refers to inspection of the wafer frontside, edge, and backside as well as wafer’s locator notch. The edge inspection process focuses on the area near the wafer edge, an area that poses difficulty for traditional wafer frontside inspection technology due to its varied topography and process variation. Edge bevel inspection looks for defects on the side edge of a wafer. Edge bead removal and edge exclusion metrology involve a topside surface measurement required exclusively in the lithography process, primarily to determine if wafers have been properly aligned for the edge exclusion region. The primary reason for wafer backside inspection is to determine if contamination has been created that may spread throughout the wafer fab. For instance, it is critical that the wafer backside be free of defects prior to the EUV lithography process to prevent focus and exposure problems on the wafer frontside.

Our materials characterization products include systems that are used to monitor the physical, optical, electrical and material characteristics of discrete electronic industry, opto-electronic, HB-LED (high brightness LEDs), solar PV (solar photovoltaics), compound semiconductor, strained silicon and silicon-on-insulator (“SOI”) devices, including composition, crystal structure, layer thickness, dopant concentration, contamination and electron mobility.

We have a broad portfolio of products for materials characterization including photoluminescence mapping and Fourier Transform Infrared (“FTIR”) spectroscope in automated and manual systems for substrate quality and epitaxial thickness metrology. The NanoSpec® line supports thin film measurement across all applications in both low volume production and research applications.

Macro Defect Inspection. Chip manufacturers deploy advanced macro defect inspection throughout the production line to monitor key process steps, gather process-enhancing information and ultimately, lower manufacturing costs. Field-established tools such as the F30™, NSX®, and the latest Dragonfly® G3 inspection systems are found in the wafer fab (front-end) and packaging (back-end) facilities around the world. These high-speed tools incorporate features such as wafer-less recipe creation, tool-to-tool correlation and multiple inspection resolutions. Using Discover® yield management software, the vast amounts of data gathered through automated inspection can be analyzed and classified to determine trends and locate root causes that directly affect yield.

Automated Defect Classification and Pattern Analysis. Automating the defect detection and classification process is best done by a system that can mimic, or even extend, the response of the human eye, but at a much higher speed, with higher resolution and more consistency. To do this, our systems capture full-color whole wafer images using simultaneous dark and bright field illumination. The resulting bright and dark field images are compared to those from an “ideal” wafer having no defects. When a difference is detected, its image is broken down into mathematical vectors that allow rapid and accurate comparison with a library of known classified defects stored in the tool’s database. Patented and proprietary enhancements of this approach enable very fast and highly repeatable image classification. The system is pre-programmed with an extensive library of local, global, and color defects and can also store a virtually unlimited amount of new defect classes. This allows customers to define defects based on their existing defect classification system, provides more reliable automated rework decisions and enables more accurate statistical process control data. Reviewing defects off-line enables automated inspection systems to maintain their utilization for high throughput inspection. Using defect image files captured by automated inspection systems, operators are able to view high-resolution defect images to determine defects that cause catastrophic failure of a device, known as killer defects. Combining the review process with classifying defects enables faster analysis by grouping defects found together as one larger defect, a scratch for example, and defects of similar types across a wafer lot to be grouped based on size, repeating defects, and other user-defined specifications.

Yield Analysis. Using wafer maps, charts and graphs, the massive amounts of data gathered through automated inspection can be analyzed to determine trends across bumps, die, wafers and lots. This analysis may determine where a process variation or deviation has occurred, allowing process engineers to make corrections or enhancements to increase yields. Defect data analysis is performed to identify, analyze and locate the source of defects and other manufacturing process excursions. Using either a single wafer map or a composite map created from multiple wafer maps, this analysis enables identification of defect patterns and distribution. When combined with inspection data from inspection points -placed strategically, this analysis may pinpoint the source of the defects so corrective action can be taken.

Opaque Film Metrology. The MetaPULSE® systems allow customers to simultaneously measure the thickness and other properties of up to six metal or non-metallic opaque film layers without physically contacting product wafers. PULSE® technology uses an ultra-fast laser to generate acoustic waves that pass down through a stack of opaque films such as those used in copper or aluminum interconnect processes, as well as the hard mask layer in 3D NAND chips, sending back to the surface a reflected signal (echo) that indicates film thickness, density, and other process critical parameters. We believe we are a leader in providing systems that can measure opaque thin-film stacks non-destructively with the speed and accuracy semiconductor device manufacturers demand in order to achieve high yields with the latest fabrication processes. The technology is ideal for characterizing copper interconnect structures. The MetaPULSE systems, used initially for fast and accurate measurements of metal interconnect in front-end wafer fabs, have now been chosen by back-end manufacturers to perform system measurements in new process applications such as RF filters and modules, driven by the need for on-product metrology as feature sizes decrease and pattern densities increase.

Industrial, Scientific, and Research Markets — 4D Technology. The 4D business offers a line of interferometry systems for the measurement and inspection of high precision surfaces. End markets include high precision optics surfaces and components, aerospace and defense components, and unique research and scientific instrumentation that requires the unique high-speed results of the 4D systems.

Advanced Packaging Lithography. Our lithography steppers use projection optics to expose circuit patterns from a mask or reticle onto a substrate to expose images with optimal fidelity. These systems employ a bright light that is transmitted through a mask or reticle containing display circuit patterns. Substrates are aligned on the system and the mask is imaged through a projection lens onto photoresist material coated on the substrate. The substrate is then moved, or “stepped,” to a second position to expose an adjacent area. The system repeats the step and exposure process until the entire substrate is patterned. Once the exposure process has been completed, the substrate is developed with an alkali solution to reveal the underlying material. The imaged photoresist serves as a stencil barrier that allows for the processing of the underlying metal or insulating layers. The substrates then continue through the etching, stripping and deposition processes until multi-layer circuits are completed.

In order to deal with increased input/output (“I/O”) resulting from devices with enhanced functionality, increased power distribution efficiency, and higher frequency, IDMs and outsourced semiconductor assembly and test (“OSATs”) facilities must incorporate lithography capabilities to create RDLs for their advanced packaging technologies. However, the associated substrates and processes are significantly different than those used in front-end wafer processing. For advanced packaging, the lithography system must perform in a completely different application, with significantly different operating parameters. For example, most packaging is an additive process, while wafer processing is subtractive, and thick films, rather than thin films, are used to enable the creation of features. In order for equipment to effectively function in this environment, it must overcome these challenges. Our JetStep® systems have been specifically designed to meet these challenges head on. The new JetStep X500 System is designed for rectangular substrates (panels), which when combined with user-selectable wavelength options, maximizes throughput while not limiting resolution when needed. High-fidelity optics are able to image the fine features required while at the same time achieving superior depth of field to minimize non-flatness that is typical for advanced packaging applications. On-the-fly auto focus and an innovative reticle management system improve yield and utilization. These features result in a revolutionary lithography system specifically designed to meet advanced packaging challenges.

Process Control Software. We provide a wide range of advanced process control solutions, which are designed to improve factory profitability, including run-to-run control, fault detection, classification and tool automation. We are a leading provider of process control software in the semiconductor industry. Advanced process control (“APC”) employs software to automatically detect or predict tool failure (fault detection) as well as calculate recipe settings for a process that will drive the yielded output to meet and exceed the target, despite variations in the incoming material and minor instabilities within the process equipment. Process control software enables the factory to increase capacity and yield while decreasing rework and scrap. It enables reduced production costs by lowering consumables, process engineering time and manufacturing cycle time.

Yield Management Software. Semiconductor manufacturers use yield management software (“YMS”) to obtain valuable process yield and equipment productivity information. The data necessary to generate productivity information comes from many different sources throughout the wafer fab: inspection and metrology systems, tool sensors, tool recipes, electrical tests and the fab environment. As the complexity and cost of manufacturing processes increase, the value of faster, better analysis to support critical manufacturing decisions grows. As a result, customers are demanding robust yield management systems that can analyze large, complex data sets quickly and effectively. Our fully integrated YMS is designed to analyze data from disparate sources and multiple sites to maximize productivity across the entire value chain.

Customers

Over 190 microelectronic device manufacturers purchased Onto Innovation tools or software in 2022. We support a diverse customer base in terms of both geographic location and type of device manufactured. Our customers are located in over 18 countries. The following chart identifies our customers that represented 10% or more of total revenue for each of the last three fiscal years:

	2022	2021	2020
Taiwan Semiconductor Manufacturing Co. Ltd.....	*	*	*
Samsung Semiconductor.....	*	*	*
SK Hynix Inc.	*	^	^

* The customer accounted for 10% or more of total revenue during the period.

^ The customer accounted for less than 10% of total revenue during the period.

Sales, Customer Service and Application Support

We believe that the capability for direct sales and support is beneficial for developing and maintaining close customer relationships and for rapidly responding to changing customer requirements. We provide local direct sales, service and application support through our worldwide offices located in the United States, South Korea, Japan, Taiwan, China, Vietnam, Singapore and Europe, and work with selected dealers and sales representatives on a more limited basis in various countries. Our applications team is composed of technically experienced sales engineers who are knowledgeable in the use of metrology systems generally and the unique features and advantages of our specific products. Supported by our technical applications team, our sales and support teams work closely with our customers to offer cost-effective solutions to complex measurement and process problems.

We believe that customer service and technical support for our systems are crucial factors that distinguish us from our competitors and are essential to building and maintaining close, long-term relationships with our customers. We generally provide a warranty for our products that ranges from twelve to fourteen months to cover defects in material and workmanship. We provide system support to our customers through factory technical support and globally deployed field service personnel. The factory technical support operations provide customers with telephonic technical support access, direct training programs, operating manuals and other technical support information to enable effective use of our metrology and measurement instruments and systems. We have field service operations based in various locations throughout the United States, South Korea, Taiwan, China, Japan, Vietnam, Malaysia, Singapore, Israel, and Europe.

Competition

We offer various products for various semiconductor manufacturing process steps, and several of our products extend across the same process flow. However, for process control of each of these process steps, we have multiple established and potential competitors, some of which may have greater financial, research, engineering, manufacturing and marketing resources than we have. We may also face future competition from new market entrants from other overseas and domestic sources. We expect our competitors to continue to improve the design and performance of their current products and processes, and to introduce new products and processes with improved price and performance characteristics. In order to remain competitive, we believe that we will require significant financial resources to offer a broad range of products, and to maintain customer service and support centers worldwide, and to invest in product research and development.

In every market in which we participate, the global semiconductor equipment industry is intensely competitive, and driven by rapid technological adoption cycles. Our ability to compete effectively depends upon our ability to continuously improve our products, applications and services, and our ability to develop new products, applications and services that meet constantly evolving customer requirements.

In automated systems for the semiconductor industry, our principal competitors are KLA Corporation (“KLA”) and Nova Ltd. (formerly Nova Measuring Instruments Ltd.) (“Nova”) for thin film and critical dimension OCD metrology. Our principal competitors for advanced packaging inspection are KLA and Camtek Ltd. (“Camtek”). While the advanced packaging lithography market is served by various competitors, our primary competitors are Ushio, Inc. (“Ushio”) and Canon, Inc. (“Canon”). Our primary competitor for inspection in the panel market is GigaVis Co. Ltd. The primary competitor for our software products is PDF Solutions, Inc. (“PDF Solutions”) and our primary competitor for integrated metrology systems for the semiconductor industry is Nova. The opto-electronics, discrete device and industrial and scientific markets are addressed primarily by our material characterization and 4D systems, served by numerous competitors, of which no single competitor or group of competitors has established a majority position.

We believe that our competitive position in each of our markets is based on the ability of our products and services to address customer requirements related to numerous competitive factors. Competitive selections are based on many factors involving technological innovation, productivity, total cost of ownership of the system, including impact on end of line yield, price, product performance and throughput capability, quality, reliability and customer support.

Manufacturing

Our manufacturing operations are in Milpitas California, Tucson Arizona, Wilmington Massachusetts, Bloomington Minnesota, and at various contract manufacturers around the world. It is our strategy to outsource the assemblies that do not contain elements that we believe lead to a direct competitive advantage. Most of our automated and integrated products are currently manufactured at our Milpitas and Bloomington facilities. We currently do not expect our manufacturing operations to require additional major investments in capital equipment.

We manufacture key modular assemblies and integrated tools and make reasonable efforts to ensure that externally purchased parts or raw materials are available from multiple suppliers, if possible. Certain components, subassemblies and services necessary for the manufacture of our systems are obtained either from a sole supplier or limited group of suppliers. We also have long-term supply agreements with strategic suppliers for the supply of key assemblies for use in our products.

We rely on limited source suppliers for certain parts and subassemblies. This reliance creates a potential inability to obtain an adequate supply of required components, and reduced control over pricing and time of delivery of components. An inability to obtain adequate supplies may require us to seek alternative sources of supply or redesign our systems to accommodate different components or subassemblies, which could result in additional expenses and delays in product development or shipment of product to our customers. Disruption or termination of the supply of components has delayed and could continue to delay shipments of some of our systems. Such delays may damage our customer relationships and reduce our sales.

Research and Development

We continue to invest in research and development to provide our customers with products that add value to their manufacturing processes and that provide a better and differentiated solution than our competitors so that our products stay in the forefront of current and future market demands. Whether it is for an advancement of current technology, yield and manufacturing improvement, enabling new end device technology, or the development of a new application in our core or emerging markets, we are committed to product excellence and longevity.

The markets for equipment and systems for manufacturing semiconductor devices and for performing OCD metrology, macro-defect inspection, advanced packaging lithography and thin film transparent and opaque process control metrology are characterized by continuous technological development and product innovations. We believe that the rapid and ongoing development of new products and enhancements to existing products is critical to our success. Accordingly, we devote a significant portion of our technical, management and financial resources to research and development programs.

Intellectual Property

We believe that our success will depend to a great degree upon innovation, technological expertise and our ability to adapt our products to new technology. As a result, we have a policy of seeking patents on inventions governing new products or technologies as part of our ongoing research, development, and manufacturing activities. As of December 31, 2022, we have been granted, or hold exclusive licenses to 411 U.S. and foreign patents. The patents we own, jointly own or exclusively license have expiration dates ranging from 2023 to 2040. We also have 117 pending patent applications in the United States and other countries. Our patents and patent applications principally cover various aspects of metrology, macro-defect detection and classification, altered material characterization, lithography techniques, automation, artificial intelligence, and machine learning.

Our pending patent applications may never be issued, and even if they are, these patents, our existing patents and the patents we license may not provide sufficiently broad protection to protect our intellectual property, or they may prove to be unenforceable. To protect our intellectual property, we also rely on a combination of patents, copyrights, trademarks, trade secret laws, contractual provisions and licenses and non-disclosure agreements. There can be no assurance (i) that any patents or trademarks issued to or licensed by us will not be challenged, invalidated or circumvented, (ii) that the rights granted thereunder will provide us with a competitive advantage or (iii) that we will be able to fully protect our intellectual property. Additionally, others may obtain patents or trademarks and assert them against us. From time to time, we receive communications from third parties asserting that our systems, software and/or methods may contain features that such third parties claim may infringe upon their intellectual property rights.

From time to time, we may find it necessary to initiate litigation against other persons or entities to protect and/or enforce our intellectual property rights or contractual rights. However, litigation is costly and time consuming and there is no assurance that any lawsuit we bring will yield the result that we seek, as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in the laws that limit our ability to pursue the lawsuit. There is a risk that our means of protecting our intellectual property may not be adequate. For example, our competitors may independently develop similar technology or duplicate our products. If we fail to adequately protect our intellectual property, it would be easier for our competitors to sell competing products.

Human Capital and Talent

As of December 31, 2022, we had approximately 1,636 staff globally, 411 in research and development, 318 in operations, 161 in administration and 746 in sales, applications and service support. A large percentage of our employees have technical backgrounds and undergraduate and/or advanced degrees. Many of our employees have specialized skills and experience that are of value to our business, products and services. Our future success will depend, in large part, upon our ability to attract, motivate and retain our highly skilled, technical, operational and managerial team members, who are in great demand in our industry and business communities.

Approximately 59% of our employees are located in the United States, 37% in Asia Pacific and 4% in Europe. None of our employees are represented by a union and we have never experienced a work stoppage because of union actions. We consider our employee relations to be favorable.

Purpose and Culture. All of our employees are expected to uphold the following core values which are foundational to our culture:

- Passion – ownership, pride and caring in our work
- Integrity – honesty, dependable, predictable and accountable
- Collaboration – working together toward a common goal
- Results – meeting and exceeding goals, focused toward innovation and growth

These core values define the way we do business in our everyday actions and choices. We strive to create a respectful work environment characterized by mutual trust and the absence of intimidation, oppression, discrimination and exploitation.

Talent Development and Acquisition. Successful execution of our strategy is dependent on attracting, developing and retaining key employees and members of our management and leadership teams. The skills, experience and industry knowledge of our employees significantly benefit our operations and performance. We continuously evaluate, modify, and enhance our internal processes, tools and technologies to increase employee engagement, productivity, quality and efficiency. We offer employees access to internal and external training and development courses to support individual development. We review succession plans and focus on promoting internal talent to help grow our employees, both professionally and personally.

We strive to promote and cultivate an inclusive and diverse culture that welcomes and celebrates everyone without bias. In addition, we look to actively engage within our communities to foster and attain social equity.

In order to ensure that we are meeting our human capital and talent objectives, we frequently utilize employee surveys to understand the effectiveness of our employee and Company programs and where we can improve across the Company. Our latest survey, completed during fiscal 2022, had a participation rate of over 84% of all our employees. Through the survey, our employees indicated that the Company's greatest strengths include ensuring that managers are communicating performance expectations to employees by providing feedback on performance and supporting development, providing a caring work environment, and fostering an environment where employees have the opportunity to do their best and have a sense of accomplishment from their work.

Compensation Philosophy. Our compensation philosophy creates the framework and building blocks for our rewards and recognition programs. We have a pay-for-performance culture that ties compensation to the performance of the individual and the Company. We provide balanced compensation programs that focus on the following five key elements:

- Pay-for-performance - Reward those who achieve or exceed set goals and objectives, while also recognizing those making significant, impactful contributions;
- External market based - Pay levels that are competitive with respect to the labor market in which we compete for talent;
- Internal equity - Providing fair compensation programs within the Company;
- Fiscal responsibility - Providing programs which can be responsibly supported by our operations; and
- Legal compliance - Ensure compliance with the applicable laws of the states and countries in which we operate in all material respects.

Safety, Health and Wellness. We strive to provide an environment which is safe and where our employees can be productive. We have rigorous health and safety programs focused on awareness, recognition, risk assessment and management, as well as teamwork.

In response to the COVID-19 pandemic, we implemented a response plan that we believe was in the best interest and health of our employees and the communities in which we operate. We continue to follow local statutory safety requirements while also monitoring COVID case numbers, in the communities in which operate, to constantly update our safety protocols and requirements

Our benefit plans are competitive and comprehensive. We provide each of our employees educational programs and initiatives focused on holistic wellness supporting nutritional, physical, emotional, mental and financial wellbeing.

Corporate Social Responsibility

Our stakeholders are essential to our business – shareholders, customers, suppliers, employees, communities as well as the environment and society. We are working to make our workforce more inclusive, our business more sustainable, and our communities more engaged by maintaining strong environmental, social and governance (“ESG”) practices. Actions we have taken in pursuit of these commitments include the following environmental and social programs:

- Demanded excellence in our environmental performance, as illustrated in our annual ESG reports.
- Demanded excellence in our quality performance, as demonstrated through our product and process qualification commitments, including ISO 9001 Quality Management;
- Set goals to reduce our environmental impact, including an increase in our use of renewable energy, a decrease in hazardous waste landfill, an increase in our use of recycled materials and beneficial reuse, and a reduction in our freshwater usage;
- Commitment to RBA Code of Conduct and humane treatment of all at Onto Innovation both upstream and downstream. We established policies and practices to ensure that: Working conditions are safe. Workers are treated with respect and dignity. Manufacturing processes are environmentally responsible.
- Produced systems responsibly by offering tool trade-in, refurbishment and technology upgrade programs;
- Provided corporate matching for employee donations to qualified nonprofit organizations; and
- Engaged in community service projects in our communities globally.

We encourage you to review our 2021 ESG Report (located on our website at <https://ontoinnovation.com/company/corporate-social-responsibility>) for more detailed information regarding our ESG initiatives. Nothing on our website, including our ESG Report or sections thereof, is deemed incorporated by reference into this Form 10-K.

Compliance with Governmental Regulations

We are subject to international, federal, state and local regulations that are customary to businesses in the semiconductor capital equipment manufacturing industry. Such regulations include, but are not limited to:

- The Restriction of Hazardous Substances Directive (“RoHS”), which restricts the use of certain hazardous substances in electrical and electronic equipment;
- General Data Protection Regulation (“GDPR”), which provides guidelines for the collection and processing of personal information from individuals who live in the European Union;
- The U.S. Foreign Corrupt Practices Act (“FCPA”), which prohibits companies and their individual officers from influencing foreign officials with any personal payments or rewards;
- Conflict minerals reporting, which imposes disclosure requirements regarding the use of “conflict” minerals mined from the Democratic Republic of Congo and adjoining countries in products; and
- Export regulations.

Our compliance with export regulations has negatively impacted our ability to compete for the business of domestic customers in China, which has adversely affected our results of operations. For additional discussion of the impact of trade policies and export regulations on our competitive position, see “Part I, Item 1A - Risk Factors - Tariffs, export regulations, and other market barriers have impacted and may continue to impact ability to compete for the business of domestic customers in China, which may adversely affect our results of operations” and “PART I, Item 7 - management’s Discussion and Analysis of Financial Condition and Results of Operations - Key Events - Expanded U.S. Export Controls.”

Available Information

Our Internet website address is <http://www.ontoinnovation.com>. The information on our website is not incorporated into this Form 10-K. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K (and any amendments to those reports) are made available free of charge, on or through our Internet website, as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. All filings we make with the SEC are also available free of charge via EDGAR through the SEC’s website at <http://www.sec.gov>. In addition, the historic reports and materials that were filed by Nanometrics and Rudolph with the SEC are available at our investor relations website at <https://investors.ontoinnovation.com>. These filings may also be obtained through the SEC’s website. Documents that are not available through the SEC’s website may also be obtained by submitting an online request to the SEC at <http://www.sec.gov>.

We also make available, free of charge, through our investor relations website, our corporate governance summary, Code of Business Conduct and Ethics, charters of the committees of our Board of Directors, and other information and materials, including information about how to contact our Board of Directors.

Investors and others should also note that we announce material financial information to our investors using our investor relations website, SEC filings, press releases, public conference calls and webcasts. We use these channels as well as social media to communicate with the public about the Company, our products and services and other matters. It is possible that the information we post on social media could be deemed to be material information. Therefore, we encourage investors, the media, and others interested in the Company to review the information we post on the social media channels listed on our investor relations website.

Item 1A. Risk Factors.

Below is a summary the principal factors and uncertainties that make investing in our company risky. You should read this summary together with the more detailed description of each risk factor contained further below.

Risks Related to Our Operations

- If we do not manage our supply chain effectively, our operating results may be adversely affected, and any increases in material, labor, supplier, logistics and other operating costs, or supply chain delays and shortages, could lower our margins or result in lost sales.
- Variations in the amount of time it takes for us to sell our systems may cause fluctuations in our operating results, which could cause our stock price to decline.
- We are subject to order and shipment uncertainties. Our profitability will decline if we fail to accurately forecast customer demand when managing inventory.

- If we deliver systems with defects, our credibility will be harmed, and the sales and market acceptance of our systems will decrease.
- Our integrated metrology systems are integrated with systems sold independently by wafer fabrication equipment suppliers, and a decrease in sales by these suppliers, or the development of competing systems by these suppliers, could harm our business.
- We must attract and retain experienced senior executives and other key personnel with knowledge of semiconductor device manufacturing and inspection, metrology or lithography equipment and related software to help support our future growth, and competition for such personnel in our industry is high.
- The COVID-19 pandemic and the resulting economic impact and supply chain issues have affected our business and could, in the future, adversely affect our business, results of operations, and financial condition.
- Any prolonged disruption in the operations of our manufacturing facilities could have a material adverse effect on our revenue.
- We may outsource select manufacturing activities to third-party service providers, which decreases our control over the performance of these functions and may result in lower quality and functionality of our products.
- Our ability to fulfill our backlog may have an effect on our long-term ability to procure contracts and fulfill current contracts.

Risks Related to Our Customers

- Our largest customers account for a substantial portion of our revenue, and our revenue and cash flows could decline considerably if one or more of these customers were to purchase significantly fewer of our systems or delay or cancel a large order.

Risks Related to Product Development

- If we are not successful in developing new and enhanced products for the semiconductor device manufacturing industry, we will lose sales and market share to our competitors.
- If new products developed by us do not gain general market acceptance, we will be unable to generate revenue and recover our investments, which may result in a write down of inventory.
- Even if we are able to develop new products that gain market acceptance, sales of these new products could impair our ability to sell existing products.
- If our relationships with our large customers deteriorate, our product development activities could be adversely affected.

Risks Related to Intellectual Property and Data Security

- We may fail to adequately protect our intellectual property and, therefore, lose our competitive advantage.
- Protection of our intellectual property rights, or the efforts of third parties to enforce their own intellectual property rights against us, may result in costly and time-consuming litigation, substantial damages, lost product sales and/or the loss of important intellectual property rights.
- If our network security measures are breached and unauthorized access is obtained to a customer's data, to our data, or to our information technology systems, we may incur significant legal and financial exposure and liabilities and may experience disruptions in our operations.

Risks Related to Competition

- Some of our current and potential competitors have significantly greater resources than we do, and increased competition could impair sales of our products or cause us to reduce our prices.
- Because of the high cost of switching equipment vendors in our markets, it is sometimes difficult for us to win new customers from our competitors even if our systems are superior to theirs.

Risks Related to Our International Operations

- We are subject to compliance with domestic and foreign laws and regulations, and the burden of complying with such laws and regulations, or any failure to comply, has adversely affected and may continue to adversely affect our business, financial condition and results of operations.
- Tariffs, export regulations, and other market barriers have impacted and may continue to impact both our ability to compete for the business of domestic customers in China and our results of operations.
- Political and economic instability may result in reduced demand for our products.
- Natural disasters, changes in climate and geo-political conflicts could materially adversely affect our worldwide operations (or those of our business partners).
- We may face difficulties in staffing and managing foreign branch operations due to political tensions or cultural differences.
- Currency fluctuations may impact our international sales or expose us to exchange rate risk.
- Our internal controls with respect to anti-corruption laws may not be effective, and any failure to comply with such laws may result in severe sanctions and liabilities, which may negatively affect our business, operating results and financial condition.

Risks Related to Tax Laws, Financial Markets and the Environment

- Changes in tax rates or tax liabilities could affect results.
- Turmoil or fluctuations in the credit markets and the financial services industry may negatively impact our business, results of operations, financial condition or liquidity, and our factoring arrangements may expose us to additional risks.
- We are subject to various environmental laws and regulations that could impose substantial costs upon us, and failure to comply with such laws and regulations may harm our business, operating results and financial condition.
- Customer and investor focus on our environmental, social and governance responsibility practices and policies, and related regulatory requirements, may make our supply chain more complex, and any failure to comply with customer or investor guidelines or applicable laws and regulations may adversely affect our relationship with customers and investors or our reputation and results of operations.

Risks Related to Growth and Acquisitions

- We may choose to acquire new and complementary businesses, products or technologies instead of developing them ourselves, and we may be unable to complete these acquisitions or may not be able to successfully integrate an acquired business in a cost-effective and non-disruptive manner.
- If we cannot effectively manage growth, our business may suffer.

Risks Related to the Global Economy and the Semiconductor Industry

- Cyclicity in the semiconductor device industry has led to substantial decreases in demand for our systems in the past and may, from time to time, continue to do so.
- Our future rate of growth is highly dependent on the development and growth of the market for microelectronic device inspection, lithography and metrology equipment.

General Risk Factors

- Provisions of our charter documents and of Delaware law could discourage potential acquisition proposals and/or delay, deter or prevent a change in control of our company.
- Our stock price is volatile.

Risks Related to Our Operations

If we do not manage our supply chain effectively, our operating results may be adversely affected, and any increases in material, labor, supplier, logistics and other operating costs, or supply chain delays and shortages, could lower our margins or result in lost sales.

We need to continually evaluate our global supply chains and assess opportunities to reduce costs. We must also enhance quality, speed and flexibility to meet changing demand for our products and product mix and uncertain market conditions. Our success also depends in part on refining our cost structure and supply chains so that we have flexibility and can maintain and improve profitability. Deteriorations in the tariff environment, political instability or changes in suppliers, may cause our costs to increase and, if we are not able to offset the increased costs by charging higher sales prices, will cause a decline in our margins. To improve our margins on a product, we will need to establish high volume supply agreements with our vendors. We cannot be certain that we will be able to timely negotiate vendor supply agreements on improved terms and conditions, or at all. Failure to achieve the desired level of cost reductions could adversely affect our financial results. Despite our efforts to control costs and increase efficiency in our facilities, changes in demand could still cause us to realize lower operating margins and profitability.

Further, our gross margins and financial performance may be adversely affected by increases in our operating costs, such as material, labor, supplier costs, logistics and energy costs, all of which have been and may continue to be subject to inflationary pressures. Operating costs have increased and may continue to increase further as a result of supply chain disruptions in connection with the sourcing of components, materials, equipment, engineering support, and services, labor shortages and other cost increases due to the COVID-19 pandemic and the effects of the Russia-Ukraine conflict. We have also experienced, and may continue to experience, production delays, disruptions and cost increases due to the worldwide shortage of semiconductor components as a result of sharp increases in demand for semiconductor products in general.

These risks may be heightened because we obtain some of the components and subassemblies included in our systems from a limited group of suppliers and do not have long-term contracts with many of our suppliers. Our dependence on limited-source suppliers of components and our lack of long-term contracts with many of our suppliers expose us to several risks, including a potential inability to obtain an adequate supply of components, price increases, late deliveries and poor component quality. A significant number of our suppliers are the sole source or single source for certain components or subassemblies. If such a supplier is unable or unwilling to manufacture and deliver components to us on the time schedule and of the quality or quantity that we require, we may be forced to seek to engage an additional or replacement supplier or redesign our product to use alternative components, which could result in additional expenses and delays in product development or shipment of product to our customers. Disruption or termination of the supply of components has delayed and could continue to delay shipments of some of our systems. Such delays may damage our customer relationships and reduce our sales. The lead-time required for shipments of some of our components can be greater than six months. In addition, the lead time required to qualify new suppliers for lasers and certain optics could be as long as a year, and the lead time required to qualify new suppliers of other components could be as long as nine months. In some cases, we may need to purchase components in advance of receiving customer orders for product. If we are unable to accurately predict our component needs, or if our component supply is disrupted, as it has been due to supply chain disruptions, logistics difficulties and shipping delays due to the COVID-19 pandemic and global electronic component shortages, we may miss market opportunities by not being able to meet the demand for our systems. Further, a significant increase in the price of one or more of these components or subassemblies could seriously harm our results of operations and cash flows.

Our efforts to mitigate any cost increases, labor impacts and supply chain delays and shortages may not be successful, and we cannot predict the duration of these current trends or other future increases in operating costs. We may not be able to pass cost increases through to our customers fully (or at all), and if supply chain delays and shortages delay delivery of our products, our customers may seek to purchase from our competitors. Any such occurrence may have a material adverse impact on our gross margins and business, financial position, results of operations and cash flows.

Variations in the amount of time it takes for us to sell our systems may cause fluctuations in our operating results, which could cause our stock price to decline.

Variations in the length of our sales cycles could cause our revenue and cash flows, and consequently, our business, financial condition, operating results and cash flows to fluctuate widely from period to period. This variation could cause our stock price to decline. Our customers generally take a long time to evaluate our inspection and/or film metrology systems and many people are involved in the evaluation process. We expend significant resources educating and providing information to our prospective customers regarding the uses and benefits of our systems in the semiconductor fabrication process. The length of time it takes for us to make a sale depends upon many factors, including, but not limited to:

- the efforts of our sales force;
- the complexity of the customer's fabrication processes;
- the internal technical capabilities and sophistication of the customer;
- the customer's budgetary constraints; and
- the quality and sophistication of the customer's current metrology, inspection or lithography equipment.

Because of the number of factors influencing the sales process, the period between our initial contact with a customer and the time when we recognize revenue from that customer and receive payment, if ever, varies widely in length. Our sales cycles, including the time it takes for us to build a product to customer specifications after receiving an order to the time we recognize revenue, typically range from three to twenty-four months. Sometimes our sales cycles can be much longer, particularly with customers in Asia. During these cycles, we commit substantial resources to our sales efforts in advance of receiving any revenue, and we may never receive any revenue from a customer despite our sales efforts. If we do make a sale, our customers often purchase only one of our systems, the performance of which they then evaluate for a lengthy period before purchasing any more of our systems. The number of additional products a customer purchases, if any, depends on many factors, including the customer's capacity requirements. The period between a customer's initial purchase and any subsequent purchases can vary from three months to a year or longer, and variations in the length of this period could cause further fluctuations in our operating results and, possibly, in our stock price.

We are subject to order and shipment uncertainties. Our profitability will decline if we fail to accurately forecast customer demand when managing inventory.

We typically plan production and inventory levels based on internal forecasts of customer demand, which can be highly unpredictable and can fluctuate substantially, which could lead to excess inventory write-downs and resulting negative impacts on gross margin and net income. We have limited visibility into our customers' inventories, future customer demand and the product mix that our customers will require, which could adversely affect our production forecasts and operating margins. Recently, certain of our customers have publicly stated their intent to decrease their memory product inventory levels as lead time for components begins to decrease. This could lead to a temporary decrease in demand for our products as customers delay capacity expansions until inventory levels are sufficiently reduced. In addition, innovation in our industry could render significant portions of our inventory obsolete. If we overestimate our customers' requirements, we may have excess inventory, which could lead to obsolete inventory and unexpected costs. Conversely, if we underestimate our customers' requirements, or if we experience sustained disruptions to our supply chain or shipping delays, including those we continue to experience due to the COVID-19 pandemic, we may have inadequate inventory, which could lead to foregone revenue opportunities, loss of potential market share and damage to customer relationships as product deliveries may not be made on a timely basis, disrupting our customers' production schedules. In response to anticipated long lead times to obtain inventory and materials from outside suppliers and foundries, we periodically order materials in advance of customer demand. This advance ordering has in the past and may in the future result in excess inventory levels or unanticipated inventory write-downs if expected orders fail to materialize, or other factors make our products less saleable. In addition, any significant future cancellation or deferral of product orders could adversely affect our revenue and margins, increase inventory write-downs due to obsolete inventory, and adversely affect our operating results and stock price.

Our earnings could be negatively affected, and our inventory levels could materially increase, if we are unable to predict our inventory needs in an accurate and timely manner and adjust our orders for parts and subcomponents in the event that our needs increase or decrease materially due to unexpected increases or decreases in demand for our products. Any material increase in our inventories could result in an adverse effect on our financial position, while any material decrease in our ability to procure needed inventories could result in an inability to supply customer demand for our products, thus adversely affecting our revenue.

If we deliver systems with defects, our credibility will be harmed, and the sales and market acceptance of our systems will decrease.

Our systems are complex and have occasionally contained errors, defects and bugs when introduced. Defects may be created during probing, bumping, dicing or general handling, and can have a major impact on device and process quality. When this occurs, our credibility and the market acceptance and sales of our systems could be harmed. Further, if our systems contain errors, defects or bugs, computer viruses or malicious code as a result of cyber-attacks to our computer networks, we may be required to expend significant capital and resources to alleviate these problems. Defects could also lead to product liability as a result of product liability lawsuits against us or against our customers. We have agreed to indemnify our customers under certain circumstances against liability arising from defects in our systems provided that we also include a cap on our liability in the related sales agreements. Our product liability insurance policy currently provides both aggregate coverage as well as an overall umbrella coverage. In the event of a successful product liability claim, we could be obligated to pay damages significantly in excess of our product liability insurance limits.

Our integrated metrology systems are integrated with systems sold independently by wafer fabrication equipment suppliers, and a decrease in sales by these suppliers, or the development of competing systems by these suppliers, could harm our business.

We believe that sales of integrated metrology systems will continue to be an important source of our net revenues. Sales of our integrated metrology systems depend upon the ability of a small number of wafer fabrication equipment suppliers to sell semiconductor manufacturing equipment products that are compatible with our metrology systems as components. If these suppliers, such as Applied Materials, Inc., Ebara Corporation, Lam Research Corporation and Tokyo Electron, are unable to sell such products, if they choose to focus their attention on products that do not integrate with our systems, or if they choose to develop competing systems, our business could suffer.

We must attract and retain experienced senior executives and other key personnel with knowledge of semiconductor device manufacturing and inspection, metrology or lithography equipment and related software to help support our future growth, and competition for such personnel in our industry is high.

Our success depends, to a significant degree, upon the continued contributions of our key executive management, engineering, sales and marketing, customer support, finance and manufacturing personnel. The loss of any of these key personnel, each of whom would be extremely difficult to replace, through resignations, retirement or other circumstances, could harm our business and operating results. Despite our employment and noncompetition agreements with key members of our senior management team, these individuals or other key employees may still leave us, which could have a material adverse effect on our business. We do not have key person life insurance on any of our executives. In addition, to support our future growth, we will need to attract and retain additional qualified employees. Competition for such personnel in our industry is intense, and we may not be successful in attracting and retaining qualified employees.

The expansion of high technology companies worldwide and growth in the demand for semiconductors following the onset of the COVID-19 pandemic have increased demand and competition for qualified personnel. Competition for engineering and other technical personnel in some of the markets in which we operate is especially intense due to continued increases in the number of technology companies worldwide. In order to attract and retain executives and other key employees, we must provide a competitive compensation package, including cash and stock-based compensation. If the anticipated value of our stock-based incentive awards does not materialize so that they cease to be viewed as valuable, if our profits decrease, or if our total compensation package is not viewed as competitive, our ability to attract, retain and motivate executives and key employees could be weakened.

The COVID-19 pandemic and the resulting economic impact and supply chain issues have affected our business and could, in the future, adversely affect our business, results of operations, and financial condition.

The effects of the public health crisis caused by the COVID-19 pandemic and the resulting economic impact have affected, and may continue to affect, our operations and those of our suppliers, third-party service providers, and customers. The extent to which the COVID-19 pandemic will continue to impact our business, results of operations, and financial conditions is difficult to predict and depends on numerous evolving factors including the duration and scope of the pandemic; government, social, business, and other actions that have been and will be taken in response to the pandemic; appearance of new variants of COVID-19; the availability, adoption, and efficacy of vaccines and treatments; and the intensity and duration of the resulting macroeconomic conditions. The COVID-19 pandemic exposes our business, results of operations, and financial condition to the following risks: disruptions to our supply chain in connection with the sourcing of materials, support, and services; disruption of operations due to unavailability of employees as a result of illness, risk of illness, travel restrictions or other factors; a potential decrease in short-term and/or long-term demand for our products; an increase in potential opportunities

for the Company to be subject to an adverse cybersecurity event as a result of an increase in employees working from home, which could give rise to business disruptions, loss of information, intellectual property and critical data as well as other negative impacts; and potential difficulty accessing capital, if needed in the future, either through our credit agreement or through a sale of securities, due to market conditions generally or a decline or volatility in the market for our securities. The effects of these risks, alone or taken together, could have a material adverse effect on our business, results of operations, legal exposure, or financial condition. Additional sustained or prolonged outbreaks of COVID-19 could exacerbate the adverse impact of the conditions and may also heighten many of the other risks described in this “Risk Factors” section.

Any prolonged disruption in the operations of our manufacturing facilities could have a material adverse effect on our revenue.

We produce the majority of our systems in our manufacturing facilities located in Wilmington, Massachusetts, Milpitas, California and Bloomington, Minnesota. We use contract manufacturers in China, Japan and the United States. Our manufacturing processes are highly complex and require sophisticated and costly equipment and a specially designed facility. As a result, any prolonged disruption in the operations of our manufacturing facilities could seriously harm our ability to satisfy our customer order deadlines. For example, shelter-in-place orders and other measures implemented during the COVID-19 pandemic to protect employees resulted in reduced workforce availability at product manufacturing sites and reduced output at some of our vendors and suppliers. Restrictions on our access to or operation of manufacturing facilities or on our support operations or workforce, or similar limitations for our vendors and suppliers, may impact our ability to meet customer demand and could have a material adverse effect on our financial condition and results of operations. If we cannot timely deliver our systems, our results from operations and cash flows could be materially and adversely affected.

We outsource select manufacturing activities to third-party service providers, which decreases our control over the performance of these functions and may result in lower quality and functionality of our products.

We outsource product manufacturing to third-party service providers. Outsourcing reduces our control over the performance of the outsourced functions. Dependence on outsourcing may also adversely affect our ability to bring new products to market. If we do not effectively manage our outsourcing strategy or if third party service providers do not perform as anticipated, we may experience operational difficulties, increased costs, manufacturing interruptions or inefficiencies in the operation of our supply chain, any or all of which could delay our delivery of products to our customers, and materially and adversely affect our business, financial condition, and results of operations.

Our ability to fulfill our backlog may have an effect on our long-term ability to procure contracts and fulfill current contracts.

Our ability to fulfill our backlog may be limited by our ability to devote sufficient financial and human capital resources and may be limited by available material supplies. If we do not fulfill our backlog in a timely manner, we may experience delays in product delivery, which would postpone receipt of revenue from those delayed deliveries. Delayed fulfillment also increases the risk that a customer may change or cancel an order due to evolution of the customer’s technological, production or market needs, which would result in a loss of revenue. Additionally, if we are consistently unable to fulfill our backlog, this may be a disincentive to customers to award large contracts to us in the future until they are comfortable that we can effectively manage our backlog.

Risks Related to Our Customers

Our largest customers account for a substantial portion of our revenue, and our revenue and cash flows could decline considerably if one or more of these customers were to purchase significantly fewer of our systems or delay or cancel a large order.

Sales to end user customers that individually represent at least ten percent of our revenue typically account for, in the aggregate, a considerable amount of our revenue. We operate in the highly concentrated, capital-intensive semiconductor device manufacturing industry. Historically, a substantial portion of our revenue in each quarter and year has been derived from sales to relatively few customers, and this trend is expected to continue. If any of our key customers were to purchase significantly fewer of our systems in the future, or if they delay or cancel a large order, our revenue and cash flows could meaningfully decline. We expect that we will continue to depend on a small number of large customers for a sizable portion of our revenue. In addition, as large semiconductor device manufacturers seek to establish closer relationships with their suppliers, we expect that our customer base will become even more concentrated.

Risks Related to Product Development

If we are not successful in developing new and enhanced products for the semiconductor device manufacturing industry, we will lose sales and market share to our competitors.

We operate in an industry that is highly competitive and subject to evolving industry standards, rapid technological changes, rapid changes in consumer demands and the rapid introduction of new, higher performance systems with shorter product life cycles. To be competitive in our demanding market, we must continually design, develop and introduce in a timely manner new lithography, inspection and metrology process control systems that meet the performance and price demands of semiconductor device manufacturers. We must also continue to refine our current systems so that they remain competitive. We expect to continue to make significant investments in our research and development activities and at times may make inventory investments prior to commercialization. We may experience difficulties or delays in our development efforts with respect to new systems, and we may not ultimately be successful in our product enhancement efforts to improve and advance products or in responding effectively to technological change, as not all research and development activities result in viable commercial products. In addition, we cannot provide assurance that we will be able to develop new products for the most opportunistic new markets and applications. Any significant delay in releasing new systems could cause our products to become obsolete, adversely affect our reputation, give a competitor a first-to-market advantage or cause a competitor to achieve greater market share.

In addition, our competitors may provide innovative technology that may have performance advantages over systems we currently offer or may offer in the future. They may be able to develop products comparable or superior to those that we offer or may adapt more quickly to new technologies or evolving customer requirements. In particular, we currently are developing additional product enhancements that we believe will address future customer requirements, but we may fail in a timely manner to complete the development or introduction of these additional product enhancements successfully, or these product enhancements may not achieve market acceptance or be competitive.

Further, customers that may otherwise desire to purchase our products from us and purchase other products from our competitors may nevertheless purchase competing products from our competitors rather than purchase our products due to a variety of reasons, including to gain favor or volume pricing from our competitors.

If new products developed by us do not gain general market acceptance, we will be unable to generate revenue and recover our investments, which may result in a write down of inventory.

Inspection, lithography and metrology product development is inherently risky because it is difficult to foresee developments in semiconductor device manufacturing technology, coordinate technical personnel, and identify and eliminate system design flaws. Further, our products are leading edge and complex, and often the applications to our customers' businesses are unique. Any new systems we introduce may not achieve or sustain a significant degree of market acceptance and sales.

We expect to spend a significant amount of time and resources developing new systems and refining our existing systems. In light of the long product development cycles inherent in our industry, these expenditures will be made well in advance of the prospect of deriving revenue from the sale of those systems. The long lead times for some components may also require us to place orders for components and accumulate inventory in advance of market acceptance of our products.

Our ability to commercially introduce and successfully market new systems is subject to a wide variety of challenges during the development cycle, including start-up bugs, design defects, and other matters that could delay introduction of these systems. Since our customers are not obligated by long-term contracts to purchase our systems, our anticipated product orders may not materialize, or orders that are placed may be canceled.

If we do not achieve market acceptance of new products, we may be unable to generate sufficient revenue and cash flow to recover our research and development costs and may result in a write down of our investments in inventory. As a result, our market share, revenue, operating results or stock price would be negatively impacted.

Even if we are able to develop new products that gain market acceptance, sales of these new products could impair our ability to sell existing products.

Competition from our new systems could have a negative effect on sales of our existing systems and the prices that we could charge for these systems. We may also divert sales and marketing resources from our current systems in order to successfully launch and promote our new or next generation systems. This diversion of resources could have a further negative effect on sales of our current systems and the value of inventory.

If our relationships with our large customers deteriorate, our product development activities could be adversely affected.

The success of our product development efforts depends on our ability to anticipate market trends and the price, performance and functionality requirements of semiconductor device manufacturers. In order to anticipate these trends and ensure that critical development projects proceed in a coordinated manner, we must continue to collaborate closely with our largest customers. Our relationships with these and other customers provide us with access to valuable information regarding trends in the semiconductor device industry, which enables us to better plan our product development activities. If our current relationships with our large customers are impaired, or if we are unable to develop similar collaborative relationships with important customers in the future, our product development activities could be adversely affected.

Risks Related to Intellectual Property and Data Security

We may fail to adequately protect our intellectual property and, therefore, lose our competitive advantage.

Our future success and competitive position depend in part upon our ability to obtain and maintain proprietary technology for our principal product families. If we fail to adequately protect our intellectual property, it will give our competitors a significant advantage. We own or have licensed a number of patents relating to our metrology, lithography, wafer and defect inspection systems, as well as artificial intelligence and machine learning systems, and software, including both embedded and application software, and have filed applications for additional patents. Any of our pending patent applications may be rejected, however, and we may be unable to develop additional proprietary technology that is patentable in the future. In addition, the patents that we do own or that have been issued or licensed to us may not provide us with competitive advantages and/or may be challenged by third parties. Third parties may also design around our patents or copy our patented inventions without our knowledge.

In addition to patent protection, we rely upon copyrights for protection of our proprietary software and documentation, trademarks for protection of our brand and source of goods, and trade secret law, and confidentiality and non-compete agreements for protection of our confidential and proprietary information and technology. These measures do not guarantee protection of our intellectual property, however. We can give no assurance that our copyrights will be upheld or will successfully deter infringement by third parties. Even though we routinely enter into confidentiality agreements with our employees and other third parties there can be no assurances that trade secrets and proprietary information will not be disclosed, that others will not independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets, or that we can fully protect our trade secrets and proprietary information. Violations by others of our confidentiality agreements and the loss of employees who have specialized knowledge and expertise could harm our competitive position and cause our sales and operating results to decline as a result of increased competition. It also possible that third parties will misappropriate our trade secrets or other confidential information. We may be subject to cybersecurity breaches in which a third party obtains our confidential information. Third parties may also reverse engineer our products to copy our technology. Any of these circumstances could result in harm to our competitive position in the market. Failure to protect our trademarks can lead to other companies selling products using confusing similar names, thereby damaging our brand. In some countries, it can be difficult to register trademarks because of the strict examination process or blocking trademarks for other goods. Costly and time-consuming litigation might be necessary to enforce and determine the scope of our intellectual property rights, and failure to obtain or maintain trade secret protection might adversely affect our ability to continue our research or bring products to market.

From time to time, we may find it necessary to initiate litigation against other persons or entities to protect and/or enforce our intellectual property or contractual rights. However, litigation is costly and time consuming and there is no assurance that any lawsuit we bring will yield the result that we seek, as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in law that limits our ability to pursue the lawsuit. For example, litigation discovery practice in China, Japan, South Korea, continental Europe and Taiwan is not as robust as the United States, so it can be more difficult to determine if a company is infringing on our patents and more challenging to bring a lawsuit. Monitoring and preventing unauthorized use are also difficult and the measures we take to protect our intellectual property rights may not be adequate. Accordingly, infringement of our intellectual property rights poses a serious risk of doing business. There is a risk that we may be unable to adequately protect our intellectual property rights in certain foreign countries. For example, our competitors may independently develop similar technology or duplicate our products. If this occurs, it would be easier for our competitors to develop and sell competing products in these countries.

Protection of our intellectual property rights, or the efforts of third parties to enforce their own intellectual property rights against us, may result in costly and time-consuming litigation, substantial damages, lost product sales and/or the loss of important intellectual property rights.

We may be required to initiate litigation in order to enforce our intellectual property rights or to determine the noninfringement, scope or validity of a third party's intellectual property rights. Any litigation, regardless of outcome, could be expensive and time consuming and could subject us to significant liabilities or require us to re-engineer our products or obtain expensive licenses from third parties. There can be no assurance that any patents, copyrights or other intellectual property rights issued to or licensed by us will not be challenged, invalidated or circumvented, or that the rights granted thereunder will provide us with a competitive advantage. Furthermore, there is no assurance that any litigation we are involved in will yield the result that we seek as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in law that limits our ability to pursue the lawsuit.

In addition, our commercial success depends in part on our ability to avoid infringing or misappropriating patents or other intellectual property rights owned by third parties. From time to time, we receive communications from third parties asserting that our products or systems infringe, or may infringe, on the intellectual property rights of these third parties. These claims of infringement may lead to protracted and costly litigation, which could require us to pay substantial damages or have the sale of our products or systems stopped by an injunction. Infringement claims could also cause product or system delays or require us to redesign our products or systems, and these delays could result in the loss of substantial revenue. We may also be required to obtain a license from the third party or cease activities utilizing the third party's intellectual property rights. We may not be able to enter into such a license or such a license may not be available on commercially reasonable terms. Accordingly, the loss of an intellectual property dispute could hinder our ability to sell our products or systems or make the sale of our products or systems more expensive, which could lead to reduced revenue or lower margins, respectively.

If our network security measures are breached and unauthorized access is obtained to a customer's data, to our data, or to our information technology systems, we may incur significant legal and financial exposure and liabilities and may experience disruptions in our operations.

As part of our business, we store our data and certain data about our customers, vendors and employees in our information technology system. We also rely on our information technology system for business operations. If there is a breach as a result of third-party action, employee error, malfeasance, break-ins or otherwise, of our security measures designed to protect this information and prevent data loss and other security breaches, and someone obtains unauthorized access to our customers', vendors' or employees' data or disrupts our access to our own data and systems, we could face loss of business, regulatory investigations or court orders, our reputation could be severely damaged, we could be required to expend significant capital and other resources to alleviate the problem, as well as incur significant costs and liabilities, including due to litigation, indemnity obligations, damages for contract breach, penalties for violation of applicable laws or regulations, and costs for remediation and other incentives offered to customers.

Cyber-attacks and other malicious internet-based activities continue to increase. In response to the COVID-19 pandemic, our expanded reliance on remote access to our information systems has further increased our exposure to potential cybersecurity breaches. The Russia-Ukraine conflict and related sanctions imposed by the U.S. government may expose government entities and public and private U.S. companies to attempted or actual cybersecurity attacks launched in retaliation, and these attacks could materially disrupt our supply chain or our systems and operations or those of our customers and suppliers.

As the techniques used to obtain unauthorized access or sabotage systems change frequently and generally are not identified until they are launched against a target, our ability to anticipate these techniques or to implement adequate preventative measures is reduced. In addition, third parties have made attempts to fraudulently induce employees or users to disclose information to gain access to our data or our customers' data. As a result of any of these events, our or our customers' and vendors' information could be accessed or disclosed improperly. In addition, cybersecurity incidents affecting our customers could result in substantial delays in our ability to ship to those customers or install our products, which could result in delays in revenue recognition or the cancellation of orders, and cybersecurity incidents affecting our suppliers could result in substantial delays in our ability to obtain necessary components for our products from those suppliers, which could hamper our ability to ship our products to our customers, harming our results of operations and our customer relationships. Any or all of the above issues could negatively affect our ability to attract new customers, cause existing customers to choose to purchase from our competitors, result in reputational damage or subject us to third-party lawsuits, regulatory fines or other action or liability, which could adversely affect our operating results.

The General Data Protection Regulation ("GDPR") is a regulation in European Union ("EU") law on data protection and privacy for the individuals within the EU and the European Economic Area ("EEA"). It also addresses the export of personal data outside the EU and EEA areas. The United Kingdom has adopted legislation that substantially implements the GDPR and

provides for a similar penalty structure. We are also subject to the California Consumer Privacy Act of 2018 (“CCPA”), which became effective January 1, 2020, as well as the California Privacy Rights Act (CPRA), an amendment and expansion of the CCPA. Although the CPRA has an effective date of January 1, 2023, many of its provisions will retroactively apply to personal information collected from January 1, 2022. We may also be subject to other data privacy laws in the United States and the other countries in which we operate. In many cases, these laws apply not only to third-party transactions, but also to transfers of information between us and our subsidiaries, and among the subsidiaries and other parties with which we have commercial relations. The introduction of new products or expansion of our activities in certain jurisdictions may subject us to additional laws and regulations. These U.S. federal and state and foreign laws and regulations, including GDPR which can be enforced by private parties or government entities, are constantly evolving and can be subject to significant change. In addition, the application and interpretation of these laws and regulations, including GDPR, are often uncertain, particularly in our evolving industry, and may be interpreted and applied differently from country to country. Appropriate technical and organizational measures are necessary to implement these data protection principles. These laws and regulations can be costly to comply with and may delay or impede the development of new products, result in negative publicity, increase our operating costs, require significant management time and attention, or subject us to inquiries or investigations, claims or other remedies, including fines, which may be significant, or demands that we modify or cease existing business practices. A failure by us, our suppliers, or other parties with whom we do business to comply with posted privacy policies or with other federal, state, or international privacy-related or data protection laws and regulations, including GDPR, CCPA, CPRA and other new or changing privacy laws and regulations, could result in proceedings against us by governmental entities or others, which could have a material adverse effect on our business, results of operations, and financial condition.

Risks Related to Competition

Some of our current and potential competitors have significantly greater resources than we do, and increased competition could impair sales of our products or cause us to reduce our prices.

The market for semiconductor capital equipment is highly competitive. We face substantial competition from established companies in each of the markets we serve. We principally compete with KLA Corporation, Nova Measuring Instruments, Camtek, Ushio, Canon, and PDF Solutions. We compete to a lesser extent with Nikon. Each of our products also competes with products that use different metrology, inspection or lithography techniques. Some of our competitors have greater financial, engineering, manufacturing and marketing resources, broader product offerings and service capabilities and larger installed customer bases than we do. As a result, these competitors may be able to respond more quickly to new or emerging technologies or market developments by devoting greater resources to the development, promotion and sale of products, which, in turn, could impair sales of our products. Further, there may be significant merger and acquisition activity among our competitors and potential competitors, which, in turn, may provide them with a competitive advantage over us by enabling them to rapidly expand their product offerings and service capabilities to meet a broader range of customer needs.

Many of our customers and potential customers in the semiconductor device manufacturing industry are large companies that require global support and service for their semiconductor capital equipment. We believe that our global support and service infrastructure is sufficient to meet the needs of our customers and potential customers. However, some of our competitors have more extensive infrastructures than we do, which could place us at a disadvantage when competing for the business of global semiconductor device manufacturers. Many of our competitors are investing heavily in the development of new systems that will compete directly with our systems. We have, from time to time, selectively reduced prices on our systems in order to protect our market share, and competitive pressures may necessitate further price reductions. We expect our competitors in each product area to continue to improve the design and performance of their products and to introduce new products with competitive prices and performance characteristics. These product introductions would likely require us to decrease the prices of our systems and increase the level of discounts that we grant our customers. Price reductions or lost sales as a result of these competitive pressures would reduce our total revenue and could adversely impact our financial results.

Because of the high cost of switching equipment vendors in our markets, it is sometimes difficult for us to win new customers from our competitors even if our systems are superior to theirs.

We believe that once a semiconductor device manufacturer has selected one vendor’s capital equipment for a production-line application, the manufacturer generally relies upon that capital equipment and, to the extent possible, subsequent generations of the same vendor’s equipment for the life of the application. Once a vendor’s equipment has been installed in a production line application, a semiconductor device manufacturer must often make substantial technical modifications and may experience production-line downtime in order to switch to another vendor’s equipment. Accordingly, unless our systems offer performance or cost advantages that outweigh a customer’s expense of switching to our systems, it will be difficult for us to achieve significant sales to that manufacturer once it has selected another vendor’s capital equipment for an application.

Risks Related to Our International Operations

We are subject to compliance with domestic and foreign laws and regulations, and the burden of complying with such laws and regulations, or any failure to comply, has adversely affected and may continue to adversely affect our business, financial condition and results of operations.

Our business is subject to risks inherent in doing business internationally, including compliance with, inconsistencies among, and unexpected changes in, a wide variety of foreign laws and regulatory environments with which we are not familiar, including, among other issues, with respect to employees, protection of our intellectual property, and a wide variety of operational regulations and trade and export controls under domestic, foreign, and international law.

We are faced with various risks that may be associated with our compliance with existing, new, different, inconsistent or conflicting laws, regulations and rules enacted by governments and/or their regulatory agencies in the countries in which we operate as well as rules and policies implemented at our customer sites. These laws, regulations, rules and policies could relate to any of an array of issues including, but not limited to, environmental, tax, intellectual property, trade secrets, product liability, contracts, antitrust, employment, securities, import/export and unfair competition. The cost of maintaining compliance under multiple and changing regulatory regimes may adversely affect our business, financial condition and results of operations, and, in the case of export controls, has adversely affected and may continue to adversely affect our results of operations. As discussed below under the heading “Tariffs, export regulations, and other market barriers have impacted and may continue to impact both our ability to compete for the business of domestic customers in China and our results of operations,” the U.S. government recently issued, on October 7, 2022, new export control rules aimed at restricting China’s access to advanced computing technology. To comply with the new rules, Onto Innovation has had to expend time and resources that might otherwise have been used for revenue generating activities. Further regulatory changes could require additional diversion of resources to compliance efforts. In addition, in the event that we fail to comply with or violate U.S. or foreign laws or regulations or customer policies, we could be subject to civil or criminal claims or proceedings that may result in monetary fines, penalties or other costs against us or our employees, which may adversely affect our operating results, financial condition, customer relations and ability to conduct our business.

Tariffs, export regulations and other market barriers have impacted and may continue to impact both our ability to compete for the business of domestic customers in China and our results of operations.

The semiconductor device industry is a high-visibility industry in many of the European and Asian countries in which we sell our products. Because the governments of these countries have provided extensive financial support to our semiconductor device manufacturing customers in these countries, we believe that our customers could be disproportionately affected by any trade embargoes, excise taxes, tariffs, or other restrictions imposed by their governments on trade with U.S. companies such as ourselves, particularly with respect to the ongoing tensions between the United States and China.

Over the last several years, the U.S. government has significantly expanded export controls on certain technologies and commodities to certain markets, particularly with respect to semiconductor and other high technology exports to China. For example, effective June 2020, the U.S. Department of Commerce imposed new export controls on the transfer of many U.S. products and technologies, including many commercial-grade electronics, to “military end users” or for “military end use” in China, which may include many Chinese commercial companies that sell products to or do business with the Chinese military. Likewise, since May 2019, the U.S. Department of Commerce has imposed restrictions on the transfer of any products from the U.S., as well as many products produced overseas that incorporate U.S. content or rely on U.S. software or technology, to Huawei Technologies Co., Ltd., and its overseas affiliates, followed by a comparable action in December 2020, related to Semiconductor Manufacturing International Corporation (SMIC) and its overseas affiliates. Most recently, in October 2022, the Bureau of Industry and Security (“BIS”) of the U.S. Department of Commerce implemented new export controls related to the Chinese semiconductor manufacturing, advanced computing, and supercomputer industries (the “October 2022 Export Controls”). In 2022, BIS also added a number of companies in China to the Unverified List and Entity List of the Export Administration Regulations (“EAR”), including Yangtze Memory Technologies Co., Ltd (YMTC).

The effect of these changes, among others, is that Onto Innovation is required to conduct additional end-use diligence and in some instances obtain export licenses before providing products to certain customers. While we are taking appropriate measures to comply with all current export control laws and regulations applicable to our business and are applying for export licenses when required, there can be no assurance that export licenses applied for by us or our customers, will be granted in a timely manner or at all. We have experienced and may continue to experience a temporary loss of revenues while we are obtaining licenses with certain customers affected by export controls. Failure to obtain any required license could result in a reduction of anticipated revenues until we are able to replace unlicensed orders with other customer orders for which a license has been obtained or is not required, and there can be no assurance that replacement orders will be obtained on favorable terms, in a timely manner, or at all. In addition, any licenses that are granted to us or to our customers may have a short duration or

require us to satisfy various conditions. Any of these occurrences could have a material adverse effect on our revenues, business, financial condition and results of operations. Further, we hold inventory of products that may be affected by these recent U.S. government actions, including potential order cancellations. If the sale of these products is delayed or we are unable to return or dispose of our inventory on favorable economic terms, we may incur additional carrying costs for the inventory or otherwise record charges associated with this inventory.

The administrative processing, attendant delays and risk of ultimately not obtaining required export approvals also put us at a disadvantage relative to our non-U.S. competitors who may not be required to comply with U.S. export controls. This difficulty and uncertainty has adversely affected our ability to compete for and win business from domestic customers in China.

It is possible that the U.S. government will impose additional export controls on our products or systems, which could lead to further revenue losses. Such changes could result in additional restrictions on our ability to sell products to customers in China and other jurisdictions. Foreign customers affected by current or future U.S. government sanctions, controls or threats of sanctions or controls may respond by developing their own solutions to replace our products or by utilizing our foreign competitors' products. In addition, these export controls may also reduce overall global demand for our customers' products or for other products produced or manufactured in the U.S. or based on U.S. technology, in turn reducing demand for our products, which could have a material adverse effect on our business, financial condition and results of operations. Increased restrictions on China exports may also lead to regulatory retaliation by the Chinese government, which may adversely impact our business. International trade disputes could result in increases in tariffs and other trade restrictions and protectionist measures that could adversely impact our operations and reduce the competitiveness of our products relative to local and global competitors.

Political and economic instability may result in reduced demand for our products.

We are subject to various global risks related to political and economic instabilities in countries in which we derive sales. If terrorist activities, armed conflict, civil or military unrest or political instability occurs outside of the United States, these events may result in reduced demand for our products. For example, the Ukraine–Russia geographic region is a major source of critical raw materials used for semiconductor manufacturing (such as neon and palladium), and any supply chain disruptions or shortages of such materials due to the ongoing conflict in that region could impact our customers in a manner that reduces demand for our products.

In addition, due to the complex relationships among China, Hong Kong, Taiwan, and the United States, there is risk that political, diplomatic, and national security influences might lead to trade, technology, or capital disputes, or disruptions affecting the semiconductor industry. In particular, the escalation of geopolitical tensions between China and Taiwan may cause disruptions in the markets in which we operate and lead to a decreased demand for our products, which could adversely affect our business in Asia or have a negative impact on the regional or global economy.

Furthermore, an outbreak of hostilities or other political upheaval in China, Taiwan, Japan, or South Korea, or an economic downturn in Asia or globally, would likely harm the operations of our customers in these countries. The effect of these types of events on our revenue and cash flows could be material because we derive substantial revenue from sales to semiconductor device foundries in Taiwan such as Taiwan Semiconductor Manufacturing Company Ltd., from memory chip manufacturers in South Korea such as Samsung Electronics Co., Ltd., and from semiconductor device manufacturers in Japan such as Toshiba Corporation.

Natural disasters, changes in climate and geo-political conflicts could materially adversely affect our worldwide operations (or those of our business partners).

The occurrence of one or more natural disasters such as hurricanes, tropical storms, fires, cyclones, earthquakes, tsunamis, flooding, typhoons, volcanic eruptions and weather conditions such as major or extended winter storms, droughts and tornadoes, whether as a result of climate change or otherwise, may disrupt manufacturing or other operations. For example, our Milpitas operations are located near major earthquake fault lines in California. There may also be conflict or uncertainty in the countries in which we operate, including public health issues (for example, an outbreak of a contagious disease such as COVID-19, avian influenza, measles or Ebola), safety issues, natural disasters, fire, disruptions of service from utilities, nuclear power plant accidents or general economic or political unrest, including war, civil unrest or terrorist attacks. We cannot provide any assurance that alternate means of conducting our operations (whether through alternate production capacity or service providers or otherwise) would be available if a major disruption were to occur or that, if such alternate means were available, they could be obtained on favorable terms. We have no operations in Russia, Belarus or Ukraine and do not have significant customers or suppliers in any of those countries. Consequently, to date, our operations have not been materially adversely affected by Russia's invasion of Ukraine. However, if the Russia-Ukraine conflict escalates and/or the U.S. and other jurisdictions impose additional sanctions on Russia and its supporters, there could be a disruption to the global economy and/or supply chains that

could adversely affect our business. For example, components used in certain of our products use raw materials that may be sourced from Russia and Ukraine; if supply of those materials is disrupted it could adversely impact our ability manufacture and sell those products, which could adversely affect our results of operations.

We may face difficulties in staffing and managing foreign branch operations due to political tensions or cultural differences.

During periods of tension between the governments of the United States and certain other countries, it is often difficult for U.S. companies such as ours to staff and manage operations in such countries. Language and other cultural differences may also inhibit our sales and marketing efforts and create internal communication problems among our U.S. and foreign research and development teams, increasing the difficulty of managing multiple remote locations performing various development, quality assurance, and yield ramp analysis projects.

Currency fluctuations may impact our international sales or expose us to exchange rate risk.

A substantial portion of our international sales are denominated in U.S. dollars. As a result, if the dollar rises in value in relation to foreign currencies, our systems will become more expensive to customers outside the United States and may be less competitive with systems produced by competitors outside the United States. These conditions could negatively impact our international sales. Foreign sales also expose us to collection risk in the event it becomes more expensive for our foreign customers to convert their local currencies into U.S. dollars. Additionally, in the event a larger portion of our revenue becomes denominated in foreign currencies, we would be subject to a potentially significant exchange rate risk, and any failure to sufficiently hedge or otherwise manage these risks could materially and adversely affect our financial condition, results of operations, and liquidity.

Our internal controls with respect to anti-corruption laws may not be effective, and any failure to comply with such laws may result in severe sanctions and liabilities, which may negatively affect our business, operating results and financial condition.

We are subject to the Foreign Corrupt Practices Act of 1977, as amended (the “FCPA”), and other laws that prohibit improper payments or offers of payments to foreign governments and their officials and political parties by U.S. persons and issuers as defined by the statute, for the purpose of obtaining or retaining business. Also, similar worldwide anti-bribery laws, such as the U.K. Bribery Act and Chinese anti-corruption laws, generally prohibit companies and their intermediaries from making improper payments to non-U.S. officials for the purpose of obtaining or retaining business. Some of our distribution partners are located in parts of the world that have experienced governmental corruption to some degree and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. The policies and procedures we have implemented to discourage these practices by our employees, our existing safeguards and any future improvements may prove to be ineffective, and our employees, consultants, sales agents or distributors may engage in conduct for which we might be held responsible. Violations of the FCPA or international anti-corruption laws may result in severe criminal or civil sanctions, and we may be subject to other liabilities, which could negatively affect our business, operating results and financial condition. In addition, the U.S. government may seek to hold us liable for successor liability FCPA violations committed by companies in which we invest or that we acquire. We cannot assure you that our internal control policies and procedures will protect us from reckless or negligent acts committed by our employees, distributors, partners, consultants or agents.

Risks Related to Tax Laws, Financial Markets and the Environment

Changes in tax rates or tax liabilities could affect results.

As a global company, we are subject to taxation in the United States and various other countries. Significant judgment is required to determine and estimate worldwide tax liabilities. Our future annual and quarterly tax rates could be affected by numerous factors, including changes in the (1) applicable tax laws; (2) composition of earnings in countries with differing tax rates; or (3) recoverability of our deferred tax assets and liabilities. Beginning in 2022, the U.S. Tax Cuts and Jobs Act of 2017 (“TCJA”) eliminated the existing option to deduct research and development expenditures and requires taxpayers to amortize them over five years pursuant to IRC Section 174. Although Congress is considering legislation that would defer the amortization requirement to later years, we have no assurance that the provision will be repealed or otherwise modified. The requirement will reduce our cash flows for 2022, unless repealed. In addition, recent proposals to increase the U.S. corporate income tax rate, increase U.S. taxation of international business operations and impose a global minimum tax could have a negative impact on our tax position depending upon the terms of the final enacted legislation. Based on the nature of the uncertainties around specific legislation to be enacted, we have not quantified the impact of this risk. Many countries and

organizations such as the Organization for Economic Cooperation and Development are also actively considering changes to existing tax laws or have proposed or enacted new laws that could increase our tax obligations in countries where we do business or cause us to change the way we operate our business. Any of these developments or changes in federal, state, or international tax laws or tax rulings could adversely affect our effective tax rate and our results of operations.

In addition, we are subject to regular examination of our income tax returns by the Internal Revenue Service and other tax authorities. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. Although we believe our tax estimates are reasonable, there can be no assurance that any final determination will not be materially different from the treatment reflected in our historical income tax provisions and accruals, which could materially and adversely affect our results of operations.

The Organization for Economic Co-operation and Development (“OECD”), released guidance covering various topics, including country-by-country reporting, definitional changes to permanent establishment and Base Erosion and Profit Shifting (“BEPS”), an initiative that aims to standardize and modernize global tax policy. Depending on the final form of guidance adopted by OECD members and legislation ultimately enacted, if any, there may be significant consequences for us due to our international business activities, including, but not limited to, an increase in our tax uncertainty and adverse effects on our provision for income taxes.

Turmoil or fluctuations in the credit markets and the financial services industry may negatively impact our business, results of operations, financial condition or liquidity, and our factoring arrangements may expose us to additional risks.

In the past, global credit markets and the financial services industry have experienced periods of turmoil and upheaval characterized by the tightening of the credit markets, the weakening of the global economy and an unprecedented level of intervention from the United States and other governments. Adverse economic conditions, such as sustained periods of economic uncertainty or a crisis in the financial markets may have a material adverse effect on our liquidity and financial condition if our ability to obtain credit from the capital financial markets, or from trade creditors was impaired. In addition, a worsening economy or an economic crisis could also adversely impact our customers’ ability to finance the purchase of systems from us or our suppliers’ ability to provide us with product, either of which may negatively impact our business and results of operations.

We are subject to various environmental laws and regulations that could impose substantial costs upon us, and failure to comply with such laws and regulations may harm our business, operating results and financial condition.

Some of our operations use substances regulated under various federal, state, local, and international laws governing the environment, including those relating to the storage, use, discharge, disposal, labeling, and human exposure to hazardous and toxic materials. We could incur costs, fines and civil or criminal sanctions, third-party property damage or personal injury claims, or could be required to incur substantial investigation or remediation costs, if we were to violate or become liable under environmental laws. Liability under environmental laws can be joint and several and without regard to comparative fault. Compliance with current or future environmental laws and regulations could restrict our ability to expand our facilities or require us to acquire additional expensive equipment, modify our manufacturing processes, or incur other significant expenses. We may unintentionally violate environmental laws or regulations in the future as a result of human error, equipment failure or other causes. In addition to the potential adverse effects on our business operations of such an event, we are committed to maintaining safe working conditions for our employees and sourcing, manufacturing, and distributing our products in a responsible and environmentally friendly manner, and any failure on our part to do so may cause reputational harm for the Company.

Customer and investor focus on our environmental, social and governance responsibility practices and policies, and related regulatory requirements, may make our supply chain more complex, and any failure to comply with customer or investor guidelines or applicable laws and regulations may adversely affect our relationship with customers and investors or our reputation and results of operations.

There is an increasing focus on corporate environmental, social and governance (“ESG”) responsibility in the semiconductor industry, particularly with OEMs that manufacture consumer electronics. A number of our customers have adopted, or may adopt, procurement policies that include ESG provisions or requirements that their suppliers should comply with, or they may seek to include such provisions or requirements in their procurement terms and conditions. An increasing number of investors are also requiring companies to disclose corporate ESG policies, practices and metrics. Legal and regulatory requirements, as well as investor expectations, on corporate ESG practices and disclosure, are subject to change, can be unpredictable, and may be difficult and expensive for us to comply with, given the complexity of our supply chain and manufacturing. If we are unable to comply, or are unable to cause our suppliers or contract manufacturers to comply, with such policies or provisions or meet the requirements of our customers and our investors, a customer may stop purchasing products

from us or an investor may sell their shares, and may take legal action against us, which could harm our reputation, revenue and results of operations.

Risks Related to Growth and Acquisitions

We may choose to acquire new and complementary businesses, products or technologies instead of developing them ourselves, and we may be unable to complete these acquisitions or may not be able to successfully integrate an acquired business in a cost-effective and non-disruptive manner.

Our success depends on our ability to continually enhance and broaden our product offerings in response to changing technologies, customer demands and competitive pressures. To this end, we have, from time to time, engaged in the process of identifying, analyzing and negotiating possible acquisition transactions, and, from time to time, acquiring one or more businesses, and we expect to continue to do so in the future. We may choose to acquire new and complementary businesses, products, technologies and/or services instead of developing them ourselves. We may, however, face competition for acquisition targets from larger and more established companies with greater financial resources, making it more difficult for us to complete acquisitions. We cannot provide any assurance that we will be successful in consummating future acquisitions on favorable terms or that we will realize the benefits that we anticipate from one or more acquisitions that we consummate. Integrating any business, product, technology or service into our current operations could be expensive and time-consuming and/or disrupt our ongoing business. Further, there are numerous risks associated with acquisitions and potential acquisitions, including, but not limited to:

- diversion of management's attention from day-to-day operational matters and current products and customers;
- lack of synergy or the inability to successfully integrate the new business or to realize expected synergies;
- integration of acquired businesses and their operations, including enterprise resource planning systems, may be costly and time-consuming and divert resources away from other projects;
- failure to commercialize the new technology or business;
- failure to meet the expected performance of the new technology or business;
- failure to retain key employees and customer or supplier relationships;
- lower-than-expected market opportunities or market acceptance of any new products; and
- unexpected reduction of sales of existing products as a result of the introduction of new products.

Our inability to consummate one or more acquisitions on favorable terms, or our failure to realize the intended benefits from one or more acquisitions, could have a material adverse effect on our business, liquidity, financial position and/or results of operations, including as a result of our incurrence of indebtedness and related interest expense and our assumption of unforeseen contingent liabilities. We might need to raise additional funds through public or private equity or debt financings to finance any acquisition. In that event, we could be forced to obtain financing on terms that are not favorable to us and, in the case of equity financing, that result in dilution to our stockholders. In addition, any impairment of goodwill or other intangible assets, amortization of intangible assets, write-down of other assets or charges resulting from the costs of acquisitions and purchase accounting could harm our business and operating results.

If we cannot effectively manage growth, our business may suffer.

Over the long-term, we intend to grow our business by increasing our sales efforts and completing strategic acquisitions. To effectively manage growth, we must, among other things:

- engage, train and manage a larger sales force and additional service personnel;
- expand the geographic coverage of our sales force;
- expand our information systems;
- identify and successfully integrate acquired businesses into our operations; and
- administer appropriate financial and administrative control procedures.

Growth of our business will likely place a significant strain on our management, financial, operational, technical, sales and administrative resources. Any failure to effectively manage our growth may cause our business to suffer and our stock price to decline.

Risks Related to the Global Economy and the Semiconductor Industry

Cyclicality in the semiconductor device industry has led to substantial decreases in demand for our systems in the past and may, from time to time, continue to do so.

Our operating results are subject to significant variation due to global economic conditions and the cyclical nature of the semiconductor device industry. Our business depends upon the capital expenditures of semiconductor device manufacturers, which, in turn, depend upon the current and anticipated market demand for semiconductors and products using semiconductors. The timing, length and severity of the up-and-down cycles in the semiconductor equipment industry are difficult to predict. In recent history, the industry has experienced significant downturns, generally in connection with declines in economic conditions. This cyclical nature of the industry in which we operate affects our ability to accurately predict future revenue and, thus, future expense levels. When cyclical fluctuations result in lower-than-expected revenue levels, operating results may be adversely affected, and cost reduction measures may be necessary in order for us to remain competitive and financially sound. During a down cycle, we must be in a position to adjust our cost and expense structure to prevailing market conditions and to continue to motivate and retain our key employees. In addition, during periods of rapid growth, we must be able to increase manufacturing capacity and personnel to meet customer demand. We can provide no assurance that these objectives can be met in a timely manner in response to industry cycles, and we cannot predict when and to what extent sales may normalize, or when and to what extent gross margins may improve, following any such occurrence. If we fail to respond to industry cycles, our business could be seriously harmed.

We may also experience supplier or customer issues as a result of adverse macroeconomic conditions. If our customers have difficulties in obtaining capital or financing, this could result in lower sales. Customers with liquidity issues could also result in an increase in bad debt expense. These conditions could also affect our key suppliers, which could affect their ability to supply parts and result in delays of our customer shipments.

Our future rate of growth is highly dependent on the development and growth of the market for microelectronic device inspection, lithography and metrology equipment.

We target our products to address the needs of microelectronic device manufacturers for defect inspection, metrology and lithography. If for any reason the market for microelectronic device inspection, lithography or metrology equipment fails to grow in the long term, we may be unable to maintain current revenue levels in the short term and maintain our historical growth in the long term. Growth in the inspection market is dependent to a large extent upon microelectronic manufacturers replacing manual inspection with automated inspection technology. Growth in the metrology market is dependent to a large extent upon new chip designs and capacity expansion of microelectronic manufacturers. Growth in the lithography market is dependent on the development of cost-effective packaging with high fine pitch RDLs, ultimately migrating to multi-die, large, form-factor packages. There can be no assurance that manufacturers will undertake these actions at the rate we expect.

General Risk Factors

Provisions of our charter documents and of Delaware law could discourage potential acquisition proposals and/or delay, deter or prevent a change in control of our company.

Provisions of our certificate of incorporation and by-laws may inhibit changes in control of our company not approved by our Board of Directors. These provisions also limit the circumstances in which a premium can be paid for our common stock and in which a proxy contest for control of our board may be initiated. These provisions provide for:

- a prohibition on stockholder actions through written consent;
- a requirement that special meetings of stockholders be called only by the chairperson of our Board of Directors or majority of our directors;
- advance notice requirements for stockholder proposals and director nominations by stockholders;
- the authority of our Board of Directors to issue, without stockholder approval, preferred stock with such terms as the Board may determine; and
- the authority of our board, without stockholder approval, to adopt a stockholder rights plan.

We are also entitled to avail ourselves of the protections of Section 203 of the Delaware General Corporation Law, which could inhibit changes in control of the Company.

Our stock price is volatile.

The market price of our common stock has fluctuated widely. Consequently, the current market price of our common stock may not be indicative of future market prices, and we may be unable to sustain or increase the value of an investment in our common stock. Factors affecting our stock price may include:

- variations in operating results from quarter to quarter;
- changes in earnings estimates by analysts or our failure to meet analysts' expectations;
- changes in the market price per share of our public company customers;
- market conditions in the semiconductor and other industries into which we sell products;
- general economic conditions;
- political changes, hostilities or natural disasters such as hurricanes and floods;
- the impact of the COVID-19 pandemic, or other future infectious disease pandemics, on the global economy and on our customers, suppliers, employees, and business;
- low trading volume of our common stock; and
- the number of firms making a market in our common stock.

In addition, the stock market has experienced periods of significant price and volume fluctuations. These fluctuations have particularly affected the market prices of the securities of high technology companies like ours. Any such market fluctuations in the future could adversely affect the market price of our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive office building is located at 16 Jonspin Road in Wilmington, Massachusetts. We own our Milpitas and Richardson facilities and lease facilities for corporate, engineering, manufacturing, sales and service-related purposes in the United States and nine other countries - China, Japan, South Korea, Singapore, Taiwan, Malaysia, Vietnam, Germany and France. The following table indicates the location, the general purpose and the square footage of our material facilities. Our leases expire at various times through July 1, 2029.

Location	Facility Purpose	Approximate Square Footage
Wilmington, Massachusetts	Corporate Headquarters, Engineering, Manufacturing and Service	77,500
Milpitas, California	Engineering, Manufacturing, Service and Administration	134,000
Budd Lake, New Jersey	Engineering, Service and Administration	49,000
Bloomington, Minnesota	Engineering, Manufacturing, Service and Administration	98,600
Bend, Oregon	Engineering and Service	12,700
Hillsboro, Oregon	Engineering and Service	10,000
Richardson, Texas	Engineering	21,000
Snoqualmie, Washington	Engineering and Service	20,300
Tucson, Arizona	Engineering, Manufacturing and Service	18,900
Taiwan	Sales and Service	37,700
China	Sales, Service and Engineering	34,300
South Korea	Sales and Service	21,900
Japan	Sales and Service	9,000
Singapore	Sales and Service	9,800

We also lease office space for other smaller sales and service offices in several locations throughout the world.

We believe that our existing facilities and capital equipment are adequate to meet our current requirements and that suitable additional or substitute space is available on commercially reasonable terms if needed.

Item 3. Legal Proceedings.

The information set forth under the heading “Legal Matters” in Note 8, “Commitments and Contingencies” to the Consolidated Financial Statements is incorporated herein by reference.

Item 4. Mine Safety Disclosures.

None.

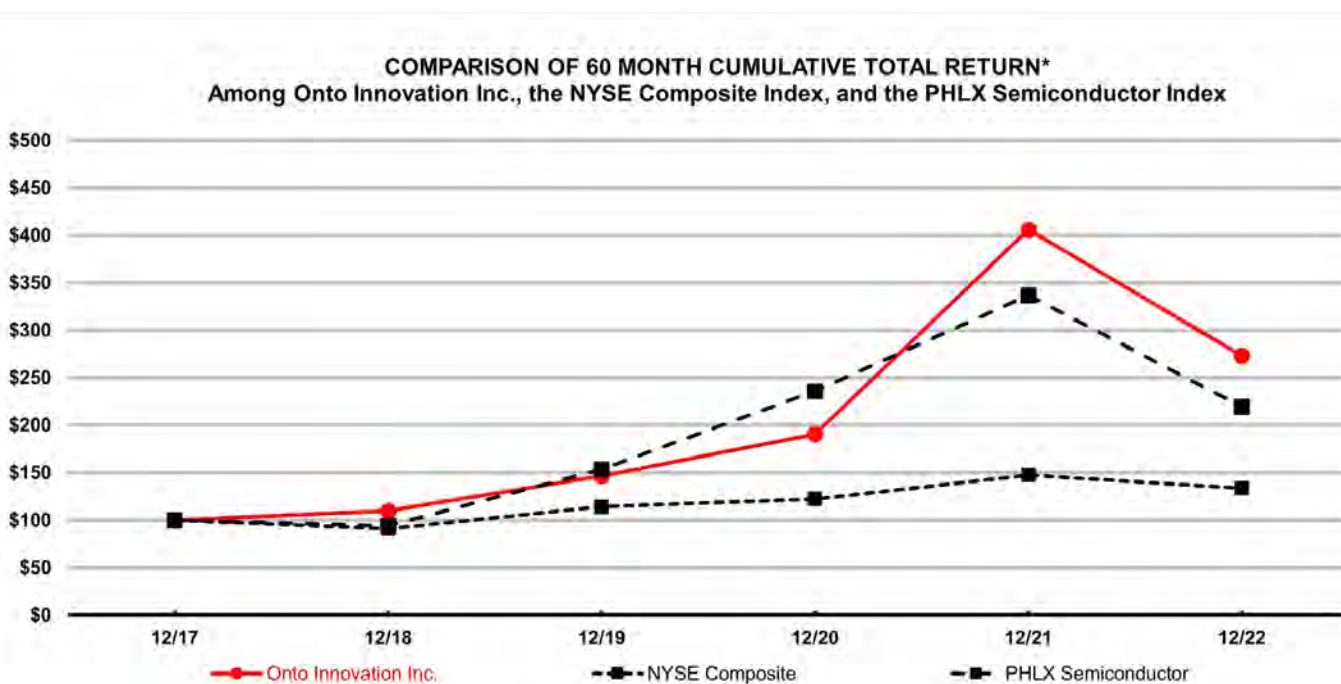
PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our common stock, \$0.01 par value per share, is quoted on the New York Stock Exchange (“NYSE”) under the symbol “ONTO.” As of February 6, 2023, there were approximately 113 stockholders of record. Prior to the 2019 Merger, Nanometrics’ common stock was quoted on the Nasdaq Global Select Market under the symbol “NANO” and Rudolph’s common stock was quoted on the NYSE under the symbol “RTEC.” Set forth below is a line graph comparing the annual percentage change in the cumulative return to the stockholders of the Company’s common stock with the cumulative return of the NYSE Composite Index and the industry specific index, PHLX Semiconductor Index, for the period commencing on December 31, 2017 and ending on December 31, 2021. Historical data for Onto Innovation in the line graph for the period commencing on December 31, 2017 and ending on October 25, 2019 reflects the cumulative return to the stockholders of Nanometrics.

The information contained in the performance graph shall not be deemed to be “soliciting material” or to be “filed” with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that the Company specifically incorporates it by reference into such filing.

The graph assumes that \$100 was invested on December 31, 2017 in the Company’s common stock and in each index. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.



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	12/17	12/18	12/19	12/20	12/21	12/22
Onto Innovation Inc.....	100.0	109.7	146.6	190.7	406.0	273.1
NYSE Composite.....	100.0	91.1	114.3	122.3	147.5	133.8
PHLX Semiconductor.....	100.0	94.0	153.4	235.7	336.7	219.3

We have never declared or paid a cash dividend on our common stock and we currently do not intend to do so. The declaration of any future dividends by us is within the discretion of our Board of Directors and will be dependent on our earnings, financial condition and capital requirements as well as any other factors deemed relevant by our Board of Directors.

In November 2020, the Onto Innovation Board of Directors approved a share repurchase authorization, which allows us to repurchase up to \$100 million worth of shares of our common stock. Repurchases may be made through both public market and private transactions from time to time. During the twelve months ended December 31, 2022, we repurchased 1.0 million,

shares of common stock under the repurchase authorization and those shares were subsequently retired. At December 31, 2022, there was \$34.8 million available for future share repurchases under the share repurchase authorization.

For further information, see Note 16 in the accompanying Notes to the Consolidated Financial Statements included in this Form 10-K.

In addition to our share repurchase program, we withhold common stock shares associated with net share settlements to cover tax withholding obligations upon the vesting of restricted stock unit awards and stock option exercises under the Company's equity incentive program. During the three and twelve months ended December 31, 2022, we withheld 4 thousand and 107 thousand shares through net share settlements, respectively. For the three and twelve month periods ended December 31, 2022, net share settlements cost \$0.3 million and \$8.9 million, respectively. Please refer to Note 10 of the Notes to the Consolidated Financial Statements included in this Form 10-K for further discussion regarding our equity incentive plan.

The following table provides details of common stock purchased during the three month period ended December 31, 2022 (in thousands, except per share data):

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Maximum Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program
October 2, 2022 - October 31, 2022	667	\$ 62.15	665	\$ 47,137
November 1, 2022 - November 30, 2022	109	\$ 66.71	105	\$ 39,961
December 1, 2022 - December 31, 2022	79	\$ 66.81	76	\$ 34,773
Three Months Ended December 31, 2022	<u>855</u>	<u>\$ 63.16</u>	<u>846</u>	

¹ Includes shares withheld through net share settlements.

Item 6. [Reserved]

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

Executive Summary

We are a worldwide leader in the design, development, manufacture and support of process control tools that perform macro-defect inspection and metrology, lithography systems, and process control analytical software used by semiconductor and advanced packaging device manufacturers. We deliver comprehensive solutions throughout the semiconductor fabrication process with our families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down costs and time to market of their devices. We provide process and yield management solutions used in both wafer processing facilities, often referred to as “front-end” manufacturing, and in device packaging and test facilities, commonly referred to as “back-end” manufacturing. Our advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, or factory-wide suites to enhance productivity and achieve significant cost savings.

Our principal market is semiconductor capital equipment. Semiconductors packaged as integrated circuits, or “chips”, are used in consumer electronics, server and enterprise systems, mobile computing (including smart phones and tablets), data storage devices, and embedded automotive and control systems. Our core focus is the measurement and control of the structure, composition, and geometry of semiconductor devices as they are fabricated on silicon wafers to improve device performance and manufacturing yields.

Our products and services are used by our customers who manufacture many types of integrated circuits for a multitude of applications, each having unique manufacturing challenges. This includes integrated circuits to enable information processing and management (logic integrated circuits), memory storage (NAND, 3D-NAND, NOR, and DRAM), analog devices (e.g., Wi-Fi and 5G radio integrated circuits, power devices), MEMS sensor devices (accelerometers, pressure sensors, microphones), image sensors, and other end markets including components for hard disk drives, LEDs, and power management.

The semiconductor and electronics industries have also been characterized by constant technological innovation. We believe that, over the long term, our customers will continue to invest in advanced technologies and new materials to enable smaller design rules and higher density applications that fuel demand for process control equipment.

The following table summarizes certain key financial information for the periods indicated below (in thousands, except per share and percent data):

	Year Ended	
	December 31, 2022	January 1, 2022
Revenue	\$ 1,005,183	\$ 788,899
Gross profit	\$ 539,221	\$ 429,086
Gross profit as a percent of revenue	54%	54%
Total operating expenses	\$ 302,507	\$ 272,679
Net income	\$ 223,334	\$ 142,349
Diluted earnings per share	\$ 4.49	\$ 2.86

- In fiscal 2022, revenue increased 27% compared to fiscal 2021, primarily due to an increase in sales to memory customers in advanced nodes applications and OSAT customers in specialty device and advanced packaging applications, partially offset by an increase in sales to foundry customers for advanced node applications.
- Gross margin as a percentage of revenue was relatively flat at 54% for both fiscal 2022 and 2021 years. This was primarily driven by increased revenue volume, offset by unfavorable product mix and increased manufacturing costs due to inflationary pressures.
- The increase in operating expenses in fiscal 2022 compared to fiscal 2021 was primarily due to increases in research and development, and sales and marketing expenses related to increased headcount, travel expenses and the write-off of purchased in process research and development assets.

Our cash, cash equivalents and marketable securities balance increased to \$547.8 million at the end of fiscal 2022 compared to \$511.3 million at the end of fiscal 2021. This increase was primarily the result of \$136.7 million of cash generated from operating activities. This source of cash was partially offset of \$65.3 million of cash used for the purchase of our common stock, \$18.4 million used for capital expenditures and \$4.6 million used for the purchase of acquired research and development assets.

The demand environment, particularly in memory and advanced nodes, has weakened, and as a result, we expect a reduction in wafer fabrication equipment spending in fiscal year 2023. We expect the regulatory conditions, and the slowing economic environment, to negatively impact our financial results in fiscal year 2023. We believe that the semiconductor industry macroeconomics have not changed and anticipate that the industry's long-term growth projections will normalize, but in the short-term, the industry is seeing volatility and disruption due to inflationary pressures, geopolitical unrest and the lingering effects of the pandemic.

Key Events

Expanded U.S. Export Controls

In October 2022, BIS issued the October 2022 Export Controls related to the Chinese semiconductor manufacturing, advanced computing, and supercomputer industries. The October 2022 Export Controls include restrictions on certain semiconductor integrated circuits, commodities containing such integrated circuits, and semiconductor manufacturing equipment and restrict the ability of U.S. persons to support the development or production of integrated circuits at certain semiconductor fabrication facilities in China. The primary impact of the October 2022 Export Controls on Onto Innovation is that we are now required to obtain a license to do business with certain Chinese customers that produce certain advanced computing integrated circuits. The October 2022 Export Controls also expanded the scope of foreign-produced items subject to license requirements to entities on the Entity List that are located in China. In 2022, BIS also added a number of Chinese companies to the Unverified List and Entity List, including Yangtze Memory Technologies Co., Ltd.

We may experience a temporary loss of revenues while we apply for licenses needed to continue doing business with certain customers affected by the new export rules. A failure to obtain required license could result in a reduction of anticipated revenues. We have assessed and will continue to assess the impact of the October 2022 Export Controls and the addition of new entities to the Unverified List and Entity List on our business, financial condition and results of operations. We have estimated these new restrictions will negatively impact our revenue by approximately \$80.0 million for fiscal year 2023.

Impact of COVID-19 and the Global Semiconductor Supply Shortage

To date, the COVID-19 pandemic has disrupted the way that we conduct business but has not had a material adverse impact on our operations. We have experienced some delays in customer deliveries. Additionally, we are impacted by the global shortage in electronic components and inflationary pressures. Our supply chain is strained in some cases as the availability of materials, logistics and freight options are challenging in many jurisdictions, which have resulted in long lead times, rising prices and supply chain disruptions. We expect supply chain shortages as well as inflationary cost pressures to persist into fiscal year 2023. While demand for our products has remained strong, further disruptions to our supply chain in connection with the sourcing of materials, inflationary pressures, equipment and engineering support, and services from geographic areas that have been impacted by COVID-19 may pose risks to our business, results of operations and financial condition. We are continuing to serve our customers while taking appropriate precautionary measures to provide a safe work environment for our employees and customers.

For a discussion of certain risks related to the international nature of our business and our operations and the COVID-19 pandemic and the resulting economic impact and supply chain issues, see Part I, Item 1A – Risk Factors of this 2022 Form 10-K.

Results of Operations

The following table sets forth, for the periods indicated, our results of operations as percentages of our revenue. Our results of operations are reported as one business segment.

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Revenue	100.0%	100.0%	100.0%
Cost of revenue.....	46.4%	45.6%	50.0%
Gross profit	53.6%	54.4%	50.0%
Operating expenses:.....			
Research and development	11.2%	12.2%	15.2%
Sales and marketing	6.5%	7.3%	8.6%
General and administrative	6.9%	8.6%	11.7%
Amortization	5.5%	6.5%	9.7%
Total operating expenses	30.1%	34.6%	45.2%
Operating income.....	23.5%	19.8%	4.8%
Interest income, net.....	0.5%	0.1%	0.5%
Other expense, net	—%	(0.2)%	(0.5)%
Income before provision (benefit) for income taxes	24.0%	19.7%	4.8%
Provision (benefit) for income taxes	1.8%	1.7%	(0.7)%
Net income.....	22.2%	18.0%	5.5%

Results of Operations for 2022, 2021 and 2020

Revenue. Our revenue is derived from the sale of our systems and software, spare parts, and services. Our revenue was \$1,005.2 million, \$788.9 million and \$556.5 million for the years ended December 31, 2022, January 1, 2022 and December 26, 2020, respectively. This represents an increase of 27.4% from 2021 to 2022 and an increase of 41.8% from 2020 to 2021.

The following table lists, for the periods indicated, the different sources of our revenue in dollars (thousands) and as percentages of our total revenue:

	Year Ended					
	December 31, 2022		January 1, 2022		December 26, 2020	
Systems and software	\$ 865,707	86%	\$ 669,114	85%	\$ 450,459	80%
Parts	84,266	8%	72,753	9%	65,444	12%
Services.....	55,210	6%	47,032	6%	40,593	8%
Total revenue	<u>\$1,005,183</u>	<u>100%</u>	<u>\$ 788,899</u>	<u>100%</u>	<u>\$ 556,496</u>	<u>100%</u>

Total systems and software revenue increased \$196.6 million for the year ended December 31, 2022, as compared to the year ended January 1, 2022, primarily due to an increase in overall demand for our products from semiconductor industry customers, particularly in advanced nodes applications, and specialty devices and advanced packaging. The year-over-year change in systems revenue was primarily due to an increase in units shipped in our metrology and inspection product lines. Parts and services revenue is generated from part sales, maintenance service contracts, and system upgrades, as well as time and material billable service calls. During fiscal 2022, the increase in parts and services revenue was primarily due to increased spending by our customers on system upgrades and repairs of existing systems.

Total systems and software revenue increased \$218.7 million for the year ended January 1, 2022, as compared to the year ended December 26, 2020, primarily due to an increase in overall demand for our products from semiconductor industry customers, particularly in specialty devices and advanced packaging and advanced nodes applications, and the inclusion of \$22.3 million of revenue from the Inspectrology acquisition. The year-over-year change in systems revenue was primarily due to an increase in units shipped in our metrology and inspection product lines. Parts and services revenue is generated from part sales, maintenance service contracts, and system upgrades, as well as time and material billable service calls. During fiscal 2021, the increase in parts and services revenue was primarily due to increased spending by our customers on system upgrades and repairs of existing systems.

The following table sets forth, for the periods indicated, our revenue by geographic region as percentages of our revenue.

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Revenue	\$ 1,005,183	\$ 788,899	\$ 556,496
China.....	25%	19%	22%
South Korea	22%	20%	16%
Taiwan	20%	25%	22%
United States.....	12%	16%	15%
Europe.....	8%	8%	9%
Japan	6%	8%	11%
Southeast Asia	7%	4%	5%
Total revenue	100%	100%	100%

The overall Asia region continues to account for a majority of our revenues as a substantial amount of the worldwide capacity investments for semiconductor manufacturing continue to occur in this region and we expect that trend to continue.

Gross Profit. Our gross profit has been and will likely continue to be affected by a variety of factors, including manufacturing efficiencies, provision for excess and obsolete inventory, pricing by competitors or suppliers, new product introductions, production volume, inventory step-up from purchase accounting, customization and reconfiguration of systems, international and domestic sales mix, system and software product mix, and parts and services margins. Our gross profit was \$539.2 million, \$429.1 million and \$278.5 million for the years ended December 31, 2022, January 1, 2022, and December 26, 2020, respectively. Our gross profit represented 53.6%, 54.4% and 50.0% for the years ended December 31, 2022, January 1, 2022, and December 26, 2020, respectively. The decrease in gross profit as a percentage of revenue from 2021 to 2022 was primarily due to continued supply chain cost increases in the 2022 fiscal period, partially offset by higher factory utilization associated with increased sales volume during the 2022 fiscal period. The increase in gross profit as a percentage of revenue from 2020 to 2021 was primarily due to higher factory utilization associated with stronger sales levels in the 2021 fiscal period, inventory reserve charges for a discontinued product line and the sale of inventory written-up to fair value upon the 2019 Merger in the 2020 fiscal period. This increase in gross profit was partially offset by supply chain cost increases in the 2021 fiscal period.

Operating Expenses.

Our operating expenses consist of:

- **Research and Development.** We believe that it is critical to continue to make substantial investments in research and development to ensure the availability of innovative technology that meets the current and projected requirements of our customers' most advanced designs. We have maintained, and intend to continue, our commitment to investing in research and development in order to continue to offer new products and technologies. Accordingly, we devote a significant portion of our technical, management and financial resources to research and development programs. Research and development expenditures consist primarily of salaries and related expenses of employees engaged in research, design and development activities. They also include consulting fees, the cost of related supplies and legal costs to defend our intellectual property. Our research and development expenses were \$112.0 million, \$96.1 million and \$84.6 million in fiscal years 2022, 2021 and 2020, respectively. The year-over-year dollar increase from 2021 through 2022 was primarily due to increased costs related to new product initiatives, increased headcount and the write-off of purchased in process research and development assets. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased costs related to new product initiatives and increased variable compensation plan costs. We continue to maintain our commitment to investing in new product development and enhancement to existing products.
- **Sales and Marketing.** Sales and marketing expenses are primarily comprised of salaries and related costs for sales and marketing personnel, as well as commissions and other non-personnel related expenses. Our sales and marketing expenses were \$65.7 million, \$57.2 million and \$48.1 million in fiscal years 2022, 2021 and 2020, respectively. The year-over-year dollar increase from 2021 through 2022 was primarily due to increased headcount, including variable compensation plan costs and higher travel related expenses. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased personnel costs, including variable compensation plan costs.

- *General and Administrative.* General and administrative expenses are primarily comprised of salaries and related costs for general administrative personnel, as well as other non-personnel related expenses. Our general and administrative expenses were \$69.6 million, \$68.0 million and \$65.3 million in fiscal years 2022, 2021 and 2020, respectively. The year-over-year dollar increase from 2021 through 2022 was primarily due to increased headcount, including variable compensation plan costs. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased personnel costs, including variable compensation plan costs.
- *Amortization of Identifiable Intangible Assets.* Amortization of identifiable intangible assets, primarily purchased technology, was \$55.3 million, \$51.4 million and \$53.7 million in fiscal years 2022, 2021 and 2020, respectively. The year-over-year dollar increase from 2021 through 2022 was primarily due to a full year of amortization being included in the 2022 fiscal period for IPR&D that became classified as identifiable intangible assets in second half of 2021. The year-over-year dollar decrease from 2020 through 2021 was primarily due to certain intangible assets becoming fully amortized, partially offset by amortization for newly acquired intangible assets in 2021.

Interest income, net. In fiscal years 2022, 2021 and 2020, net interest income was \$5.0 million, \$1.2 million and \$2.9 million, respectively. The increase in net interest income from 2021 to 2022 was due to higher average balances and higher interest rates during the 2022 period. The decrease in net interest income from 2020 to 2021 was due to lower interest rates during the 2021 period.

Income taxes. The following table provides details of income tax (dollars in millions):

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Income before provision (benefit) for income taxes	\$ 241.6	\$ 155.7	\$ 26.9
Provision (benefit) for income taxes	\$ 18.3	\$ 13.3	\$ (4.2)
Effective tax rate	7.6%	8.6%	(15.5)%

The income tax provision differs from the federal statutory income tax rate of 21% for 2022 primarily due to a benefit related to the Foreign Derived Intangible Income Deduction (“FDII”) of \$25.4 million, excess benefits related to stock compensation of \$3.5 million, tax benefits for research and development credits of \$7.1 million, and a one-time benefit of \$1.5 million related to the recognition of a tax benefit associated with the lapse of a statute of limitations. These benefits were partially offset by the inclusion of U.S. tax on foreign source income of \$1.4 million and non-deductible officer’s compensation of \$1.9 million.

The income tax provision differs from the federal statutory income tax rate of 21% for 2021 primarily due to a benefit related to the Foreign Derived Intangible Income Deduction (“FDII”) of \$11.1 million, excess benefits related to stock compensation of \$3.8 million, tax benefits for research and development credits of \$3.6 million, tax benefit from foreign income being taxed at lower rates of \$3.8 million, and a one-time benefit of \$2.0 million from a reduction to recorded tax reserve related to a lapse of statute of limitations. These benefits were partially offset by the inclusion of U.S. tax on foreign source income of \$1.7 million.

The income tax provision differs from the federal statutory income tax rate of 21% for 2020 primarily due to a benefit related to the FDII of \$4.3 million, tax benefits for research and development credits of \$4.9 million, and a one-time benefit related to the closure of an IRS audit for tax years 2016 through 2018 of \$2.9 million. These benefits were partially offset by the inclusion of Global Intangible Low-Taxed Income (“GILTI”) of \$2.0 million.

Our future effective income tax rate depends on various factors, such as future impacts of the Tax Act, possible further tax legislation, the geographic composition of our pre-tax income, the amount of our pre-tax income as business activities fluctuate, non-deductible expenses incurred in connection with acquisitions and research and development credits as a percentage of aggregate pre-tax income.

On March 27, 2020, the “Coronavirus Aid, Relief and Economic Security Act” (the “CARES Act”) was enacted. The CARES Act includes provisions relating to refundable payroll tax credits, deferral of the employer portion of certain payroll taxes, net operating loss carryback periods, alternative minimum tax credit refunds, modifications to the net interest deduction limitations and technical corrections to tax depreciation methods for qualified improvement property. The Company filed a claim for a refund of prior years’ income taxes paid under the provisions of the CARES Act which resulted in a tax benefit of \$1.9 million as the 2019 net operating loss was carried back to a year with higher tax rates.

Unanticipated changes in our tax provisions or exposure to additional tax liabilities could affect our profitability and cash flow. We are subject to income and other taxes in the United States and foreign jurisdictions. Changes in applicable U.S. (federal, state and local) or foreign tax laws and regulations, or their interpretation and application, including the possibility of retroactive effect, have affected and could continue to affect our tax expense and profitability as, for example, they did in 2017

upon passage of the Tax Cuts and Jobs Act. In addition, the final determination of any state or federal tax audits or related litigation, in particular with regard to the sustainment of our positions on research credits and timing of revenue recognition under IRC Section 451(b), could be materially different from our historical income tax provisions and accruals.

Beginning in 2022, the TCJA eliminates the existing option to deduct research and development expenditures and requires taxpayers to amortize them over five years for U.S. incurred expenditures and fifteen years for non-U.S. expenditures pursuant to IRC Section 174. Although Congress has considered legislation that would defer the amortization requirement to later years, we have no assurance that the provision will be repealed or otherwise modified. If the requirement is not modified, it will continue to reduce our cash flows for 2023. Changes in our tax provisions or an increase in our tax liabilities, whether due to changes in applicable laws and regulations, the interpretation or application thereof, or a final determination of tax audits or litigation or agreements, could have a material adverse effect on our financial position, results of operations and/or cash flows.

Liquidity and Capital Resources

At December 31, 2022, we had \$547.8 million of cash, cash equivalents and marketable securities and \$974.3 million in working capital. At January 1, 2022, we had \$511.3 million of cash, cash equivalents and marketable securities and \$793.6 million in working capital.

Net cash and cash equivalents provided by operating activities for the years ended December 31, 2022, January 1, 2022 and December 26, 2020 totaled \$136.7 million, \$175.3 million and \$106.0 million, respectively.

- Cash provided by operating activities decreased in fiscal 2022 compared to fiscal 2021 primarily due to an increase in inventories of \$36.7 million, an increase in accounts receivable of \$37.3 million, an increase in income taxes of \$6.3 million, and an increase in prepaid expenses and other assets of \$4.2 million, partially offset by higher net income, adjusted to exclude the effect of non-cash charges, of \$67.3 million, an increase in accounts payable of \$11.0 million and an increase in accrued and other liabilities of \$10.4 million.
- Cash provided by operating activities increased in fiscal 2021 compared to fiscal 2020 primarily due to higher net income, adjusted to exclude the effect of non-cash charges of \$91.2 million, an increase in accrued and other liabilities of \$3.8 million and an increase in income taxes of \$2.5 million, partially offset by an increase in inventories of \$14.7 million, an increase in prepaid expenses and other assets of \$12.2 million and an increase in accounts receivable of \$2.0 million.

Net cash and cash equivalents used in investing activities for the years ended December 31, 2022, January 1, 2022 and December 26, 2020 was \$55.7 million, \$141.8 million and \$48.6 million, respectively.

- During the year ended December 31, 2022, net cash used in investing activities included purchases of marketable securities, net of proceeds from sales of marketable securities of \$32.6 million, purchase of business net of cash acquired of \$4.6 million, and purchases of property, plant and equipment of \$18.4 million.
- During the year ended January 1, 2022, net cash used in investing activities included purchases of marketable securities, net of proceeds from sales of marketable securities of \$106.0 million, purchase of business net of cash acquired of \$23.8 million, and purchases of property, plant and equipment of \$12.0 million.
- During the year ended December 26, 2020, net cash used in investing activities included purchases of marketable securities, net of proceeds from sales of marketable securities of \$47.6 million and purchases of property, plant and equipment of \$3.8 million, partially offset by cash received from convertible note receivable of \$2.8 million.

Net cash used in financing activities was \$68.4 million and \$53.7 million for the year ended December 31, 2022 and December 26, 2020, respectively. For the year ended January 1, 2022 financing activities provided \$2.7 million.

- During the year ended December 31, 2022, financing activities primarily used cash for repurchases of common stock of \$65.3 million, tax payments related to shares withheld to satisfy employee tax obligations in connection with the vesting of awards under share-based compensation plans of \$8.9 million and payments related to contingent consideration for acquired business of \$2.3 million, partially offset by proceeds from sale of shares through share-based compensation plans of \$8.1 million.
- During the year ended January 1, 2022, financing activities provided cash from shares issued through share-based compensation plans of \$10.1 million, partially offset by cash used to pay taxes related to shares withheld to satisfy employee tax obligations in connection with the vesting of awards under share-based compensation plans of \$7.4 million.
- During the year ended December 26, 2020, financing activities used cash primarily to purchase shares of our

common stock under the share repurchase authorization of \$52.0 million.

From time to time, we evaluate whether to acquire new or complementary businesses, products or technologies. We may fund all of or a portion of the price of these investments or acquisitions in cash, stock, or a combination of cash and stock. In the first quarter of 2021, the Company acquired Inspectrology, LLC for \$24.0 million in cash.

In November 2020, the Onto Innovation Board of Directors approved a share repurchase authorization, which allows us to repurchase up to \$100 million worth of shares of our common stock. Repurchases may be made through both public market and private transactions from time to time. During the twelve months ended December 31, 2022, we repurchased 1.0 million shares of common stock under this repurchase authorization and those shares were subsequently retired. At December 31, 2022, there was \$34.7 million available for future share under this share repurchase authorization.

For further information regarding our share repurchases, see Note 16 in the accompanying Notes to the Consolidated Financial Statements included in this Form 10-K.

We have a credit agreement with a bank that provides for a line of credit that is secured by the marketable securities we have with the bank. We are permitted to borrow up to 70% of the value of eligible securities held at the time the line of credit is accessed. As of December 31, 2022, the available line of credit was approximately \$108.4 million with an available interest rate of 6.0%. The credit agreement is available to us until such time that either party terminates the arrangement at its discretion. To date, we have not utilized the line of credit.

Our future capital requirements will depend on many factors, including the timing and amount of our revenue and our investment decisions, which will affect our ability to generate additional cash. We expect that our existing cash, cash equivalents, marketable securities and availability under our line of credit will be sufficient to meet our anticipated cash requirements for working capital, capital expenditures and other cash needs for the next 12 months following the filing of this Form 10-Q. Thereafter, if cash generated from operations and financing activities is insufficient to satisfy our working capital requirements, we may seek additional funding through bank borrowings, sales of securities or other means. In addition, a reduction in or volatility with respect to our stock price or a general market downturn could materially impact our ability to sell securities on favorable terms or at all. There can be no assurance that we will be able to raise any such capital on terms acceptable to us or at all.

Contractual Obligations

The following table summarizes our significant contractual obligations at December 31, 2022, and the effect such obligations are expected to have on our liquidity and cash flows in future periods. We are currently unable to provide a reasonably reliable estimate of the amount or periods when cash settlement of this liability may occur (dollars in thousands).

	Payments due by period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating lease obligations.....	\$ 25,232	\$ 6,876	\$ 10,946	\$ 4,891	\$ 2,519
Purchase obligations ⁽¹⁾	417,148	348,984	68,165	—	—
Total	<u>\$ 442,380</u>	<u>\$ 355,860</u>	<u>\$ 79,111</u>	<u>\$ 4,891</u>	<u>\$ 2,519</u>

⁽¹⁾ Represents our agreements to purchase goods and services consisting of outstanding purchase orders for goods and services.

Critical Accounting Policies and Estimates

Management's discussion and analysis of our financial condition and results of operations are based upon our Consolidated Financial Statements included in this Form 10-K, which have been prepared in accordance with accounting principles generally accepted in the United States. We review the accounting policies we use in reporting our financial results on a regular basis. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, accounts receivable, inventories, business acquisitions, intangible assets, share-based payments, income taxes and warranty obligations. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Results may differ from these estimates due to actual outcomes being different from those on which we based our assumptions. These estimates and judgments are regularly reviewed by management on an ongoing basis at the end of each quarter prior to the public release of our financial results. We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our Consolidated Financial Statements.

Revenue Recognition. Revenue is recognized when control of the promised goods or services are transferred to our customers in an amount that reflects the consideration we expect to be entitled to receive in exchange for those goods or services. We account for a contract when it has approval and commitment from both parties, the rights of the parties and payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

We account for shipping and handling activities as the fulfillment of a promise to transfer goods to the customer and therefore record these activities under the caption "Cost of revenue." Sales tax and any other taxes collected concurrent with revenue producing activities are excluded from revenue. Incidental items that are immaterial in the context of the contract are recognized as expense.

Contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or the expected cost-plus margin.

Revenue from systems is recognized when we transfer control of the product to our customer. To indicate transfer of control, we must have a present right to payment, legal title must have passed to the customer and the customer must have the significant risks and rewards of ownership. We generally transfer control for system sales when the customer or the customer's agent picks up the system at our facility. We provide an assurance warranty on our systems for a period of twelve to fourteen months against defects in material and workmanship. We provide for the estimated cost of product warranties at the time revenue is recognized.

Depending on the terms of the systems arrangement, we may also defer the recognition of a portion of the consideration expected to be received because we have to satisfy a future obligation (e.g., installation and extended warranties). We use an observable price to determine the standalone selling price for separate performance obligations or a cost-plus margin approach when one is not available.

Revenue from software licenses, which is primarily sold without systems, is recognized upfront at the point in time when the software is made available to the customer. Software licenses provide the customer with limited rights to use the software. Revenue from licensing support and maintenance is recognized as the support and maintenance are provided, which is over the contract period.

Revenue from parts is recognized when we transfer control of the product, which typically occurs when we ship the product from our facilities to the customer.

Revenue from services primarily consists of service contracts, which provide additional maintenance coverage beyond our assurance warranty on our products, service labor, consulting and training. Revenue from service contracts is recognized ratably over the term of the service contract. Revenue from service labor and consulting is recognized as services are performed.

We record contract liabilities when the customer has been billed in advance of completing our performance obligations. These amounts are recorded as deferred revenue in the Consolidated Balance Sheets.

Business combinations. We account for business combinations under the acquisition method of accounting, which requires us to recognize separately from goodwill the assets acquired, and the liabilities assumed at their acquisition date fair values. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recognized in our consolidated statements of operations. Accounting for business combinations requires our management to make significant estimates and assumptions, especially at the acquisition date including our estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Estimates in valuing certain acquired intangible assets under the income approach include growth in future expected cash flows from product sales, acquired technologies, technology obsolescence rates, estimated cash flows from the projects when completed and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

Excess and Obsolete Inventory. Inventories are stated at the lower of cost or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less predictable costs of completion, disposal and transportation. Cost is generally determined on a first-in, first-out basis, and includes material, labor and manufacturing overhead costs. We review and set standard costs as needed, but at a minimum, on an annual basis, at current manufacturing costs in order to

approximate actual costs. We maintain reserves for our excess and obsolete inventory equal to the difference between the cost of inventory and the estimated market value based upon assumptions about future product lifecycles, product demand and market conditions. If actual product lifecycles, product demand and market conditions are less favorable than those originally projected by management, additional inventory write-downs may be required.

Goodwill and Indefinite Lived Intangible Assets. Goodwill is tested for impairment during the fourth quarter, or whenever events or circumstances indicate that its carrying value may not be recoverable. Goodwill impairment is tested at the reporting unit level, which is defined as an operating segment or one level below the operating segment. The Company has three reporting units and one operating segment. Goodwill is reviewed for impairment using either a qualitative assessment or a quantitative goodwill impairment test. If the Company chooses to perform a qualitative assessment and determine the fair value more likely than not exceeds the carrying value, no further evaluation is necessary. When the Company performs the quantitative goodwill impairment test, it compares fair value to carrying value, which includes goodwill. If fair value exceeds carrying value, the goodwill is not considered impaired. If the carrying value is higher than the fair value, the difference would be recognized as an impairment loss.

Intangible assets with indefinite lives, including in-process research and development (“IPR&D”), are tested for impairment if impairment indicators arise and, at a minimum, annually. However, the Company is permitted to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that an indefinite-lived intangible asset’s fair value is less than its carrying amount. Otherwise, no further impairment testing is required. The indefinite-lived intangible asset impairment test consists of a one-step analysis that compares the fair value of the intangible asset with its carrying amount. If the carrying amount of an intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. We consider many factors in evaluating whether the value of intangible assets with indefinite lives may not be recoverable, including, but not limited to estimates of future cash flows, the discount rate, terminal growth rates, general economic conditions, our outlook and market performance of our industry and recent and forecasted financial performance.

There was no impairment of goodwill or IPR&D for the years presented.

Long-Lived Assets and Finite-Lived Acquired Intangible Assets. We periodically review long-lived assets, other than goodwill, for impairment whenever changes in events or circumstances indicate that the carrying amount of an asset may not be recoverable. Assumptions and estimates used in the determination of impairment losses, such as future cash flows and disposition costs, may affect the carrying value of long-lived assets and the impairment of such long-lived assets, if any, could have a material effect on our consolidated financial statements. No such indicators were noted in 2022, 2021 or 2020.

Accounting for Income Taxes. As part of the process of preparing our consolidated financial statements, we are required to estimate our current tax exposure together with our temporary differences resulting from differing treatment of items for tax and accounting purposes. These temporary differences result in deferred tax assets and liabilities, which are included within our consolidated balance sheet. We must then assess the likelihood that our deferred tax assets will be recovered from future taxable income and to the extent we believe that recovery is not likely, we must establish a valuation allowance. Management judgment is required in determining our provision for income taxes and any valuation allowance recorded against our deferred tax assets. The need for a valuation allowance is based on our estimates of taxable income by jurisdiction in which we operate and the period over which our deferred taxes will be recoverable. In the event that actual results differ from these estimates or we adjust these estimates in future periods, we may need to adjust the valuation allowance, which could materially impact our financial position and results of operations. At December 31, 2022 and January 1, 2022, we had recorded valuation allowances of \$11.8 million and \$10.9 million on certain of our deferred tax assets to reflect the deferred tax assets at the net amount that is more likely than not to be realized. We evaluated the realizability of the deferred tax assets based on positive earnings as well as the projected earnings in future years and believe it is more likely than not that the substantial majority of our deferred tax asset will be realized in the future years. We will continue to monitor the realizability of the deferred tax assets and evaluate the valuation allowance.

We recognize liabilities for uncertain tax positions based on a two-step process. The first step requires us to determine if the weight of available evidence indicates that the tax position has met the threshold for recognition; therefore, we must evaluate whether it is more likely than not that the position will be sustained on audit, including resolution of any related appeals or litigation processes. The second step requires us to measure the tax benefit of the tax position taken, or expected to be taken, in an income tax return as the largest amount that is more than 50% likely of being realized when effectively settled. This measurement step is inherently difficult and requires subjective estimations of such amounts to determine the probability of various possible outcomes. We reevaluate the uncertain tax positions each quarter based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues, and new audit activity. Such a change in recognition or measurement could result in the recognition of a tax benefit or an additional charge to the tax provision in the period.

Although we believe the measurement of our liabilities for uncertain tax positions is reasonable, no assurance can be given that the final outcome of these matters will not be different than what is reflected in the historical income tax provisions and accruals. If additional taxes are assessed as a result of an audit or litigation, it could have a material effect on our income tax provision and net income in the period or periods for which that determination is made.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate and Credit Market Risk

We are exposed to changes in interest rates and market liquidity including our investments in certain available-for-sale securities. Our available-for-sale securities consist of fixed and variable rate income investments, such as municipal notes, municipal bonds and corporate bonds. We continually monitor our exposure to changes in interest rates, market liquidity and credit ratings of issuers for our available-for-sale securities. It is possible that we are at risk if interest rates, market liquidity or credit ratings of issuers change in an unfavorable direction. The magnitude of any gain or loss will be a function of the difference between the fixed or variable rate of the financial instrument and the market rate, and our financial condition and results of operations could be materially affected. Based on a sensitivity analysis performed on our financial investments held as of December 31, 2022, a hypothetical increase of 100 basis points in interest rates would result in a decrease of \$2.0 million in the fair value of our available-for-sale debt securities and would not have a material impact on our consolidated financial position, results of operations or cash flows.

Foreign Currency Risk

We enter into foreign currency forward contracts to minimize the short-term impact of exchange rate fluctuations on certain foreign currency denominated monetary assets and liabilities, primarily cash and intercompany receivables and payables. In addition, we hedge certain anticipated foreign currency cash flows, primarily on revenues denominated in Japanese yen. These forward contracts are not designated as accounting hedges, so the change in fair value of the forward exchange contracts is recognized under the caption "Other expense, net" in the Consolidated Statements of Operations for each reporting period. As of December 31, 2022, and January 1, 2022, we had six and seven outstanding forward contracts, respectively, with a total notional contract value of \$27.9 million and \$32.3 million, respectively. We do not use derivative financial instruments for trading or speculative purposes.

Item 8. Financial Statements and Supplementary Data.

The consolidated financial statements and related information required by this Item are set forth on the pages indicated in Item 15(a) of this Form 10-K.

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

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time period specified in SEC rules and forms. These controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating disclosure controls and procedures, we have recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. Management is required to apply judgment in evaluating its controls and procedures.

We performed an evaluation under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, to assess the effectiveness of the design and operation of our disclosure controls and procedures under the Exchange Act as of December 31, 2022. Based on that evaluation, our management, including our principal executive officer and principal financial officer, concluded that our disclosure controls and procedures were effective as of December 31, 2022 at the reasonable assurance level.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). 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 accounting principles generally accepted in the United States of America. Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) ("COSO"). Based on our evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

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 be circumvented or deteriorate.

Attestation Report of the Registered Public Accounting Firm

Our consolidated financial statements as of and for the year ended December 31, 2022 have been audited by Ernst & Young LLP, our independent registered public accounting firm, in accordance with the standards of the Public Company Accounting Oversight Board (United States). Ernst & Young LLP has also audited our internal control over financial reporting as of December 31, 2022, as stated in its attestation report included elsewhere in this Form 10-K.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during our fiscal quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspection.

Not applicable.

PART III

Certain information required by Part III is omitted from this Form 10-K because we expect to file a definitive proxy statement within one hundred twenty (120) days after the end of our fiscal year pursuant to Regulation 14A (the “Proxy Statement”) for our Annual Meeting of Stockholders currently scheduled for May 9, 2023, and the information included in the Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item with respect to directors and executive officers is incorporated by reference to the information under the headings “Proposal 1: Election of Directors,” “Executive Officers” and “Corporate Governance Principles and Practices” in the Proxy Statement. Information regarding compliance with Section 16 of the Exchange Act is incorporated by reference to the information under the heading “Delinquent Section 16(a) Reports” in the Proxy Statement, if any.

Code of Business Conduct and Ethics. We have adopted a code of business conduct and ethics that applies to our principal executive officer, principal financial officer and controller. This code of business conduct and ethics is posted on our internet website address at <http://investors.ontoinnovation.com>. We will post on our website any amendment to or waiver from a provision of our code of business conduct and ethics as may be required, and within the time period specified, by applicable SEC rules.

Item 11. Executive Compensation.

The information required by this Item is incorporated by reference to the information under the headings “Executive Officer Compensation,” “Compensation of Directors,” “Executive Officer Compensation Tables,” “Compensation Committee Report on Executive Officer Compensation,” “Stock Ownership/Retention Guidelines for Directors” and “Compensation Committee Interlocks and Insider Participation” in the Proxy Statement.

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

The information required by this Item is incorporated by reference to the information under the headings “Security Ownership of Certain Beneficial Owners” and “Equity Compensation Plan Information” in the Proxy Statement.

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

The information required by this Item is incorporated by reference to the information under the headings “Related Persons Transaction Policy” and “Board Independence” in the Proxy Statement.

Item 14. Principal Accountant Fees and Services.

The information required by this Item is incorporated by reference to the information under the heading “Proposal 3: Ratification of Appointment of Independent Registered Public Accounting Firm” in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedule.

(a) The following documents are filed as part of this Form 10-K:

1. Financial Statements

The consolidated financial statements and consolidated financial statement information required by this Item are included on pages F-1 through F-9 of this report. The Reports of Independent Registered Public Accounting Firm appear on pages F-2 through F-4 of this report.

2. Financial Statement Schedule

See Index to financial statements on page F-1 of this report.

3. Exhibits

Exhibits are as set forth in the “Exhibit Index”, provided below. Where so indicated, exhibits, which were previously filed, are incorporated by reference.

<u>Exhibit No.</u>	<u>Exhibit Description</u>	<u>Form</u>	<u>File Number</u>	<u>Date of First Filing</u>	<u>Exhibit No./Appendix Reference</u>
2.1	Agreement and Plan of Merger, dated as of June 23, 2019, by and among Nanometrics Incorporated, Rudolph Technologies, Inc. and PV Equipment Inc.	8-K	000-13470	June 24, 2019	2.1
3.1	Amended and Restated Certificate of Incorporation of Onto Innovation Inc.	8-K	001-39110	October 28, 2019	3.2
3.2	Amended and Restated Bylaws of Onto Innovation Inc.	8-K	001-39110	January 27, 2020	3.1
4.1	Form of Common Stock Certificate	10-K	001-39110	February 25, 2020	4.1
4.2	Description of Securities	10-K	001-39110	February 25, 2020	4.2
10.1*	Nanometrics Incorporated Amended and Restated 2005 Equity Incentive Plan	DEF14A	000-13470	April 4, 2017	Appendix B
10.1.1*	Form of Performance-Based Restricted Stock Unit Agreement	8-K	000-13470	March 24, 2015	99.1
10.1.2*	Nanometrics Incorporated Amended and Restated 2005 Equity Incentive Plan forms of Stock Option and Restricted Stock Unit Agreements	10-K	000-13470	March 13, 2008	10.8
10.2*	Rudolph Technologies, Inc. 2009 Stock Plan	DEFR14A	000-27965	May 8, 2009	Appendix A
10.2.1*	Amended form of Employee Restricted Stock Unit Purchase Agreement pursuant to the Rudolph Technologies, Inc. 2009 Stock Plan	10-Q	001-36226	August 3, 2017	10.12
10.3*	Rudolph Technologies, Inc. 2018 Stock Plan	8-K	001-36226	May 16, 2018	10.1
10.3.1*	Form of Employee Performance Stock Unit Purchase Agreement pursuant to the Rudolph Technologies, Inc. 2018 Stock Plan	10-Q	001-36226	August 2, 2018	10.1

<u>Exhibit No.</u>	<u>Exhibit Description</u>	<u>Form</u>	<u>File Number</u>	<u>Date of First Filing</u>	<u>Exhibit No./Appendix Reference</u>
10.4*	Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.2*	Form of Employee Stock Option Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.3*	Form of Director Stock Option Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.5*	Form of Employee Restricted Stock Unit Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.6*	Form of Director Restricted Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.7*	Form of Employee Performance Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.8*	Form of Employee Incentive Restricted Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	November 4, 2021	10.1
10.5*	Onto Innovation Inc. 2020 Employee Stock Purchase Plan	S-8	333-238492	May 19, 2020	10.2
10.6*	Form of Indemnification Agreement	8-K	001-39110	November 6, 2019	10.1
10.7*	Form of Onto Innovation Inc. Indemnification Agreement	8-K	001-39110	September 13, 2021	10.1
10.8*	Management Agreement, dated as of July 24, 2000 by and between Rudolph Technologies, Inc. and Steven R. Roth as restated and amended on July 29, 2014.	10-Q	001-36226	August 6, 2014	10.2
10.9*	Employment Agreement, dated as of November 9, 2015, by and between Rudolph Technologies, Inc. and Michael Plisinski.	8-K	001-36226	November 9, 2015	10.1
10.10*	Offer Letter to Yoon Ah E. Oh, dated October 4, 2021, by and between Yoon Ah E. Oh and Onto Innovation Inc.	10-Q	001-39110	May 3, 2022	10.1
10.11*	Offer Letter to Mark Slicer, dated April 1, 2022, by and between Mark Slicer and Onto Innovation Inc.	8-K	001-39110	May 17, 2022	10.1
10.12*	Executive Change in Control Agreement, dated July 5, 2022, by and between Onto Innovation Inc. and Yoon Ah Oh	10-Q	001-39110	November 10, 2022	10.1
10.13*+	Form of Executive Change in Control Agreement	—	—	—	—

<u>Exhibit No.</u>	<u>Exhibit Description</u>	<u>Form</u>	<u>File Number</u>	<u>Date of First Filing</u>	<u>Exhibit No./Appendix Reference</u>
21.1+	Subsidiaries.	—	—	—	—
23.1+	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.	—	—	—	—
31.1+	Rule 13a-14(a) Certification of Chief Executive Officer of the Registrant pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
31.2+	Rule 13a-14(a) Certification of Chief Financial Officer of the Registrant pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
32.1+	Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
32.2+	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
101.INS	Inline XBRL Instance 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 Label Linkbase Document				
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				
104	Cover Page Interactive Data File (formatted in inline XBRL and contained in Exhibit 101)				
*	Management contract, compensatory plan or arrangement.				
+	Filed herewith.				

ONTO INNOVATION INC.
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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Onto Innovation Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Onto Innovation Inc. (the Company) as of December 31, 2022, and January 1, 2022, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedule listed in the Index at Item 15(a) (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 December 31, 2022 and January 1, 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 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 December 31, 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 24, 2023, 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 Matter

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

Reserve for Excess and Obsolete Inventory

Description of the Matter As described in Notes 2 and 7 to the consolidated financial statements, the Company records inventory net of a reserve for excess and obsolete inventory resulting in net inventories of \$324.3 million as of December 31, 2022. The valuation of certain of the Company's inventory is subject to risks associated with supply and demand. As described in Note 2 to the consolidated financial statements, the Company maintains reserves for excess and obsolete inventory equal to the difference between the cost of inventory and its estimated net realizable value based upon assumptions about historical and future demand for the Company's products and market conditions

Auditing management's estimate of the excess and obsolete inventory reserve was subjective and required significant judgment as the excess and obsolete inventory reserve is sensitive to changes in the Company's operations and assumptions used to estimate the reserve including management's assumptions with regards to product life-cycles, product demand and market conditions, which includes historical usage, expected future usage, on-hand quantities of individual materials, and anticipated engineering design changes or advancements.

How We Addressed the Matter in Our Audit We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's excess and obsolete inventory reserve process, including those over

the validity and reasonableness of the data and assumptions used in estimating the excess and obsolete inventory reserve.

To test the adequacy of the Company's excess and obsolete inventory reserve, we performed audit procedures that included, among others, assessing methodologies and assumptions used, testing the completeness and accuracy of the underlying data used by management in its analysis including the usage of historical materials, considering potential product obsolescence, observing physical inventory on-hand and inspecting historical gross margins to assess whether any items are being sold at a loss or lower margins that may need to be included in the reserve. We assessed the historical accuracy of management's estimated excess and obsolete inventory reserve and performed sensitivity analyses to evaluate changes in the estimate that result from changes in the Company's significant assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2008.

Iselin, New Jersey
February 24, 2023

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Onto Innovation Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Onto Innovation Inc.'s internal control over financial reporting as of December 31, 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, Onto Innovation Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 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 sheets of the Company as of December 31, 2022 and January 1, 2022, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedule listed in the Index at Item 15(a) and our report dated February 24, 2023 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

Iselin, New Jersey
February 24, 2023

ONTO INNOVATION INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share data)

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Revenue	\$ 1,005,183	\$ 788,899	\$ 556,496
Cost of revenue	465,962	359,813	278,043
Gross profit	539,221	429,086	278,453
Operating expenses:			
Research and development	111,953	96,118	84,584
Sales and marketing	65,688	57,235	48,136
General and administrative	69,582	67,960	65,310
Amortization	55,284	51,366	53,746
Total operating expenses	302,507	272,679	251,776
Operating income.....	236,714	156,407	26,677
Interest income, net.....	5,011	1,163	2,899
Other expense, net	(141)	(1,888)	(2,708)
Income before provision (benefit) for income taxes	241,584	155,682	26,868
Provision (benefit) for income taxes	18,250	13,333	(4,157)
Net income.....	\$ 223,334	\$ 142,349	\$ 31,025
Earnings per share:			
Basic	\$ 4.52	\$ 2.89	\$ 0.63
Diluted	\$ 4.49	\$ 2.86	\$ 0.63
Weighted average number of shares outstanding:			
Basic	49,424	49,242	49,136
Diluted	49,764	49,728	49,475

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Net income.....	\$ 223,334	\$ 142,349	\$ 31,025
Other comprehensive income (loss), net of tax:			
Change in net unrealized gains (losses) on available-for-sale marketable securities	(2,447)	(537)	123
Change in currency translation adjustments	(8,879)	(2,715)	5,043
Total other comprehensive income (loss), net of tax	(11,326)	(3,252)	5,166
Total comprehensive income	<u>\$ 212,008</u>	<u>\$ 139,097</u>	<u>\$ 36,191</u>

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except per share data)

	December 31, 2022	January 1, 2022
ASSETS		
Current Assets:		
Cash and cash equivalents	\$ 175,872	\$ 169,602
Marketable securities	371,912	341,741
Accounts receivable, less allowance of \$1,572 at December 31, 2022 and \$1,303 at January 1, 2022	241,395	177,205
Inventories	324,282	243,108
Prepaid expenses and other current assets	21,411	16,433
Total current assets	1,134,872	948,089
Property, plant and equipment, net	91,980	82,094
Goodwill	315,811	315,811
Identifiable intangible assets, net	222,197	277,281
Deferred income taxes	4,778	4,822
Other assets	25,225	21,716
Total assets	<u>\$ 1,794,863</u>	<u>\$ 1,649,813</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 54,526	\$ 53,345
Accrued liabilities	48,836	43,042
Deferred revenue	30,163	29,979
Other current liabilities	27,033	28,160
Total current liabilities	160,558	154,526
Deferred and other tax liabilities	7,366	40,281
Other non-current liabilities	30,513	28,951
Total liabilities	<u>198,437</u>	<u>223,758</u>
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Preferred stock, \$0.001 par value, 3,000 shares authorized, no shares issued and outstanding	—	—
Common stock, \$0.001 par value, 97,000 shares authorized, 48,684 and 49,300 issued and outstanding at December 31, 2022 and January 1, 2022, respectively	49	49
Additional paid-in capital	1,243,631	1,256,179
Accumulated other comprehensive income	(10,010)	1,316
Accumulated earnings	362,756	168,511
Total stockholders' equity	<u>1,596,426</u>	<u>1,426,055</u>
Total liabilities and stockholders' equity	<u>\$ 1,794,863</u>	<u>\$ 1,649,813</u>

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Cash flows from operating activities:			
Net income.....	\$ 223,334	\$ 142,350	\$ 31,025
Adjustments to reconcile net income to net cash and cash equivalents provided by operating activities:			
Depreciation.....	9,378	14,435	13,832
Amortization of intangibles	55,284	51,366	53,746
Share-based compensation.....	24,426	19,542	17,662
Write-off of acquired in-process research and development	5,652	—	—
Acquired inventory step-up amortization.....	—	393	10,678
Provision for inventory valuation.....	9,313	8,175	14,703
Deferred income taxes	(33,601)	(12,618)	(11,631)
Other, net	(563)	2,267	4,711
Change in operating assets and liabilities, net of effects of business acquired:			
Accounts receivable	(65,140)	(27,829)	(25,816)
Income taxes	(5,006)	1,307	(1,196)
Inventories	(93,905)	(57,175)	(42,409)
Prepaid expenses and other assets	(4,954)	(768)	11,409
Accounts payable	1,181	12,142	11,403
Accrued and other liabilities	11,304	21,694	17,867
Net cash and cash equivalents provided by operating activities	<u>136,703</u>	<u>175,281</u>	<u>105,984</u>
Cash flows from investing activities:			
Purchases of marketable securities	(371,287)	(361,022)	(313,027)
Proceeds from maturities and sales of marketable securities.....	338,645	255,063	265,409
Purchases of property, plant and equipment.....	(18,405)	(12,039)	(3,829)
Acquisitions, net of cash acquired	(4,644)	(23,795)	—
Cash received from convertible note receivable.....	—	—	2,848
Net cash and cash equivalents used in investing activities	<u>(55,691)</u>	<u>(141,793)</u>	<u>(48,599)</u>
Cash flows from financing activities:			
Purchases of common stock.....	(65,257)	—	(52,000)
Tax payments related to shares withheld for share-based compensation plans	(8,874)	(7,403)	(4,052)
Payment of contingent consideration for acquired business.....	(2,287)	—	(569)
Issuance of shares through share-based compensation plans.....	8,068	10,073	2,919
Net cash and cash equivalents provided by (used in) financing activities.....	<u>(68,350)</u>	<u>2,670</u>	<u>(53,702)</u>
Effect of exchange rate changes on cash and cash equivalents	(6,391)	(3,276)	2,364
Net increase in cash and cash equivalents.....	6,270	32,882	6,047
Cash and cash equivalents at beginning of year	169,602	136,720	130,673
Cash and cash equivalents at end of year.....	<u>\$ 175,872</u>	<u>\$ 169,602</u>	<u>\$ 136,720</u>
Supplemental disclosure of cash flow information:			
Income taxes paid, net	\$ 58,687	\$ 23,766	\$ 6,415

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

For the years ended December 31, 2022,

January 1, 2022 and December 26, 2020

(In thousands)

	Common Stock		Additional	Accumulated	Accumulated	
	Shares	Amount	Paid-in	Other	Earnings /	Total
			Capital	Comprehensive	(Deficit)	
				Income / (Loss)		
Balance at December 31, 2019	50,184	\$ 50	\$ 1,269,437	\$ (598)	\$ (4,863)	\$ 1,264,026
Issuance of shares through share-based compensation plans, net....	668	1	2,918	—	—	2,919
Repurchase of common stock	(1,882)	(2)	(51,998)	—	—	(52,000)
Net income.....	—	—	—	—	31,025	31,025
Share-based compensation.....	—	—	17,662	—	—	17,662
Share-based compensation plan withholdings	(118)	—	(4,052)	—	—	(4,052)
Other	(94)	—	—	—	—	—
Currency translation.....	—	—	—	5,043	—	5,043
Unrealized gain on investments	—	—	—	123	—	123
Balance at December 26, 2020	48,758	49	1,233,967	4,568	26,162	1,264,746
Issuance of shares through share-based compensation plans, net....	650	—	10,072	—	—	10,072
Net income.....	—	—	—	—	142,349	142,349
Share-based compensation.....	—	—	19,542	—	—	19,542
Share-based compensation plan withholdings	(108)	—	(7,402)	—	—	(7,402)
Currency translation.....	—	—	—	(2,715)	—	(2,715)
Unrealized loss on investments.....	—	—	—	(537)	—	(537)
Balance at January 1, 2022	49,300	49	1,256,179	1,316	168,511	1,426,055
Issuance of shares through share-based compensation plans, net....	509	1	8,067	—	—	8,068
Repurchase of common stock	(1,018)	(1)	(36,167)	—	(29,089)	(65,257)
Net income.....	—	—	—	—	223,334	223,334
Share-based compensation.....	—	—	24,426	—	—	24,426
Share-based compensation plan withholdings	(107)	—	(8,874)	—	—	(8,874)
Currency translation.....	—	—	—	(8,879)	—	(8,879)
Unrealized loss on investments.....	—	—	—	(2,447)	—	(2,447)
Balance at December 31, 2022	<u>48,684</u>	<u>\$ 49</u>	<u>\$ 1,243,631</u>	<u>\$ (10,010)</u>	<u>\$ 362,756</u>	<u>\$ 1,596,426</u>

The accompanying notes are an integral part of these consolidated financial statements

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(In thousands, except per share data)

1. Organization and Nature of Operations:

Onto Innovation Inc. (“Onto Innovation” or the “Company”) is a worldwide leader in the design, development, manufacture and support of process control tools that perform macro-defect inspection and metrology, lithography systems, and process control analytical software used by semiconductor and advanced packaging device manufacturers. The Company delivers comprehensive solutions throughout the semiconductor fabrication process with our families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down costs and time to market of their devices. The Company provides process and yield management solutions used in both wafer processing facilities, often referred to as “front-end” manufacturing, and in device packaging and test facilities, commonly referred to as “back-end” manufacturing. The Company’s advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, or factory-wide suites to enhance productivity and achieve significant cost savings. Onto Innovation’s systems are backed by worldwide customer service and applications support. The Company has branch sales and service offices or subsidiaries in Korea, Japan, China, Taiwan, Singapore, Malaysia, Vietnam and in several countries in Europe. The Company operates in a single reportable segment and is a provider of process characterization equipment and software for wafer fabs and advanced packaging facilities.

2. Summary of Significant Accounting Policies:

Consolidation. The consolidated financial statements reflect the accounts of the Company and its wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated.

Fiscal Year. The fiscal year of 2022 began on January 2, 2022 and ended December 31, 2022. The fiscal year of 2021 began on December 27, 2020 and ended January 1, 2022. The fiscal year of 2020 began on January 1, 2020 and ended December 26, 2020.

Revenue Recognition. Revenue is recognized when control of the promised goods or services are transferred to the Company’s customers in an amount that reflects the consideration the Company expects to be entitled to receive in exchange for those goods or services. The Company accounts for a contract when it has approval and commitment from both parties, the rights of the parties and payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

The Company has elected to account for shipping and handling activities as the fulfillment of a promise to transfer goods to the customer and therefore records these activities under the caption “Cost of revenue.” Sales tax and any other taxes collected concurrent with revenue producing activities are excluded from revenue. Incidental items that are immaterial in the context of the contract are recognized as expense. These accounting policy elections are consistent with the manner in which the Company has historically recorded these items.

Contracts with customers may include multiple performance obligations. For such arrangements, the Company allocates revenue to each performance obligation based on its relative standalone selling price. The Company generally determines standalone selling prices based on the prices charged to customers or the expected cost-plus margin.

Systems and Software Revenue

Revenue from systems is recognized when the Company transfers control of the product to the customer. To indicate transfer of control, the Company must have a present right to payment, legal title must have passed to the customer and the customer must have the significant risks and rewards of ownership. The Company generally transfers control for system sales when the customer or the customer’s agent picks up the system at the Company’s facility. The Company provides an assurance warranty on its systems for a period of twelve to fourteen months against defects in material and workmanship. The Company provides for the estimated cost of product warranties at the time revenue is recognized.

Depending on the terms of the systems arrangement, the Company may also defer the recognition of a portion of the consideration expected to be received because the Company has to satisfy a future obligation (e.g., installation and extended warranties). The Company uses an observable price to determine the standalone selling price for separate performance obligations or a cost-plus margin approach when one is not available.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

Revenue from software licenses provides the customer with a right to use the software as it exists when made available to the customer. Revenue from software licenses, which is primarily sold with our systems, is recognized upfront at the point in time when the software is made available to the customer. Revenue from licensing support and maintenance is recognized as the support and maintenance are provided, which is over the contract period.

Parts Revenue

Revenue from parts is recognized when the Company transfers control of the product, which typically occurs when the Company ships the product from its facilities to the customer.

Services Revenue

Revenue from services primarily consists of service contracts, which provide additional maintenance coverage beyond the Company's assurance warranty on its products, service labor, consulting and training. Revenue from service contracts is recognized ratably over the term of the service contract. Revenue from service labor and consulting is recognized as services are performed. Revenue from installation services is recognized at a point in time when installation is complete.

Practical Expedients

The Company generally expenses sales commissions when incurred because the amortization period is one year or less. These costs are recorded within selling, general and administrative expenses.

The Company does not adjust the amount of consideration for the effects of a significant financing components, if any, as the payment terms are one year or less.

The Company does not disclose the value of remaining performance obligations for contracts with an original expected length of one year or less and contracts for which the Company recognizes revenue in the amount to which it has the right to invoice.

For additional information on the Company's revenue recognition, see Note 9 of Notes to the Consolidated Financial Statements.

Business Combinations. The Company accounts for business combinations under the acquisition method of accounting, which requires us to recognize separately from goodwill the assets acquired, and the liabilities assumed at their acquisition date fair values. While the Company uses its best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, the Company's estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, the Company records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recognized in its consolidated statements of operations. Accounting for business combinations requires the Company's management to make significant estimates and assumptions, especially at the acquisition date including its estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although the Company believes the assumptions and estimates it has made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Estimates in valuing certain acquired intangible assets under the income approach include growth in future expected cash flows from product sales, acquired technologies, technology obsolescence rates, estimated cash flows from the projects when completed and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

Use of Estimates. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Significant estimates made by management include the allowance for credit losses, excess and obsolete inventory, fair value of assets acquired and liabilities assumed in a business combination, recoverability and useful lives of property, plant and equipment and identifiable intangible assets, recoverability of goodwill, recoverability of deferred tax assets, liabilities for product warranty, contingencies, including litigation reserves and share-based payments and liabilities for tax uncertainties. Actual results could differ from those estimates.

These estimates and assumptions are based on historical experience and on various other factors which the Company believes to be reasonable under the circumstances. The Company may engage third-party valuation specialists to assist with estimates related to the valuation of financial instruments, assets and stock awards associated with various contractual arrangements. Such estimates often require the selection of appropriate valuation methodologies and significant judgment. Actual results could differ from these estimates under different assumptions or circumstances and such differences could be material.

Cash and Cash Equivalents. Cash and cash equivalents include cash and highly liquid debt instruments with original maturities of three months or less when purchased.

Marketable Securities. The Company determined that all of its investment securities are to be classified as available-for-sale. Available-for-sale debt securities are carried at fair value, with the unrealized gains and losses reported in stockholders' equity under the caption "Accumulated other comprehensive loss." Realized gains and losses and, interest and dividends on available-for-sale securities are included in interest income and other, net. Available-for-sale securities are classified as current assets regardless of their maturity date if they are available for use in current operations. The Company reviews its investment portfolio to identify and evaluate investments that have indications of possible impairment. Factors considered in determining whether a loss is other-than-temporary include the length of time and extent to which fair value has been less than the cost basis, credit quality and the Company's ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. When a decline in fair value is determined to be other-than-temporary, unrealized losses on available-for-sale securities are charged against earnings. The specific identification method is used to determine the gains and losses on marketable securities.

For additional information on the Company's marketable securities, see Note 4 of Notes to the Consolidated Financial Statements.

Allowance for Credit Losses. The Company maintains an allowance for credit losses that is estimated based on a combination of factors including write-off history, aging analysis, forecast of future economic conditions and any specific known troubled accounts. The Company believes the allowance is adequate to cover expected losses on trade receivables. Provisions for expected credit losses are classified as selling, general and administrative expense in the Consolidated Statements of Operations. If the financial condition of the Company's customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required.

Inventories. Inventories are stated at the lower of cost or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less predictable costs of completion, disposal and transportation. Cost is generally determined on a first-in, first-out basis, and includes material, labor and manufacturing overhead costs. The Company reviews and sets standard costs as needed, but at a minimum, on an annual basis, at current manufacturing costs in order to approximate actual costs.

The Company evaluates inventories for excess quantities and obsolescence. The Company establishes inventory reserves when conditions exist that suggest that inventory may be in excess of anticipated demand or is obsolete based upon assumptions about historical and future demand for the Company's products and market conditions. In addition, inventories are evaluated for potential obsolescence due to the effect of known and anticipated engineering design changes. Once a reserve has been established, it is maintained until the item to which it relates is scrapped or sold. The Company regularly evaluates its ability to realize the value of inventory based on a combination of factors including the following: historical usage rates, forecasted sales, product end-of-life dates, estimated current and future market values and new product introductions. When recorded, reserves are intended to reduce the carrying value of the Company's inventory to its net realizable value. If actual demand for the Company's products deteriorates, or market conditions are less favorable than those that the Company projects, additional reserves may be required.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

Property, Plant and Equipment. Property, plant and equipment are stated at cost. Depreciation of property, plant and equipment is computed using the straight-line method over the estimated useful lives of the assets, which are five to twenty-two years for buildings, three to ten years for machinery and equipment, three to ten years for furniture and fixtures, three years for computer equipment, and three to seven years for software. Leasehold improvements are amortized using the straight-line method over the lesser of the lease term or the estimated useful life of the related asset. Repairs and maintenance costs are expensed as incurred and major renewals and betterments are capitalized.

Long-Lived Assets and Finite-Lived Acquired Intangible Assets. Long-lived assets, such as property, plant, and equipment, and identifiable acquired intangible assets with finite useful lives, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset, which is generally based on discounted cash flows. There were no impairments of long-lived assets for the years ended December 31, 2022, January 1, 2022 and December 26, 2020.

Goodwill and Indefinite Lived Intangible Assets. Goodwill and indefinite lived intangible assets are tested for impairment on an annual basis or when an event or changes in circumstances indicate that its carrying value may not be recoverable. Goodwill impairment is tested at the reporting unit level, which is defined as an operating segment or one level below the operating segment. The Company has three reporting units and one operating segment. No goodwill impairment occurred in fiscal years 2022, 2021, or 2020. Goodwill is reviewed for impairment using either a qualitative assessment or a quantitative goodwill impairment test. If the Company chooses to perform a qualitative assessment and determine the fair value more likely than not exceeds the carrying value, no further evaluation is necessary. When the Company performs the quantitative goodwill impairment test, it compares fair value to carrying value, which includes goodwill. If fair value exceeds carrying value, the goodwill is not considered impaired. If the carrying value is higher than the fair value, the difference would be recognized as an impairment loss.

Intangible assets with indefinite lives, including in-process research and development (“IPR&D”), are tested for impairment if impairment indicators arise and, at a minimum, annually. However, the Company is permitted to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that an indefinite-lived intangible asset’s fair value is less than its carrying amount. Otherwise, no further impairment testing is required. The indefinite-lived intangible asset impairment test consists of a one-step analysis that compares the fair value of the intangible asset with its carrying amount. If the carrying amount of an intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. We consider many factors in evaluating whether the value of intangible assets with indefinite lives may not be recoverable, including, but not limited to estimates of future cash flows, the discount rate, terminal growth rates, general economic conditions, our outlook and market performance of our industry and recent and forecasted financial performance.

There was no impairment of goodwill or IPR&D for the years ended December 31, 2022, January 1, 2022 and December 26, 2020.

For additional information on the Company’s goodwill and purchased intangible assets, see Note 5 of Notes to the Consolidated Financial Statements.

Concentration of Credit Risk. Financial instruments, which potentially subject the Company to concentrations of credit risk, consist primarily of accounts receivable, cash and cash equivalents and marketable securities.

The Company maintains cash and cash equivalents and marketable securities with higher credit quality issuers and monitors the amount of credit exposure to any one issuer. The Company’s investment policy provides guidelines and limits regarding credit quality, investment concentration, investment type, and maturity that the Company believes will provide liquidity while reducing risk of loss of capital. Investments are of a short-term nature and include investments in commercial paper, corporate debt securities, asset-backed securities, U.S. Treasury, U.S. Government, and U.S. Agency debt.

The Company’s accounts receivable result primarily from the sale of semiconductor equipment, related accessories and replacement parts. The Company’s customer base is highly concentrated and historically, a relatively small number of customers have accounted for a significant portion of its revenues. Write-offs of uncollectible accounts have historically not been material. The Company actively monitors its customers’ financial strength to reduce the risk of loss.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

Warranties. The Company generally provides a warranty on its products for a period of twelve to fourteen months against defects in material and workmanship. The Company provides for the estimated cost of product warranties at the time revenue is recognized. The estimated future warranty obligations are affected by the warranty periods, sales volumes, product failure rates, material usage and labor and replacement costs incurred in correcting a product failure. If actual product failure rates, material usage, labor or replacement costs differ from the Company's estimates, revisions to the estimated warranty obligations would be required. The warranty accrual represents the best estimate of the amount necessary to settle future and existing claims on products sold as of the balance sheet date. The Company periodically assesses the adequacy of its recorded warranty reserve and adjusts the amounts in accordance with changes in these factors.

Income Taxes. The Company accounts for income taxes using the asset and liability approach for deferred taxes which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the Company's consolidated financial statements or tax returns. A valuation allowance is recorded to reduce a deferred tax asset to that portion which more likely than not will be realized.

For additional information on the Company's income taxes, see Note 12 of Notes to the Consolidated Financial Statements.

Translation of Foreign Currencies. The Company's international branches and subsidiaries primarily generate and expend cash in their local functional currency. Accordingly, all balance sheet accounts of these local functional currency branches and subsidiaries are translated into U.S. dollars at the fiscal period-end exchange rate, and income and expense accounts are translated into U.S. dollars using average rates in effect for the period. The resulting translation adjustments are recorded as cumulative translation adjustments and are recorded directly as a separate component of stockholders' equity under the caption, "Accumulated other comprehensive loss." The Company had accumulated exchange losses resulting from the translation of foreign operation financial statements of \$7,115 and \$1,764 as of December 31, 2022 and January 1, 2022, respectively.

Share-based Compensation. The Company measures the cost of employee services received in exchange for the award of equity instruments based on the fair value of the award at the date of grant. Compensation expense is recognized using the straight-line attribution method to recognize share-based compensation over the service period of the award, with adjustments recorded for forfeitures as they occur.

For additional information on the Company's share-based compensation plans, see Note 10 of Notes to the Consolidated Financial Statements.

Research and Development Costs. Expenditures for research and development are expensed as incurred.

Derivative Instruments and Hedging Activities. The Company's policy is to mitigate the effect of exchange rate fluctuations on certain foreign currency denominated business exposures. The Company has a policy that allows for the use of derivative financial instruments to hedge foreign currency exchange rate fluctuations on forecasted revenue and net monetary assets or liabilities denominated in various foreign currencies. The Company carries derivative financial instruments (derivatives) on the balance sheet at their fair values, in either prepaid expenses and other current assets or other current liabilities in the Consolidated Balance Sheets. The Company does not use derivatives for trading or speculative purposes. The Company does not believe that it is exposed to more than a nominal amount of credit risk in its foreign currency hedges, as counterparties are large, global and well-capitalized financial institutions. The Company's exposures are in liquid currencies (Japanese yen, euros, Korean won, Taiwanese dollars, Chinese renminbi, Singapore dollars and Israeli shekel), so there is minimal risk that appropriate derivatives to maintain the Company's hedging program would not be available in the future.

To hedge foreign currency risks, the Company uses foreign currency exchange forward contracts, where possible and prudent. These hedge contracts are valued using standard valuation formulas with assumptions about future foreign currency exchange rates derived from existing exchange rates, interest rates, and other market factors.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

The dollar equivalent of the U.S. dollar forward contracts and related fair values as of December 31, 2022 and January 1, 2022 were as follows:

	December 31, 2022	January 1, 2022
Notional amount	\$ 27,923	\$ 32,293
Fair value of liability	135	26

During the years ended December 31, 2022 and January 1, 2022, the Company recognized losses of \$3,487 and \$1,650 on maturities of forward contracts, respectively. During the year ended December 26, 2020, the Company recognized a gain of \$510 on maturities of forward contracts. The aggregate notional amounts of matured contracts were \$365,985, \$420,460 and \$373,749 for 2022, 2021 and 2020, respectively.

Contingencies and Litigation. The Company is subject to the possibility of losses from various contingencies, including certain legal proceedings, lawsuits and other claims. The Company accrues for a loss contingency when it concludes that the likelihood of a loss is probable and the amount of the loss can be reasonably estimated. If the Company concludes that loss contingencies that could be material to any one of its financial statements are not probable, but are reasonably possible, or are probable, but cannot be estimated, then the Company discloses the nature of the loss contingencies, together with an estimate of the range of possible loss or a statement that such loss is not reasonably estimable. The Company expenses as incurred the costs of defending legal claims against the Company. The Company does not recognize gain contingencies until realized. See Note 8 of the Notes to the Consolidated Financial Statements, “Commitments and Contingencies” for a detailed description.

Recent Accounting Pronouncements.

Recently Adopted and Issued

Recently adopted and issued accounting guidance is not applicable or did not have, or is not expected to have, a material impact to the Company.

3. Fair Value Measurements:

Fair Value of Financial Instruments

The Company has evaluated the estimated fair value of financial instruments using available market information and valuations as provided by third-party sources. The use of different market assumptions and/or estimation methodologies could have a significant effect on the estimated fair value amounts. The carrying value of cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximates fair value because of the short-term maturity of these instruments.

Fair Value Hierarchy

The Company applies a three-level valuation hierarchy for fair value measurements. This hierarchy prioritizes the inputs into three broad levels. Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities. Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the asset or liability. Level 3 inputs are unobservable inputs based on management’s assumptions used to measure assets and liabilities at fair value. A financial asset’s or liability’s fair value measurement classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

The following tables provide the assets and liabilities carried at fair value measured on a recurring basis at December 31, 2022 and January 1, 2022:

	Carrying Value	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 31, 2022				
Assets:				
Available-for-sale debt securities:				
Municipal notes and bonds	\$ 178,868	\$ —	\$ 178,868	\$ —
Asset-backed securities	1,534	—	1,534	—
Certificates of deposit	52,095	—	52,095	—
Commercial paper.....	80,079	—	80,079	—
Corporate bonds.....	59,335	—	59,335	—
Total assets.....	<u>\$ 371,912</u>	<u>\$ —</u>	<u>\$ 371,912</u>	<u>\$ —</u>
Liabilities:				
Foreign currency forward contracts	135	\$ —	135	\$ —
Total liabilities	<u>\$ 135</u>	<u>\$ —</u>	<u>\$ 135</u>	<u>\$ —</u>

		Fair Value Measurements Using		
	Carrying Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
January 1, 2022				
Assets:				
Available-for-sale debt securities:				
Municipal notes and bonds	\$ 170,980	\$ —	\$ 170,980	\$ —
Asset-backed securities	2,009	—	2,009	—
Certificates of deposit	33,192	—	33,192	—
Commercial paper.....	73,113	—	73,113	—
Corporate bonds.....	62,447	—	62,447	—
Total assets.....	<u>\$ 341,741</u>	<u>\$ —</u>	<u>\$ 341,741</u>	<u>\$ —</u>
Liabilities:				
Foreign currency forward contracts	\$ 26	\$ —	\$ 26	\$ —
Total liabilities	<u>\$ 26</u>	<u>\$ —</u>	<u>\$ 26</u>	<u>\$ —</u>

Available-for-sale debt securities classified as Level 2 are valued using observable inputs to quoted market prices, benchmark yields, reported trades, broker/dealer quotes or alternative pricing sources with reasonable levels of price transparency. The foreign currency forward contracts are primarily measured based on the foreign currency spot and forward rates quoted by the banks or foreign currency dealers. Investment prices are obtained from third party pricing providers, which model prices utilizing the above observable inputs, for each asset class.

See Note 4 for additional discussion regarding the fair value of the Company's marketable securities.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
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4. Marketable Securities:

At December 31, 2022 and January 1, 2022, marketable securities are categorized as follows:

	<u>Amortized Cost</u>	<u>Gross Unrealized Holding Gains</u>	<u>Gross Unrealized Holding Losses</u>	<u>Fair Value</u>
December 31, 2022				
Municipal notes and bonds	\$ 181,196	\$ 27	\$ 2,355	\$ 178,868
Asset-backed securities.....	1,555	—	21	1,534
Certificates of deposit.....	52,190	24	118	52,095
Commercial paper.....	80,199	16	136	80,079
Corporate bonds.....	60,334	4	1,003	59,335
Total marketable securities	<u>\$ 375,474</u>	<u>\$ 71</u>	<u>\$ 3,633</u>	<u>\$ 371,912</u>
January 1, 2022				
Municipal notes and bonds	\$ 171,203	\$ 38	\$ 261	\$ 170,980
Asset-backed securities.....	2,009	—	—	2,009
Certificates of deposit.....	33,200	2	10	33,192
Commercial paper.....	73,152	2	41	73,113
Corporate bonds.....	62,634	29	216	62,447
Total marketable securities	<u>\$ 342,198</u>	<u>\$ 71</u>	<u>\$ 528</u>	<u>\$ 341,741</u>

The amortized cost and estimated fair value of marketable securities classified by the maturity date listed on the security, regardless of the Consolidated Balance Sheet classification, is as follows at December 31, 2022 and January 1, 2022:

	<u>December 31, 2022</u>		<u>January 1, 2022</u>	
	<u>Amortized Cost</u>	<u>Fair Value</u>	<u>Amortized Cost</u>	<u>Fair Value</u>
Due within one year.....	\$ 311,934	\$ 309,385	\$ 219,353	\$ 219,211
Due after one through five years.....	63,540	62,527	122,845	122,530
Due after five through ten years.....	—	—	—	—
Due after ten years.....	—	—	—	—
Total marketable securities	<u>\$ 375,474</u>	<u>\$ 371,912</u>	<u>\$ 342,198</u>	<u>\$ 341,741</u>

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
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The following table summarizes the estimated fair value and gross unrealized holding losses of marketable securities, aggregated by investment instrument and period of time in an unrealized loss position, at December 31, 2022 and January 1, 2022.

	In Unrealized Loss Position For Less Than 12 Months		In Unrealized Loss Position For Greater Than 12 Months	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
December 31, 2022				
Municipal notes and bonds	\$ 96,301	\$ 1,273	\$ 69,159	\$ 1,082
Asset-backed securities.....	1,555	21	—	—
Certificates of deposit.....	22,400	118	—	—
Commercial paper.....	50,550	136	—	—
Corporate bonds.....	28,975	637	28,769	366
Total marketable securities	<u>\$ 199,781</u>	<u>\$ 2,185</u>	<u>\$ 97,928</u>	<u>\$ 1,448</u>
January 1, 2022				
Municipal notes and bonds	\$ 113,790	\$ 262	\$ —	\$ —
Certificates of deposit.....	16,300	10	—	—
Commercial paper.....	58,681	40	—	—
Corporate bonds.....	53,661	150	2,587	66
Total marketable securities	<u>\$ 242,432</u>	<u>\$ 462</u>	<u>\$ 2,587</u>	<u>\$ 66</u>

See Note 3 for additional discussion regarding the fair value of the Company's marketable securities.

5. Goodwill and Purchased Intangible Assets:

Goodwill and purchased intangible assets with indefinite useful lives are not amortized but are reviewed for impairment annually during the fourth quarter of each fiscal year and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The process of evaluating the potential impairment of goodwill and intangible assets requires significant judgment. The Company regularly monitors current business conditions and considers other factors including, but not limited to, adverse industry or economic trends, restructuring actions and lower projections of profitability that may impact future operating results. The Company performed its annual assessment in the fourth quarter of fiscal 2022 and concluded that no impairment charge was required.

Goodwill

The changes in the carrying amount of goodwill are as follows:

Balance at December 26, 2020	\$ 306,632
Goodwill from Inspectrology acquisition	9,179
Balance at January 1, 2022	315,811
Goodwill adjustment.....	—
Balance at December 31, 2022	<u>\$ 315,811</u>

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
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Purchased Intangible Assets

Purchased intangible assets as of December 31, 2022 and January 1, 2022 are as follows:

	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization</u>	<u>Net</u>
December 31, 2022			
Finite-lived intangible assets:			
Developed technology	\$ 378,197	\$ 205,386	\$ 172,811
Customer and distributor relationships	73,321	30,195	43,126
Trademarks and trade names	14,171	7,911	6,260
Total identifiable intangible assets.....	<u>\$ 465,689</u>	<u>\$ 243,492</u>	<u>\$ 222,197</u>
January 1, 2022			
Finite-lived intangible assets:			
Developed technology	\$ 377,997	\$ 155,976	\$ 222,021
Customer and distributor relationships	73,321	25,608	47,713
Trademarks and trade names	14,171	6,624	7,547
Total identifiable intangible assets.....	<u>\$ 465,489</u>	<u>\$ 188,208</u>	<u>\$ 277,281</u>

Intangible asset amortization expense amounted to \$55,284, \$51,366 and \$53,746 for the years ended December 31, 2022, January 1, 2022 and December 26, 2020, respectively. Assuming no change in the gross carrying value of identifiable intangible assets and estimated lives, estimated amortization expenses are \$54,823 for 2023, \$49,137 for 2024, \$32,587 for 2025, \$31,394 for 2026 and \$23,173 for 2027.

6. Leasing Arrangements:

The Company determines if an arrangement is a lease at its inception. Operating lease arrangements are comprised primarily of real estate and equipment agreements for which the right-of-use assets are included in “Other assets” and the corresponding lease liabilities, depending on their maturity, are included in “Other current liabilities” or “Other non-current liabilities” in the Consolidated Balance Sheets.

Right-of-use assets represent the right to use an underlying asset for the lease term and lease liabilities represent the obligation to make lease payments arising from the lease. Right-of-use assets and lease liabilities are recognized at the lease commencement date based on the estimated present value of lease payments over the lease term. The lease term includes options to extend the lease when it is reasonably certain that the option will be exercised. Lease agreements frequently require the Company to pay real estate taxes, insurance and maintenance costs. Leases with a term of one year or less are not recorded on the Consolidated Balance Sheets and lease expense for these leases is recognized on a straight-line basis over the lease term.

The Company uses its estimated incremental borrowing rate in determining the present value of lease payments considering the term of the lease, which is derived from information available at the lease commencement date, giving consideration to publicly available data for instruments with similar characteristics. The Company accounts for the lease and non-lease components as a single lease component.

Lease costs for operating leases were \$6,368 and \$5,964 for the years ended December 31, 2022 and January 1, 2022, respectively. Operating lease costs are generally recognized over the lease term. The Company elected the practical expedient to not provide comparable presentation for periods prior to adoption.

Details of the Company’s operating leases are as follows:

	<u>Year Ended</u>	
	<u>December 31, 2022</u>	<u>January 1, 2022</u>
Cash Flow Information		
Cash paid for operating lease liabilities	\$ 6,368	\$ 6,247
Right-of-use assets obtained in exchange for operating lease liabilities.....	\$ 9,295	\$ 304
	<u>December 31, 2022</u>	<u>January 1, 2022</u>
Operating Lease Information		
Weighted average remaining lease term.....	4.5	5.3
Weighted average discount rate	3.8%	4.5%

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As of December 31, 2022, there was an insignificant amount of commitments for operating leases that have not yet commenced. The reconciliation of the maturities of operating leases to the lease liabilities recorded on the Consolidated Balance Sheet as of December 31, 2022 is as follows:

Fiscal Year	
2023	\$ 6,721
2024	5,799
2025	4,646
2026	2,905
2027	1,905
Thereafter.....	2,399
Total undiscounted operating lease payments	24,375
Less: imputed interest	2,030
Present value of operating lease liabilities	<u>\$ 22,345</u>

7. Balance Sheet Components:

Inventories

Inventories are comprised of the following:

	December 31, 2022	January 1, 2022
Materials	\$ 231,029	\$ 157,343
Work-in-process	69,072	60,415
Finished goods	24,181	25,350
Total inventories	<u>\$ 324,282</u>	<u>\$ 243,108</u>

Property, Plant and Equipment

Property, plant and equipment, net, is comprised of the following:

	December 31, 2022	January 1, 2022
Land and building	\$ 50,344	\$ 48,297
Machinery and equipment	56,924	50,226
Furniture and fixtures	2,949	2,534
Computer equipment and software	15,415	13,856
Leasehold improvements	18,539	13,710
	<u>144,171</u>	<u>128,623</u>
Accumulated depreciation	(52,191)	(46,529)
Total property, plant and equipment, net	<u>\$ 91,980</u>	<u>\$ 82,094</u>

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
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Other assets

Other assets is comprised of the following:

	December 31, 2022	January 1, 2022
Operating lease right-of-use assets	\$ 20,746	\$ 17,488
Other	4,479	4,228
Total other assets	<u>\$ 25,225</u>	<u>\$ 21,716</u>

Accrued liabilities

Accrued liabilities is comprised of the following:

	December 31, 2022	January 1, 2022
Payroll and related expenses	\$ 36,529	\$ 32,581
Warranty	10,890	9,093
Other	1,417	1,368
Total accrued liabilities	<u>\$ 48,836</u>	<u>\$ 43,042</u>

Other current liabilities

Other current liabilities is comprised of the following:

	December 31, 2022	January 1, 2022
Customer deposits	\$ 12,482	\$ 9,459
Current operating lease obligations	5,678	3,968
Income tax payable	1,910	6,315
Accrued professional fees	968	912
Other	5,995	7,506
Total other current liabilities	<u>\$ 27,033</u>	<u>\$ 28,160</u>

Other non-current liabilities

Other non-current liabilities is comprised of the following:

	December 31, 2022	January 1, 2022
Non-current operating lease obligations	\$ 16,345	\$ 13,754
Unrecognized tax benefits (including interest)	7,693	7,861
Deferred revenue	2,852	1,693
Other	3,623	5,643
Total non-current liabilities	<u>\$ 30,513</u>	<u>\$ 28,951</u>

8. Commitments and Contingencies:

Factoring

The Company maintains arrangements under which eligible accounts receivable in Japan are sold without recourse to unrelated third-party financial institutions. The Company sold \$32,385 of receivables during the year ended December 31, 2022. There were no material gains or losses on the sale of such receivables. There were no amounts due from such third-party financial institutions at December 31, 2022.

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Intellectual property Indemnification Obligations

The Company has entered into agreements with customers that include limited intellectual property indemnification obligations that are customary in the industry. These guarantees generally require the Company to compensate the other party for certain damages and costs incurred as a result of third-party intellectual property claims arising from these transactions. The nature of the intellectual property indemnification obligations prevents the Company from making a reasonable estimate of the maximum potential amount it could be required to pay to its customers. Historically, the Company has not made any indemnification payments under such agreements and no amount has been accrued in the accompanying consolidated financial statements with respect to these indemnification guarantees.

Warranty Reserves

The Company generally provides a warranty on its products for a period of 12 to 14 months against defects in material and workmanship. The Company estimates the costs that may be incurred during the warranty period and records a liability in the amount of such costs at the time revenue is recognized. The Company's estimate is based primarily on historical experience. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary. Settlements of warranty reserves are generally associated with sales that occurred during the 12 to 14 months prior to the year-end and warranty accruals are related to sales during the same year.

Changes in the Company's warranty reserves are as follows:

	Year Ended	
	December 31, 2022	January 1, 2022
Balance, beginning of the period	\$ 9,682	\$ 6,485
Accruals	16,040	11,892
Warranty liability assumed from Inspectrology acquisition	—	407
Usage	(13,893)	(9,102)
Balance, end of the period	<u>\$ 11,830</u>	<u>\$ 9,682</u>

Legal Matters

From time to time, the Company is subject to legal proceedings and claims in the ordinary course of business. The following reflects an overview of the material developments with regard to the Company's pending material legal proceedings.

Optical Solutions Inc. v. Nanometrics Incorporated (Case No. 18-cv-00417-BLF): On August 2, 2017, Nanometrics was named as defendant in a complaint filed in New Hampshire Superior Court (the "Complaint"). The Complaint, brought by Optical Solutions, Inc. ("OSI"), alleges claims arising from a purported exclusive purchase contract between OSI and Nanometrics pertaining to certain products. The relief sought is the award of damages in an amount to be proven at trial, attorney's fees and cost as well as other relief the court deems just and proper. On September 18, 2017, Nanometrics removed the action to the United States District Court for the District of New Hampshire (the "District of New Hampshire"). On September 25, 2017, Nanometrics moved to transfer the Complaint to the United States District Court for the Northern District of California (the "Northern District of California"). On December 20, 2017, Nanometrics filed its complaint against OSI in the California Superior Court for the County of Santa Clara alleging claims arising from OSI's breach of certain purchase orders. The relief sought is the award of damages in an amount to be proven at trial including pre- and post-judgment interest, punitive damages, restitution for benefits unjustly received by OSI, attorney's fees and cost as well as other relief the court deems just and proper. Nanometrics' complaint was later removed by OSI to the Northern District of California. On May 29, 2018, the District of New Hampshire issued an order granting Nanometrics' motion to transfer the Complaint to the Northern District of California and denying Nanometrics' motion to dismiss the Complaint without prejudice. On June 14, 2018, the Complaint was consolidated with Nanometrics' complaint against OSI. On August 9, 2018, OSI filed an Amended Complaint. On September 19, 2018, Nanometrics filed a motion to dismiss OSI's Amended Complaint for failure to state a claim. Nanometrics' motion to dismiss was heard on February 28, 2019. On March 5, 2019, the Northern District of California granted Nanometrics' motion to dismiss with leave to amend. OSI filed a Second Amended Complaint on March 29, 2019. Nanometrics filed a motion to dismiss OSI's Second Amended Complaint on May 31, 2019. In October 2019, Nanometrics was renamed Onto Innovation Inc. as a result of the Merger. Thereafter, the Company's second motion to dismiss was heard on November 14, 2019. On November 26, 2019, the Northern District of California granted the Company's motion to dismiss with leave to amend. OSI filed a Third Amended Complaint on January 21, 2020. On March 2, 2020, the Company filed a motion to dismiss OSI's Third Amended Complaint and a hearing on the motion was held on June 11, 2020. On June 23, 2020, the Northern District of California granted the Company's motion to dismiss with prejudice with regard to two claims asserted by OSI and dismissed two other claims asserted by OSI with leave to amend. Thereafter, on July 7, 2020, OSI filed a Fourth Amended Complaint. On August 14, 2020, the Company filed a motion to dismiss with regard to one of the two remaining claims. On

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December 1, 2020, the Northern District of California denied this final motion to dismiss and as a result the Company filed its Answer in this matter on December 22, 2020. Discovery is now closed and the trial date is set for December 4, 2023. At this time, the loss contingency in this matter is remote and the Company does not anticipate the outcome of the matter to have a material impact on its financial position, results of operations, or cash flows.

Open and Committed Purchase Orders

As of December 31, 2022, the Company has open and committed purchase orders of \$417,148, of which \$348,984 is for less than one year.

Line of Credit

The Company has a credit agreement with a bank that provides for a line of credit which is secured by the marketable securities the Company has with the bank. The Company is permitted to borrow up to 70% of the value of eligible securities held at the time the line of credit is accessed. The available line of credit as of December 31, 2022 was approximately \$108,375 with an available interest rate of 6.0%. The credit agreement is available to the Company until such time that either party terminates the arrangement at their discretion. The Company has not utilized the line of credit to date.

9. Revenue

The following table represents a disaggregation of revenue by timing of revenue:

	Year Ended	
	December 31, 2022	January 1, 2022
Point-in-time	\$ 958,409	\$ 749,276
Over-time	46,773	39,623
Total revenue	<u>\$ 1,005,183</u>	<u>\$ 788,899</u>

See Note 14 of the Notes to the Consolidated Financial Statements for additional discussion of the Company's disaggregated revenue in detail.

Contract Liabilities

The Company records contract liabilities when the customer has been billed in advance of the Company completing its performance obligations primarily related to service contracts and installation. For contracts that have a duration of one year or less, these amounts are recorded as current deferred revenue in the Consolidated Balance Sheets. As of December 31, 2022 and January 1, 2022, the Company carried a long-term deferred revenue balance of \$2,852 and \$1,693, respectively, in "other non-current liabilities" on the Consolidated Balance Sheets.

Changes in deferred revenue were as follows:

	Year Ended	
	December 31, 2022	January 1, 2022
Balance, beginning of the period	\$ 31,672	\$ 15,627
Deferred revenue assumed from Inspectrology acquisition	—	386
Deferral of revenue	81,772	69,656
Recognition of deferred revenue	(80,430)	(53,997)
Balance, ending of the period	<u>\$ 33,014</u>	<u>\$ 31,672</u>

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10. Share-Based Compensation and Employee Benefit Plans:

Share-Based Compensation Plans

The Company's share-based compensation plans are intended to attract and retain employees and to provide an incentive for them to assist the Company to achieve long-range performance goals and to enable them to participate in long-term growth of the Company. The Company settles restricted stock unit awards, employee stock purchase option exercises and stock option exercises with newly issued common shares.

Onto Innovation Inc. 2020 Stock Plan (the "2020 Plan"). The 2020 Plan provides for the grant of 3,744 stock options and other stock awards to employees, directors and consultants at an exercise price equal to the fair market value of the common stock on the date of grant. Options granted under the 2020 Plan typically grade vest over a three-year period and expire ten years from the date of grant. Restricted stock units granted under the 2020 Plan typically vest over a three-year period for employees and one year for directors; however, other vesting periods are allowable under the 2020 Plan. Restricted stock units ("RSU") granted to employees have time based or performance-based vesting. As of December 31, 2022, there were 3,086 shares of common stock available for issuance pursuant to future grants under the 2020 Plan.

Onto Innovation Inc. 2020 Employee Stock Purchase Plan (the "2020 ESPP"). Under the terms of the 2020 ESPP, eligible employees may have up to 10 % of eligible compensation deducted from their pay and applied to the purchase of shares of Company common stock. The price the employee pays for each share of stock is 85 % of the lesser of the fair market value of Company common stock at the beginning or the end of the applicable six-month purchase period. The 2020 ESPP is intended to qualify under Section 423 of the Internal Revenue Code and is a compensatory plan as defined by FASB ASC 718, "Stock Compensation." Through the Company's employee stock purchase plans, employees purchased 142, 242 and 91 shares during the twelve months ended December 31, 2022, January 1, 2022 and December 26, 2020, respectively. As of December 31, 2022 and January 1, 2022, there were 1,116 and 1,258, shares available for issuance under the Company's employee stock purchase plan, respectively.

The following table reflects share-based compensation expense by type of award:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Share-based compensation expense:			
Restricted stock units, including all performance and market based awards	\$ 21,729	\$ 17,174	\$ 15,780
Stock options and employee stock purchase options	2,697	2,368	1,882
Total share-based compensation	24,426	19,542	17,662
Tax effect on share-based compensation	5,237	4,255	3,849
Net effect on net income	<u>\$ 19,189</u>	<u>\$ 15,287</u>	<u>\$ 13,813</u>
Effect on earnings per share:			
Basic	\$ (0.39)	\$ (0.31)	\$ (0.28)
Diluted	\$ (0.39)	\$ (0.31)	\$ (0.28)

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Restricted Stock Units

During fiscal years 2022, 2021 and 2020, the Company issued both service-based RSUs and market-based performance RSUs ("PRSUs"). Service-based RSUs typically vest over a period of 3 years or less. Market-based PRSUs generally vest three years from the grant date if certain performance criteria are achieved and require continued employment. Based upon the terms of such awards, the number of shares that can be earned over the performance periods is based on the Company's Common Stock price performance compared to the market price performance of a designated benchmark index, ranging from 0% to 200% of target. The designated benchmark index was the Philadelphia Semiconductor Sector Index for market-based PRSUs issued in 2022, 2021 and 2020. The stock price performance or market price performance is measured using the closing price for the 20-trading days prior to the dates the performance period begins and ends.

The following table summarizes the Company's combined service-based RSUs and market-based PRSUs:

	Number of Shares	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2019	1,107	\$ 28.89
Granted	498	\$ 34.71
Vested	(498)	\$ 29.46
Forfeited.....	(143)	\$ 29.99
Nonvested at December 26, 2020	964	\$ 31.37
Granted	338	\$ 69.82
Vested	(441)	\$ 30.90
Forfeited.....	(96)	\$ 42.40
Nonvested at January 1, 2022	765	\$ 48.25
Granted	410	\$ 82.48
Vested	(373)	\$ 42.87
Forfeited.....	(59)	\$ 58.98
Nonvested at December 31, 2022	<u>743</u>	<u>\$ 69.01</u>

Of the 743 shares outstanding at December 31, 2022, 644 are service-based RSUs and 99 are market-based PRSUs. The fair value of the Company's service-based RSUs was calculated based on the fair market value of the Company's stock at the date of grant. The fair value of the Company's market-based PRSUs granted during fiscal years 2022, 2021, and 2020 was calculated using a Monte Carlo simulation model at the date of the grant, resulting in a weighted average grant-date fair value per share of \$85.49, \$80.04, and \$47.86, respectively.

As of December 31, 2022, there was \$28,653 of total unrecognized compensation cost related to restricted stock units granted under the plans. That cost is expected to be recognized over a weighted average period of 1.5 years.

401(k) Savings Plan

The Company has a 401(k) savings plan that allows employees to contribute up to 100% of their annual compensation to the Plan on a pre-tax or after-tax basis, limited to a maximum annual amount as set periodically by the Internal Revenue Service. The plan provides a 50% match of all employee contributions up to 6 percent of the employee's salary. Matching contributions to the plan totaled \$2,965, \$2,544 and \$2,315 for the years ended December 31, 2022, January 1, 2022 and December 26, 2020, respectively.

11. Other Expense, Net:

Other expense, net is comprised of the following:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Foreign currency exchange losses, net.....	\$ (73)	\$ (2,020)	\$ (3,070)
Other.....	(68)	132	362
Total other expense, net.....	<u>\$ (141)</u>	<u>\$ (1,888)</u>	<u>\$ (2,708)</u>

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12. Income Taxes:

The components of income tax expense are as follows:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Current:			
Federal	\$ 47,963	\$ 21,791	\$ 1,466
State	987	1,007	371
Foreign.....	2,901	3,153	5,637
	<u>51,851</u>	<u>25,951</u>	<u>7,474</u>
Deferred:			
Federal	(31,622)	(9,475)	(10,355)
State	(1,506)	(540)	(1,036)
Foreign.....	(473)	(2,603)	(240)
	<u>(33,601)</u>	<u>(12,618)</u>	<u>(11,631)</u>
Total income tax expense (benefit).....	<u>\$ 18,250</u>	<u>\$ 13,333</u>	<u>\$ (4,157)</u>

The income before tax is comprised of the following:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Domestic operations	\$ 239,527	\$ 136,143	\$ (120)
Foreign operations	\$ 2,057	\$ 19,539	\$ 26,988

The provision for income taxes differs from the amount of income tax determined by applying the applicable U.S. federal income tax rate of 21% for the years ended December 31, 2022, January 1, 2022 and December 26, 2020, to income before provision for income taxes as follows:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Federal income tax provision at statutory rate	\$ 50,732	\$ 32,693	\$ 5,642
State taxes, net of federal effect.....	467	1,066	126
Foreign taxes, net of federal effect	(481)	(3,817)	596
Foreign Derived Intangible Income ("FDII") Deduction.....	(25,445)	(11,061)	(4,262)
US tax on foreign source income.....	1,423	1,721	2,013
Non-deductible officer's compensation.....	1,910	689	213
Research and development tax credit	(7,146)	(3,607)	(4,858)
Tax impact of audit and statute closures	(1,526)	(1,987)	(2,905)
Impact of the CARES Act	—	(732)	(1,141)
Other	(1,684)	(1,632)	(419)
Provision (benefit) for income taxes.....	<u>\$ 18,250</u>	<u>\$ 13,333</u>	<u>\$ (4,157)</u>
Effective tax rate	8%	9%	(16)%

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Deferred tax assets and liabilities are comprised of the following:

	December 31, 2022	January 1, 2022
Deferred tax assets:		
Reserves and accruals	\$ 17,231	\$ 15,084
Deferred revenue	3,512	4,729
Share-based compensation.....	3,942	3,023
Tax credit carryforward	12,197	10,339
Net operating losses	1,643	3,254
Depreciation and amortization.....	125	368
Operating lease liabilities.....	4,162	3,575
Other	4,044	2,364
Gross deferred tax assets.....	46,856	42,736
Less: valuation allowance	(11,772)	(10,948)
Total deferred tax assets after valuation allowance	35,084	31,788
Deferred tax liabilities:		
Depreciation and amortization.....	(32,693)	(63,554)
Operating lease right of use assets	(4,890)	(3,469)
Other	(89)	(224)
Gross deferred tax liabilities	(37,672)	(67,247)
Net deferred tax liabilities.....	<u>\$ (2,588)</u>	<u>\$ (35,459)</u>

At December 31, 2022 and January 1, 2022, the Company had recorded valuation allowances of \$11,772 and 10,948, respectively, on a certain portion of the Company's deferred tax assets to reflect the deferred tax assets at the net amount that is more likely than not to be realized. The Company maintains a valuation allowance against a portion of its federal and foreign tax credit carryforwards and state net operating losses and research and development credits of \$1,601 and \$10,171, respectively.

In assessing the realizability of deferred tax assets, the Company uses a more likely than not standard. If it is determined that it is more-likely-than-not that deferred tax assets will not be realized, a valuation allowance must be established against the deferred tax assets. The ultimate realization of the assets is dependent on the generation of future taxable income during the periods in which the associated temporary differences become deductible. Management considers the scheduled reversal of deferred income tax liabilities, projected future taxable income and tax planning strategies when making this assessment. In making the determination that it is more likely than not that the Company's deferred tax assets will be realized as of December 31, 2022, the Company relied primarily on the reversal of deferred tax liabilities as well as projected future taxable income.

At December 31, 2022, the Company had tax effected state and foreign net operating loss carryforwards of \$1,168 and \$475, respectively. The federal, state and foreign net operating loss carryforwards expire on various dates beginning in 2023 through 2037.

At December 31, 2022, the Company had foreign tax credit carryforwards and state research & development credits of \$1,601, and \$14,797, respectively. The foreign tax credit carryforwards are set to expire at various dates beginning December 31, 2029. The state research & development credits have no expiration dates.

As of December 31, 2022, the Company has provided U.S. income taxes on all its foreign earnings. The Company continues to permanently reinvest the cash held offshore to support its working capital needs. The Company has accrued \$82 for additional foreign withholding taxes that may be required from its United Kingdom and China entities in the event of a cash distribution.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

The total amount of unrecognized tax benefits are as follows:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Balance, beginning of the period	\$ 12,373	\$ 13,486	\$ 15,143
Gross increases—tax positions in prior period	456	156	347
Gross decreases—tax positions in prior period.....	—	(204)	—
Gross increases—current-period tax positions.....	1,729	1,193	1,048
Closure of audit/statute limitation.....	(1,548)	(2,258)	(3,052)
Balance, end of the period	<u>\$ 13,010</u>	<u>\$ 12,373</u>	<u>\$ 13,486</u>

The unrecognized tax benefits at December 31, 2022 and January 1, 2022 were \$13,010 and \$12,373, respectively, of which \$7,614 and \$7,832, respectively, would be reflected as an adjustment to income tax expense if recognized. The year over year increase from 2021 to 2022 is primarily due to additional unrecognized tax benefits related to federal and state tax exposures, offset by expiring tax statutes. It is reasonably possible that certain amounts of unrecognized tax benefits may reverse in the next 12 months; however, the Company does not expect such reversals to have a significant impact on its results of operations or financial position.

The Company recognizes accrued interest and penalties related to unrecognized tax benefits in income tax expense. During the years ended December 31, 2022, January 1, 2022 and December 26, 2020, the Company recognized approximately \$149, \$(814) and \$(193), respectively, in interest and penalties (benefit) expense associated with uncertain tax positions. As of December 31, 2022 and January 1, 2022, the Company had accrued interest and penalties expense included in the table of unrecognized tax benefits of \$628 and \$430, respectively.

The Company is subject to U.S. federal income tax as well as income tax in multiple state and foreign jurisdictions. The Company is subject to ordinary statute of limitation rules of three and four years for federal and state returns, respectively. However, due to tax attribute carryforwards, the Company is subject to examination for tax years 2012 forward for U.S. federal tax purposes with respect to carryforward amounts. The Company is also subject to examination in various states for tax years 2003 forward with respect to carryforward amounts. The Company is subject to examination for tax years 2014 forward for various foreign jurisdictions. The Company believes that adequate amounts have been reserved for any adjustments that may ultimately result from any future examinations of these years.

In the normal course of business, the Company is subject to tax audits in various jurisdictions, and such jurisdictions may assess additional income taxes or other taxes against it. Although the Company believes its tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from the Company's historical income tax provisions and accruals. The results of an audit or litigation could have a material adverse effect on the Company's results of operations or cash flows in the period or periods for which that determination is made.

13. Accumulated Other Comprehensive Income (Loss):

Comprehensive income includes net income, foreign currency translation adjustments, and net unrealized gains and losses on available-for-sale debt securities. See the Consolidated Statements of Comprehensive Income for the effect of the components of comprehensive income on the Company's net income.

The components of accumulated other comprehensive income (loss), net of tax, are as follows:

	Foreign currency translation adjustments	Net unrealized gains (losses) on marketable securities	Accumulated other comprehensive income (loss)
Balance at December 26, 2020	\$ 4,479	\$ 89	\$ 4,568
Net current period other comprehensive income	(2,715)	(537)	(3,252)
Reclassifications	—	—	—
Balance at January 1, 2022	1,764	(448)	1,316
Net current period other comprehensive loss.....	(8,879)	(2,447)	(11,326)
Reclassifications	—	—	—
Balance at December 31, 2022	<u>\$ (7,115)</u>	<u>\$ (2,895)</u>	<u>\$ (10,010)</u>

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

14. Segment Reporting and Geographic Information:

The Company is engaged in the design, development, manufacture and support of high-performance control metrology, defect inspection, lithography and data analysis systems used by microelectronics device manufacturers. The Company and its subsidiaries currently operate in a single operating segment: the design, development, manufacture and support of high-performance process control defect inspection and metrology, lithography and process control software systems used by microelectronics device manufacturers. Therefore, the Company has one reportable segment. The Company's chief operating decision maker is the Chief Executive Officer (the "CEO"). The CEO allocates resources and assesses performance of the business and other activities at the reportable segment level.

The following table lists the different sources of revenue:

	Year Ended					
	December 31, 2022		January 1, 2022		December 26, 2020	
Systems and software	\$ 865,707	86%	\$ 669,114	85%	\$ 450,459	80%
Parts	84,266	8%	72,753	9%	65,444	12%
Services.....	55,210	6%	47,032	6%	40,593	8%
Total revenue	<u>\$ 1,005,183</u>	<u>100%</u>	<u>\$ 788,899</u>	<u>100%</u>	<u>\$ 556,496</u>	<u>100%</u>

The Company's significant operations outside the United States include sales, service and application offices in Asia and Europe. For geographical revenue reporting, revenue is attributed to the geographic location to which the product is shipped. Revenue by geographic region is as follows:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Revenue from third parties:			
China.....	\$ 250,968	\$ 151,027	\$ 125,023
South Korea	224,172	160,373	90,193
Taiwan	199,104	194,458	120,959
United States.....	121,487	123,858	81,708
Europe.....	80,256	64,943	49,697
Japan	58,133	61,186	59,295
Southeast Asia	71,062	33,054	29,621
Total revenue	<u>\$ 1,005,183</u>	<u>\$ 788,899</u>	<u>\$ 556,496</u>

The following chart identifies our customers that represented 10% or more of total revenue for each of the last three fiscal years:

	2022	2021	2020
Taiwan Semiconductor Manufacturing Co. Ltd.....	15 %	18 %	14 %
Samsung Semiconductor.....	13 %	16 %	15 %
SK Hynix Inc.	11 %	^	^

^ The customer accounted for less than 10% of total revenue during the period.

At December 31, 2022, two customers, Samsung Semiconductor and Taiwan Semiconductor Manufacturing Co. Ltd., accounted for more than 10% of net accounts receivable. At January 1, 2022, one customer, Taiwan Semiconductor Manufacturing Co. Ltd., accounted for more than 10% of net accounts receivable.

Substantially all of the Company's long-lived assets are located within the United States of America.

ONTO INNOVATION INC.
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except per share data)

15. Earnings Per Share:

Basic income per share is calculated using the weighted average number of shares of common stock outstanding during the period. Restricted stock units and stock options are included in the calculation of diluted earnings per share, except when their effect would be anti-dilutive.

The Company's basic and diluted earnings per share amounts are as follows:

	December 31, 2022	January 1, 2022	December 26, 2020
Numerator:			
Net income.....	\$ 223,334	\$ 142,349	\$ 31,025
Denominator:			
Basic earnings per share - weighted average shares outstanding.....	49,424	49,242	49,136
Effect of potential dilutive securities:			
Restricted stock units, employee stock purchase grants and stock options - dilutive shares	340	486	339
Diluted earnings per share - weighted average shares outstanding.....	49,764	49,728	49,475
Earnings per share:			
Basic	\$ 4.52	\$ 2.89	\$ 0.63
Diluted	\$ 4.49	\$ 2.86	\$ 0.63

16. Share Repurchase Authorization:

In November 2020, the Onto Innovation Board of Directors approved a share repurchase authorization, which allows the Company to repurchase up to \$100,000 worth of shares of its common stock. Repurchases may be made through both public market and private transactions from time to time with shares purchased being subsequently retired. During the twelve months ended December 31, 2022, the Company repurchased and retired 1,018 shares of its common stock under this repurchase authorization and those shares were subsequently retired. At December 31, 2022, there was \$34,773 available for future share repurchases under this share repurchase authorization.

The following table summarizes the Company's stock repurchases:

	Year Ended		
	December 31, 2022	January 1, 2022	December 26, 2020
Shares of common stock repurchased	1,018	—	1,882
Cost of stock repurchased	\$ 65,257	\$ —	\$ 52,000
Average price paid per share	\$ 64.09	\$ —	\$ 27.62

ONTO INNOVATION INC. AND SUBSIDIARIES

SCHEDULE OF VALUATION AND QUALIFYING ACCOUNTS
(In thousands)

<u>Column A</u>	<u>Column B</u>	<u>Column C</u>		<u>Column D</u>	<u>Column E</u>
<u>Description</u>	<u>Balance at Beginning of Period</u>	<u>Charged to (Recovery of) Costs and Expense</u>	<u>Charged to Other Accounts (net)</u>	<u>Deductions</u>	<u>Balance at End of Period</u>
Fiscal Year 2022:					
Allowance for credit losses....	\$ 1,303	\$ 356	\$ —	\$ 87	\$ 1,572
Deferred tax valuation allowance	10,948	824	—	—	11,772
Fiscal Year 2021:					
Allowance for credit losses....	\$ 784	\$ 955	\$ —	\$ 436	\$ 1,303
Deferred tax valuation allowance	14,238	(3,290)	—	—	10,948
Fiscal Year 2020:					
Allowance for credit losses....	\$ 1,247	\$ 327	\$ —	\$ 790	\$ 784
Deferred tax valuation allowance	14,160	78	—	—	14,238
Allowance for convertible notes receivable.....	2,000	—	—	2,000	—

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.

Onto Innovation Inc.
(Registrant)

By: /s/ Michael P. Plisinski
Michael P. Plisinski
Chief Executive Officer
Date: February 24, 2023

PURSUANT TO THE REQUIREMENTS OF THE SECURITIES EXCHANGE ACT OF 1934, THIS REPORT HAS BEEN SIGNED BELOW BY THE FOLLOWING PERSONS ON BEHALF OF THE REGISTRANT AND IN THE CAPACITIES AND ON THE DATES INDICATED.

Signature	Title	Date
/s/ Michael P. Plisinski Michael P. Plisinski	Chief Executive Officer (Principal Executive Officer)	February 24, 2023
/s/ Mark R. Slicer Mark R. Slicer	Senior Vice President, Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 24, 2023
/s/ Leo Berlinghieri Leo Berlinghieri	Director	February 24, 2023
/s/ Stephen D. Kelley Stephen D. Kelley	Director	February 24, 2023
/s/ David B. Miller David B. Miller	Director	February 24, 2023
/s/ Karen M. Rogge Karen M. Rogge	Director	February 24, 2023
/s/ Christopher A. Seams Christopher A. Seams	Director	February 24, 2023
/s/ May Su May Su	Director	February 24, 2023
/s/ Christine A. Tsingos Christine A. Tsingos	Director	February 24, 2023

SUBSIDIARIES

<u>Name</u>	<u>Jurisdiction</u>
Rudolph Technologies, Inc.	U.S.A.
4D Technology Corporation	U.S.A.
Inspectrology LLC	U.S.A.
Onto Innovation Japan Co. Ltd.	Japan
Onto Innovation (Shanghai) Trading Co., Ltd.	China
Nanometrics China Company Ltd.	China
Onto Innovation Germany GmbH	Germany
Onto Innovation Hong Kong Limited	Hong Kong
Onto Innovation Europe, B.V.	Netherlands
Onto Innovation Switzerland GmbH	Switzerland
Nanometrics U.K. Ltd.	United Kingdom
Nanometrics Israel, Ltd.	Israel
Onto Innovation Korea Ltd.	Korea
Onto Innovation Southeast Asia Pte. Limited	Singapore
Onto Innovation Ireland Limited	Ireland
Onto Innovation Malaysia Sdn. Bhd.	Malaysia
Onto Innovation Vietnam PTE Company Limited	Vietnam
Neta SAS	France

**Rule 13a-14(a) Certification of Chief Executive Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, Michael P. Plisinski, certify that:

1. I have reviewed this annual report on Form 10-K of Onto Innovation Inc.;
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 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 and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 24, 2023

By: /s/ Michael P. Plisinski

Michael P. Plisinski
Chief Executive Officer

**Rule 13a-14(a) Certification of Chief Financial Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, Mark R. Slicer, certify that:

1. I have reviewed this annual report on Form 10-K of Onto Innovation Inc.;
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 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 and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 24, 2023

By: /s/ Mark R. Slicer

Mark R. Slicer
Chief Financial Officer

**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**

I, Michael P. Plisinski, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Onto Innovation Inc. on Form 10-K for the year ended December 31, 2022 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Onto Innovation Inc.

Date: February 24, 2023

By: /s/ Michael P. Plisinski
Michael P. Plisinski
Chief Executive Officer

**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**

I, Mark R. Slicer, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Onto Innovation Inc. on Form 10-K for the year ended December 31, 2022 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Onto Innovation Inc.

Date: February 24, 2023

By: /s/ Mark R. Slicer
Mark R. Slicer
Chief Financial Officer

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 14A

**PROXY STATEMENT PURSUANT TO SECTION 14(a) OF
THE SECURITIES EXCHANGE ACT OF 1934**

Filed by the Registrant ☒

Filed by a Party other than the Registrant ☐

Check the appropriate box:

- ☐ Preliminary Proxy Statement
- ☐ Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- ☒ Definitive Proxy Statement
- ☐ Definitive Additional Materials
- ☐ Soliciting Material Pursuant to Rule 14a-12

Onto Innovation Inc.

(Name of Registrant as specified in its charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check all boxes that apply):

- ☒ No fee required.
- ☐ Fee paid previously with preliminary materials.
- ☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11.



NOTICE OF 2023 ANNUAL MEETING OF STOCKHOLDERS

- Date:** Tuesday, May 9, 2023
- Time:** 12:00 p.m., Eastern Time
- Place:** The Company's offices located at 16 Jonspin Road, Wilmington, MA 01887
- Record Date:** Only stockholders of record at the close of business on March 13, 2023 are entitled to vote at the meeting and any adjournment or postponement thereof for which no new record date is set.
- Items of Business:**
1. To elect the Board's eight nominees for director to serve until the next Annual Meeting and until their successors are duly elected and qualified;
 2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement;
 3. To hold an advisory (non-binding) vote on the frequency of advisory votes on named executive officer compensation;
 4. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 30, 2023; and
 5. To transact such other business as may properly come before the meeting and any adjournment or postponement thereof.

These items of business are described more fully below in this proxy statement. This year we will be providing access to our proxy materials via the Internet in accordance with the Securities and Exchange Commission's "Notice and Access" rules. On or about March 30, 2023, we will be mailing to our stockholders our Notice of Internet Availability of Proxy Materials, which contains instructions for accessing our 2023 proxy statement and 2022 annual report to stockholders and how to vote online. In addition, the Notice of Internet Availability of Proxy Materials will contain instructions on how to request a paper copy of the 2023 proxy statement and 2022 annual report to stockholders.

Your vote is important. As always, we encourage you to vote your shares as soon as possible and prior to the Annual Meeting even if you plan to attend the Annual Meeting. Voting early will ensure your shares are represented at the Annual Meeting, regardless of whether you attend the Annual Meeting. You may cast your vote via the Internet, by telephone, or during the Annual Meeting. If you receive a paper copy of the proxy card by mail, you may also mark, sign, date, and return the proxy card in the accompanying postage-prepaid envelope.

IMPORTANT NOTICE REGARDING THE AVAILABILITY OF PROXY MATERIALS FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD MAY 9, 2023:

This notice, the proxy statement, and the 2022 Annual Report to Stockholders are available at:

<https://www.ontoinnovation.com/ar-proxy>

FOR THE BOARD OF DIRECTORS

Yoon Ah E. Oh
Corporate Secretary

Wilmington, Massachusetts
March 30, 2023

PROXY STATEMENT
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Forward Looking Statements

Certain statements in this proxy statement of Onto Innovation Inc. (referred to in this proxy statement, together with its consolidated subsidiaries, unless otherwise specified or suggested by the context, as the “Company,” “Onto Innovation,” “we,” “our,” or “us”) may be considered “forward-looking statements” or may be based on “forward-looking statements,” including, but not limited to, those concerning: our business momentum and future growth; technology development, product introduction and acceptance of our products and services; our manufacturing practices and ability to both deliver products and services consistent with our customers’ demands and expectations and to strengthen our market position, including our ability to source components, materials, and equipment due to supply chain delays or shortages; our expectations of the semiconductor market outlook; future revenue, gross profits, research and development and engineering expenses, selling, general and administrative expenses, and cash requirements; the effects of political, economic, legal, and regulatory changes or conflicts on our global operations; the effects of natural disasters or public health emergencies, such as the current COVID-19 pandemic, on the global economy and on our customers, suppliers, employees, and business; our dependence on certain significant customers and anticipated trends and developments in and management plans for our business and the markets in which we operate; our ability to be successful in managing our cost structure and cash expenditures and results of litigation; as well as other matters that are not purely historical data. Statements contained or incorporated by reference in this proxy statement that are not purely historical are forward-looking statements and are subject to safe harbors created under Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as, but not limited to, “anticipate,” “believe,” “continue,” “estimate,” “expect,” “intend,” “plan,” “should,” “may,” “could,” “will,” “would,” “forecast,” “project” and words or phrases of similar meaning, as they relate to our management or us. Forward-looking statements contained herein reflect our current expectations, assumptions and projections with respect to future events and are subject to certain risks, uncertainties and assumptions, such as those identified in Part I, Item 1A. “Risk Factors” of our Form 10-K for the fiscal year ended December 31, 2022. Actual results may differ materially and adversely from those included in such forward-looking statements. Forward-looking statements reflect our position as of the date of this report and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

PROXY SUMMARY

This summary highlights information contained elsewhere in the proxy statement. This summary does not contain all of the information that you should consider, and you should read the entire proxy statement carefully before voting.

Stockholder Voting Matters

Voting Matter	Board Vote Recommendation	Page Reference for more information
Proposal 1: Election of Directors	FOR ALL	6
Proposal 2: Advisory Vote to Approve Named Executive Officer Compensation	FOR	25
Proposal 3: Advisory Vote on the Frequency of Advisory Votes on Named Executive Officer Compensation	EVERY 1 YEAR	56
Proposal 4: Ratification of Appointment of Independent Registered Public Accounting Firm for the Fiscal Year Ending December 30, 2023	FOR	57

Corporate Governance Highlights

Snapshot Of Board Composition

The following table presents a snapshot of the expected composition of the Onto Innovation Board of Directors (the “Board”) immediately following the 2023 Annual Meeting, assuming the election of all nominees named in the proxy statement.

Board Characteristic	Onto Innovation
Total Number of Directors	8
Percentage of Independent Directors	87.5%
Average Age of Directors (years)	63.4
Average Tenure of Directors (years)	6.1
Separate Chairperson and CEO roles	Yes
Independent Chairperson	Yes
Audit Committee Financial Experts	2
Female Director Representation	37.5%
Race/Ethnicity Diversity Representation	12.5%

Snapshot Of Board Governance And Compensation Policies

The following table presents a snapshot of the Onto Innovation Board governance and compensation policies currently in effect.

Policy	Onto Innovation
Majority Voting for All Directors	Yes
Regular Executive Sessions of Independent Directors	Yes
Annual Board, Committee, and Director Evaluations	Yes
Risk Oversight by Full Board and Committees	Yes
Independent Audit, Compensation, and Nominating & Governance Committees	Yes
Code of Business Conduct and Ethics for Employees and Directors	Yes
Financial Information Integrity Policy	Yes
Stock Ownership Requirement for Directors	3x annual retainer
Stock Ownership Requirement for CEO	3x base salary
Stock Ownership Requirement for other NEOs	1x base salary
Stock-Based Award Grant Date Policy	Yes
Anti-Hedging, Anti-Short Sale & Anti-Pledging Policies	Yes
Incentive Compensation Clawback Policy	Yes
No Tax Gross-Up Provisions	Yes
No Poison Pill	Yes
Stock Buyback Program	Yes
Double Trigger Change-in-Control Provisions for Executive Officers	Yes
Annual Environmental, Social, and Governance Report	Yes

Snapshot Of Board Governance And Compensation Policies Newly Implemented Or Adjusted In Past Year

The following presents a snapshot of the Onto Innovation Board governance and compensation policies that were newly implemented or adjusted in the past year.

- After the 2022 Annual Meeting of Stockholders, the following actions were taken with regard to the composition and leadership structure of the Board and standing committees of the Board:
 - As previously disclosed, Edward J. Brown Jr. and Bruce C. Rhine each retired from the Board following the conclusion of their terms as of the 2022 Annual Meeting.
 - The Audit Committee was reduced to three members: Karen M. Rogge, May Su, and Christine A. Tsingos, with Ms. Tsingos serving as Chairperson.
 - David B. Miller was appointed Chairperson of the Compensation Committee following Mr. Brown's retirement. The other members of the Compensation Committee are currently Leo Berlinghieri, and Mses. Su, and Tsingos.
 - The Nominating & Governance Committee was reduced to three members: Messrs. Berlinghieri, Miller, and Seams, with Mr. Berlinghieri serving as Chairperson.
- The Board formed a new standing M&A Committee with the following members: Christopher A. Seams, Ms. Rogge and Mr. Miller, with Mr. Miller serving as Chairperson.
- The annual review of the charters for the Audit, Compensation and Nominating & Governance Committees was performed and completed. The Board also reviewed and approved updates to the Company's Code of Business Conduct and Ethics, Related Parties Transaction Policy, Financial Information Integrity Policy, Investment Policy, Incentive Compensation Clawback Policy, and Corporate Governance Guidelines (formerly, the Summary of Corporate Governance Policies).
- The Board approved a new Insider Trading Policy which, includes, among other things, a prohibition against all pledging of company securities as collateral for loans by directors, employees and other individuals and entities covered by the Insider Trading Policy.
- The Compensation Committee approved a new Stock-Based Award Grant Date Policy, which establishes the dates upon which the Company will grant stock-based awards to directors, officers, and other employees of the Company, including annual grants as well as grants for promotions, new hires, retention and other special circumstances.
- In January 2023, the Board appointed Stephen D. Kelley to the Board and to the Audit Committee.



PROXY STATEMENT

The proxy detailed herein is solicited on behalf of the Board of Directors (the “Board” or “Board of Directors”) of Onto Innovation for use at the 2023 Annual Meeting of Stockholders to be held May 9, 2023 at 12:00 p.m. Eastern Time (the “Annual Meeting”), or at any adjournment or postponement thereof, for the purposes set forth herein and in the accompanying Notice of Annual Meeting of Stockholders. The Annual Meeting will be held at the Company’s principal executive offices located at 16 Jonspin Road, Wilmington, MA 01887. Directions to the Annual Meeting may be found on our website (www.ontoinnovation.com) by clicking on “Company,” “Locations,” “Massachusetts” and then accessing the interactive map. The Company’s telephone number is (978) 253-6200.

On or about March 30, 2023, we will furnish a Notice of Internet Availability of Proxy Materials (“Notice”) to our stockholders containing instructions on how to access the proxy materials online at:

<https://www.ontoinnovation.com/ar-proxy>

Instructions on how to vote online and to request a printed copy of the proxy materials may be found in the Notice. If you receive a Notice by mail, you will not receive a paper copy of the proxy materials unless you request such materials by following the instructions contained in the Notice. Your vote is important, regardless of the extent of your holdings.

PROPOSAL 1

ELECTION OF DIRECTORS

Nominees

The Company's Amended and Restated Certificate of Incorporation provides that directors shall be elected at each Annual Meeting of Stockholders, and that each director of the Company shall serve until the expiration of the term for which he or she is elected and until his or her successor is duly elected and qualified, or until his or her earlier death, resignation, disqualification or removal.

Based on the recommendation of the Nominating & Governance Committee, the eight director nominees approved by the Board for inclusion in this proxy statement and for election at the Annual Meeting are:

Leo Berlinghieri Stephen D. Kelley David B. Miller Michael P. Plisinski
Karen M. Rogge Christopher A. Seams May Su Christine A. Tsingos

Each nominee is currently serving as a director of Onto Innovation. In making its recommendations, the Nominating & Governance Committee considered a number of factors, including its criteria for Board membership, which include the qualifications that must be possessed by a director candidate in order to be nominated for a position on our Board. Each nominee has indicated that he or she will serve if elected. Unless otherwise instructed, the proxy holders will vote the proxies received by them for the Company's eight nominees. In the event that any nominee of the Company becomes unable or unavailable to serve as a director at the time of the Annual Meeting (which we do not anticipate) the proxy holders will vote the proxies for any substitute nominee who is designated by the current Board to fill the vacancy. Alternatively, the Board, in its discretion, may elect not to nominate a substitute and to reduce the size of the Board. We do not have any reason to believe that any of the nominees will be unable or will decline to serve as a director.

Board Composition And Refreshment

A priority of the Nominating & Governance Committee and the Board as a whole is making certain that the composition of the Board reflects the desired professional experience, skills, and backgrounds in order to present an array of viewpoints and perspectives, help develop and execute strategy for the future, and effectively represent the long-term interests of stockholders. Further, the Board recognizes the importance of Board refreshment in order to continue to achieve an appropriate balance of tenure, turnover, diversity, and skills on the Board.

Vote Required

Pursuant to the Company's Amended and Restated Bylaws ("Bylaws"), our directors are elected by the affirmative vote of the majority of the votes cast (provided, however, that if the number of nominees exceeds the number of directors to be elected, directors will be elected by a plurality voting standard). In order for a director in an uncontested election to be elected, the number of votes cast "for" his/her election must exceed the number of votes cast "against" his/her election (with "abstentions" and "broker non-votes" not counted as a vote cast either "for" or "against" that director's election). If a nominee who is an incumbent director receives a greater number of "against" votes for election than "for" votes in an uncontested election and is not elected, our Corporate Governance Guidelines provide that such director must promptly tender a resignation to the Board. Our Nominating & Governance Committee would then make a recommendation to the Board on whether to accept or reject the tendered resignation, or whether other action should be taken. Within 90 days after the date of the certification of the election results, our Board will act on any such tendered resignation and publicly disclose (in a press release, a filing with the SEC or other broadly disseminated means of communication) its decision regarding the tendered resignation and the rationale behind the decision.

Information About The Nominees And Continuing Directors

Our Board and its Nominating & Governance Committee believe that all of the director nominees are highly qualified, have demonstrated leadership skills, and have the requisite experience and judgment in areas that are relevant to our business. We believe that their ability to challenge and stimulate management and their dedication to the affairs of the Company collectively serve the interests of the Company and its stockholders. The Company is unaware of any arrangements or understandings between any director or nominee and any other person(s) pursuant to which any director or nominee was or is to be selected.

The eight nominees for director are set forth below. All information is as of the record date.

Name	Principal Occupation	Board Tenure ⁽¹⁾
<i>Nominee Directors:</i>		
Leo Berlinghieri	Former President and Chief Executive Officer of MKS Instruments, Inc.	14.5 years
Stephen D. Kelley	President and Chief Executive Officer of Advanced Energy Industries, Inc.	<0.2 year
David B. Miller	Former President of DuPont Electronics & Communications	7.7 years
Michael P. Plisinski	Chief Executive Officer of Onto Innovation Inc.	7.4 years
Karen M. Rogge	President of RYN Group LLC, and Former Senior Vice President and Chief Financial Officer of Extreme Networks, Inc.	1.5 years
Christopher A. Seams	Former Chief Executive Officer of Deca Technologies Inc.	7.6 years
May Su	Former Chief Executive Officer of Kateeva, Inc.	1.1 years
Christine A. Tsingos	Former Executive Vice President and Chief Financial Officer of Bio-Rad Laboratories, Inc.	8.9 years

(1) On October 25, 2019 (the “Merger Date”), Rudolph Technologies, Inc. merged with and into Nanometrics Incorporated, which was then renamed Onto Innovation Inc. (the “2019 Merger”). Unless otherwise indicated or context otherwise requires, as used herein “Nanometrics” refers to Nanometrics Incorporated and its subsidiaries prior to the Merger Date and “Rudolph” refers to Rudolph Technologies, Inc. and its subsidiaries prior to the Merger Date. Board tenure includes time served on the Rudolph Board of Directors or the Nanometrics Board of Directors, as applicable, prior to the Merger Date.

There are no family relationships between any directors or executive officers of the Company. The Nominating & Governance Committee considered the professional experience, skills, and backgrounds of the nominees and recommended the nominees to the full Board.

The following reflects additional information regarding the background and qualifications of our director nominees, including the experience and skills that support the Board’s determination that each director nominee should serve on our Board.



The director nominees for 2023 voluntarily self-identified with the following diversity characteristics:

- Gender Self-Identification: 62.5% Male / 37.5% Female
- Race/Ethnicity Identification: 87.5% White / 12.5% Asian
- LGBTQ+ Identification: None

NOMINEES FOR DIRECTOR

Leo Berlinghieri



Director Since:	July 2008
Age:	69
Independent Status:	Independent Director
Board Committee(s):	Nominating & Governance (Chairperson), Compensation
Other Public Company Boards:	MKS Instruments, Inc. (2005-2013)

From July 2005 to December 2013, Mr. Berlinghieri served as President and Chief Executive Officer of MKS Instruments, Inc., a critical subsystem and instrument provider to the semiconductor industry. From April 2004 to July 2005, Mr. Berlinghieri served as President and Chief Operating Officer, and prior to that served as Vice President and Chief Operating Officer from July 2003 to April 2004, at MKS Instruments, Inc. Mr. Berlinghieri also served on the Advisory Board of Unipower, LLC from 2017 to 2019, as a director on the North America Advisory Board of Semiconductor Equipment and Materials International (SEMI) from 2005 to 2013, holding the role of chairperson in 2012 and 2013, and on the Board of Directors of the Massachusetts High Technology Council, Inc. from 2006 to 2013.

Key Qualifications, Attributes, Skills and Experience

Mr. Berlinghieri has over 34 years of experience in the semiconductor industry and extensive international, financial, and operations experience through his various roles with MKS Instruments, Inc., including Chief Executive Officer, Chief Operating Officer and Vice President of Global Sales and Service.

Stephen D. Kelley



Director Since:	January 2023
Age:	60
Independent Status:	Independent Director
Board Committee(s):	Audit
Other Public Company Boards:	Advanced Energy Industries, Inc. (since March 2021) Amkor Technology, Inc. (2013-2020)

Mr. Kelley has served President & Chief Executive Officer of Advanced Energy Industries, Inc., which designs and manufactures highly engineered power delivery systems for semiconductor wafer fabrication equipment and other mission-critical applications, since March 2021. Previously, Mr. Kelley served as President and Chief Executive Officer of Amkor Technology, Inc., a leading semiconductor package and test company, from May 2013 to June 2020. Prior to joining Amkor, Mr. Kelley served as Senior Advisor to Advanced Technology Investment Company, the Abu Dhabi-sponsored investment company that owned GlobalFoundries Inc. at the time, from June through November 2012. Mr. Kelley served as Executive Vice President and Chief Operating Officer of Cree, Inc. from 2008 to 2011. Previously, Mr. Kelley held executive leadership roles at Texas Instruments Inc. and Philips Semiconductors. Mr. Kelley holds a Bachelor of Science degree in Chemical Engineering from the Massachusetts Institute of Technology and a Juris Doctor degree from Santa Clara University.

Key Qualifications, Attributes, Skills and Experience

With over 30 years of leadership experience in the semiconductor industry, Mr. Kelley has a comprehensive understanding of our industry and extensive management experience, and also possesses first-hand knowledge of our customer base and has in-depth experience in strategic planning, business development, technology, manufacturing, and operations relevant to our business. Mr. Kelley was recommended to serve on our Board by a third-party search firm.

David B. Miller



Director Since:	July 2015
Age:	66
Independent Status:	Independent Director
Board Committee(s):	Compensation (Chairperson), Nominating & Governance, M&A (Chairperson)
Other Public Company Boards:	Merrimac Industries, Inc. (2002-2008)

Mr. Miller served as Rudolph's non-executive Chairperson from August 2018 through the Merger Date. From June 1981 to November 2015, Mr. Miller served in various positions, most recently as President, at DuPont Electronics & Communications, an electronic materials company. Mr. Miller previously served as the President of the University of Virginia School of Engineering & Applied Science Foundation from 2016 to 2018. Mr. Miller served on the board of directors of Semiconductor Equipment and Materials International (SEMI) from 2011 to 2015 and on the board of the North Carolina Chamber of Commerce from 2010 to 2015. He has also served on several electronics joint venture boards in the U.S. and Asia. Mr. Miller holds a Bachelor of Science degree in Electrical Engineering from the University of Virginia.

Specific Qualifications, Attributes, Skills and Experience

Mr. Miller has over 40 years of experience in the electronics industry. In his prior roles, including as President of DuPont Electronics & Communications, he had oversight of technology advancement, complex financial transactions, profit and loss responsibility and investor relations, and brings substantial management and market expertise to the Board. Mr. Miller also has substantial international experience, having served on several electronics joint venture boards in the U.S. and Asia as well as on the board of SEMI International.

Michael P. Plisinski



Director Since:	November 2015
Age:	53
Independent Status:	Non-Independent Director
Board Committee(s):	None
Other Public Company Boards:	None

Mr. Plisinski has served as the Company's Chief Executive Officer since the Merger Date and was previously Chief Executive Officer of Rudolph from November 2015 through the Merger Date. Prior to his appointment as Rudolph's CEO, Mr. Plisinski served as Rudolph's Executive Vice President and Chief Operating Officer from October 2014 to November 2015 and as Vice President and General Manager, Data Analysis and Review Business Unit from February 2006, when Rudolph merged with August Technology Corporation, a provider of process control equipment for thin film measurement and macro defect inspection, until October 2014. From February 2004 to February 2006, Mr. Plisinski served as August Technology's Vice President of Engineering and, from July 2003 to February 2004, as its Director of Strategic Marketing for review and analysis products. Mr. Plisinski joined August Technology in connection with its acquisition of Counterpoint Solutions, a supplier of optical review and automated metrology equipment to the semiconductor industry, where he was both sole founder and President from June 1999 to July 2003. Since August 2020, Mr. Plisinski has served on the Board of Cognizer.AI, a software company that specializes in deep-learning powered natural language intelligence. Mr. Plisinski has a Bachelor of Science degree in Computer Science from the University of Massachusetts and has completed the Advanced Management Program from Harvard Business School.

Key Qualifications, Attributes, Skills and Experience

Mr. Plisinski brings to our Board of Directors insights based on his leadership roles at the Company and his deep knowledge of our products, markets, customers, culture, and organization.

Karen M. Rogge



Director Since:	September 2021
Age:	68
Independent Status:	Independent Director
Board Committee(s):	Audit, M&A
Other Public Company Boards:	GigCapital5, Inc. (since February 2023) Rambus Inc. (since April 2021) Kemet Corporation (2018-2020) AeroCentury Corp. (2017-2018)

Ms. Rogge is president of the RYN Group LLC, a management consulting business, which she founded in 2010. She served as the Interim Vice President and Chief Financial Officer of Applied Micro Circuits Corporation, a semiconductor company, from 2015 to 2016. Previously, Ms. Rogge served as the Senior Vice President and Chief Financial Officer of Extreme Networks, a computer network company, from 2007 to 2009. Earlier in her career, she held executive financial and operations management positions at Hewlett Packard Company and Seagate Technology. Ms. Rogge holds a Master of Business Administration degree from Santa Clara University, and a Bachelor of Science degree in business administration from California State University, Fresno. She maintains a National Association of Corporate Directors (NACD) Board Leadership Fellow credential and has attended the Stanford Directors College. Ms. Rogge also serves as a director of GigCapital6, Inc., a privately held special purpose acquisition company.

Key Qualifications, Attributes, Skills and Experience

Ms. Rogge has substantial financial and international experience gained in her roles as Chief Financial Officer of Applied Micro Circuits Corporation and Extreme Networks as well as in executive financial and operations roles at Hewlett Packard Company and Seagate Technology. From her prior roles she also gained a broad array of technological exposure, interaction, and understanding.

Christopher A. Seams



Director Since:	August 2015
Age:	60
Independent Status:	Independent Director
Board Committee(s):	Nominating & Governance, M&A
Other Public Company Boards:	Xperi Inc. (since October 2013)

Mr. Seams served as Chief Executive Officer of Deca Technologies Inc., a wafer-level electronic interconnect solutions provider to the semiconductor industry, from June 2013 to August 2016. Prior to Deca Technologies, Mr. Seams served as Executive Vice President of sales and marketing at Cypress Semiconductor, a semiconductor design and manufacturing company, and held various technical and operational management positions in its manufacturing, development, and operations. Prior to joining Cypress in 1990, Mr. Seams worked in process development for Advanced Micro Devices and Philips Research Laboratories. Mr. Seams earned his Bachelor of Science degree in electrical engineering from Texas A&M University and his master's degree in electrical and computer engineering from the University of Texas at Austin. Mr. Seams has a Professional Certificate in Advanced Computer Security from Stanford University and is a senior member of the Institute of Electrical and Electronics Engineers. Mr. Seams is a member of the American College of Corporate Directors (ACCD) as well as a member and Certified Director of the National Association of Corporate Directors (NACD).

Key Qualifications, Attributes, Skills and Experience

Mr. Seams has over 30 years of experience within the semiconductor industry. During that time he has gained substantial management, financial and international experience as a senior leader at multiple companies. He also brings to the Board technology and innovation experience gained through an array of technical and operational management positions in manufacturing, development, operations, and process development.

May Su



Director Since:	March 2022
Age:	65
Independent Status:	Independent Director
Board Committee(s):	Audit, Compensation
Other Public Company Boards:	Kateeva, Inc. (2020-2022)

Ms. Su served as Chief Executive Officer of Kateeva, Inc., a company that builds inkjet deposition equipment solutions, from March 2020 to October 2022. Prior to becoming Chief Executive Officer, Ms. Su served as Kateeva's Chief Marketing Officer starting in January 2018 and added the role of Senior Vice President of Sales in May 2019. Before joining Kateeva, Ms. Su was an independent consultant from 2016 to 2018. From 2012 to 2016, Ms. Su served in an array of senior management roles, including Vice President, Strategic Marketing and Vice President Strategic OEM Sales, for Brooks Automation, Inc., a provider of automation, vacuum and instrumentation equipment for multiple markets, including semiconductor manufacturing. From 2009 to 2012, Ms. Su served as Vice President and General Manager for Crossing Automation Inc., a manufacturer of fabrication and tool automation products, which was acquired by Brooks Automation in 2012. Before her role at Crossing Automation, Ms. Su was President of U.S. & European Field Operations for Nova Measuring Instrument, Inc., a provider of metrology devices for advanced process control used in semiconductor manufacturing, and held other senior management roles with Aviza Technology, Inc., New-Wave Research, KLA-Tencor Corporation and Lam Research Corporation. Ms. Su holds a Bachelor of Science degree in mechanical engineering from Cornell University, a Master of Science degree in mechanical engineering from University of California-Berkeley, and a Master of Business Administration degree from Santa Clara University, Leavey School of Business. Ms. Su also serves on the board of directors of Applied Engineering, Inc., a high-tech contract manufacturing company.

Key Qualifications, Attributes, Skills and Experience

Ms. Su has over 40 years of experience within the semiconductor capital equipment industry. During that time she has gained substantial management, international and financial experience in her role as Chief Executive Officer of Kateeva, Inc., as well as in other executive and general manager roles.

Christine A. Tsingos



Director Since:	May 2014
Age:	64
Independent Status:	Independent Director
Board Committee(s):	Audit (Chairperson), Compensation
Other Public Company Boards:	Envista Holdings Corporation (since September 2019) Varex Imaging Corporation (since February 2017) Telesis Bio Inc. (since May 2021)

Ms. Tsingos served as the Executive Vice President and Chief Financial Officer of Bio-Rad Laboratories, a manufacturer and distributor of life science research and clinical diagnostics products, from December 2002 through May 2019. Prior to Bio-Rad, Ms. Tsingos held executive positions at Autodesk, The Cooper Companies, and Attest Systems. Ms. Tsingos earned a Bachelor of Arts degree in International Studies from the American University in Washington, D.C. and a Master of Business Administration degree in International Business from the George Washington University. In 2010, Ms. Tsingos was awarded the prestigious Bay Area CFO of the Year.

Key Qualifications, Attributes, Skills and Experience

Ms. Tsingos has over 30 years of financial and operational experience with a series of companies, including 16 years of service as Chief Financial Officer of Bio-Rad Laboratories through which she also gained comprehensive international experience. Ms. Tsingos also has significant experience and knowledge of both the Company and the semiconductor industry derived from nine years of dedicated service on the Boards of Directors of Nanometrics and the Company.

**The Board recommends voting “FOR”
all of the nominees set forth above.**

CORPORATE GOVERNANCE PRINCIPLES AND PRACTICES

Onto Innovation is committed to sound and effective corporate governance practices. Having such practices is essential to running our business efficiently and maintaining our integrity in the marketplace. The major components of our corporate governance practices are described below.

Board Leadership Structure

In accordance with our sound and effective corporate governance practices, the roles of Chief Executive Officer (“CEO”) and Chairperson of the Board are held by separate individuals. Our Board is led by Christopher A. Seams, who is an independent director and has served as Chairperson of the Board since the Merger Date. The Board’s primary responsibility is to oversee management of the company. Company management is led by Michael P. Plisinski, who has served as our CEO and a director since the Merger Date.

Our Board is currently comprised of one non-independent director, Mr. Plisinski, and seven independent directors, each of whom has been affirmatively determined by our Board to meet the criteria for independence established by the Securities and Exchange Commission (“SEC”) and the New York Stock Exchange (“NYSE”). The independent directors meet periodically in executive session chaired by the Chairperson without the CEO or other management present. Furthermore, each director is encouraged to suggest items for the Board agenda in advance of any meeting and to raise at any Board meeting subjects that are not on the agenda for that meeting.

The Board believes that, at the current time, the designation of an independent Chairperson of the Board facilitates the functioning of the Board, while leaving the CEO with the responsibility for setting the strategic direction for the Company and for the day-to-day leadership and performance of the Company. The independent Chairperson of the Board:

- Presides at all meetings of the stockholders and the Board at which he or she is present;
- Establishes the agenda for each Board and stockholder meeting;
- Calls and prepares the agenda for and presides over separate executive sessions of the independent directors;
- Acts as a liaison between the independent directors and the Company’s management; and
- Performs such other powers and duties as may from time to time be assigned by the Board or as may be prescribed by the Company’s Bylaws.

Board Meetings

In 2022, each incumbent director attended at least 96% of the aggregate of the total number of Board meetings and the total number of meetings of Board committees on which such director served during the time such director served on the Board. Edward J. Brown, Jr. and Bruce C. Rhine both attended 75% or more of the Board meetings and meetings of committees on which they served that were held during 2022 until the Company’s 2022 Annual Meeting date at which Messrs. Brown and Rhine did not stand for reelection to the Board. While the Company does not currently have a formal policy regarding the attendance of directors at the Annual Meeting of stockholders, directors are encouraged to attend. All members of the Board who stood for reelection at the Company’s 2022 Annual Meeting of Stockholders attended the Annual Meeting.

In 2022, the Board held a total of six Board meetings. On four occasions during 2022 the Company’s Board met in executive session in which only the independent Board members were present.

Board Independence

The Board makes an annual determination as to the independence of each of our Board members under the current standards for “independence” established by the NYSE and the SEC. The Board has determined that the following nominees for election as directors to our Board are independent under the NYSE Listing Rules and SEC rules: Leo Berlinghieri, Stephen D. Kelley, David B. Miller, Karen M. Rogge, Christopher A. Seams, May Su, and Christine A. Tsingos. Michael P. Plisinski, due to his position as our CEO, is not considered to be independent. The two directors who did not stand for re-election in 2022, Edward J. Brown, Jr. and Bruce C. Rhine were both determined by the Board to be independent under applicable NYSE and SEC rules.

During 2022, none of the independent members of our Board was a party to any transactions, relationships, or arrangements that were considered by the Board to impair his or her independence.

Oversight Of Risk

One of the Board’s primary responsibilities is reviewing the Company’s strategic plans and objectives, including oversight of the principal risk exposures of the Company. In particular, the Board is responsible for monitoring and assessing strategic risk exposure, including determining the nature and level of risk appropriate for the Company. The Board does not have a standing risk management committee, but rather administers this oversight function directly through the Board as a whole, as well as through the standing Board committees, which address risks inherent in their respective areas of oversight. The Audit Committee, along with the Nominating and Governance Committee, assists the Board in oversight and monitoring of the financial and legal risks facing the Company, management’s approach to addressing these risks and strategies for risk mitigation. On at least an annual basis, the Audit Committee reviews, and discusses with management, policies and systems pursuant to which management addresses risk, including risks associated with our audit, financial reporting, internal control, disclosure control, cybersecurity, regulatory compliance and investment policies. Our Compensation Committee, at least annually, reviews our compensation program to ensure that it does not encourage excessive risk-taking. Our Nominating & Governance Committee oversees risks related to governance issues, such as succession planning. It also monitors and oversees legal compliance and compliance with the Company’s Code of Business Conduct and Ethics, including the investigation and enforcement of the provisions of the Code of Business Conduct and Ethics. Each of our Committees regularly reviews with our Board any issues that arise in connection with the risk matters within the scope of its responsibilities and, in accordance with our Corporate Governance Guidelines, our full Board regularly engages in discussions of risk management to assess major risks facing our Company and review options for the mitigation of such risks. As a result of the foregoing, we believe that our CEO, together with the Chairpersons of our Audit, Compensation and Nominating & Governance Committees and our full Board, provide effective oversight of Company risk.

As part of the Company’s cybersecurity initiatives, we have established the Cyber Security Council (“CSC”), a cybersecurity oversight committee composed of members of the management team. The CSC oversees and is responsible for the executive level supervision of the Company’s cybersecurity risk, information security, and technology risk, as well as the Information Technology department’s actions to identify, assess, mitigate, and remediate cyber related issues. The CSC receives regular quarterly reports from the Vice President of Information Technology on the Company’s cybersecurity risk profile and enterprise cybersecurity program and meets with the Board’s Audit Committee on at least a quarterly basis. The CSC annually reviews and recommends the Company’s information security policy and information security program to the Board for approval. The Board reviews and discusses the Company’s technology strategy with the Vice President of Information Technology on an annual basis and approves the Company’s technology strategic plan.

Board Committees

The Board has four standing committees with separate chairpersons: the Audit, Compensation, Nominating & Governance, and M&A Committees. Each of the Board committees is composed solely of independent directors and has adopted a written charter that sets forth the specific responsibilities and qualifications for membership on the committee. The charters of these committees are available on our website at <https://investors.ontoinnovation.com/governance/governance-documents/>.

In 2022, the composition of and number of meetings held by the Company's Board committees were as follows:

Committee Chairperson	Committee Members	Number of Meetings Held in 2022
Audit Committee		
Christine A. Tsingos	Edward J. Brown, Jr. ¹ Bruce C. Rhine ¹ Karen M. Rogge Christopher A. Seams ² May Su ³	10
Nominating & Governance Committee		
Leo Berlinghieri	David B. Miller Bruce C. Rhine ¹ Christopher A. Seams	6
Compensation Committee		
David B. Miller ⁶	Edward J. Brown, Jr. ⁴ Leo Berlinghieri May Su ⁵ Christine A. Tsingos	6
M&A Committee		
David B. Miller	Karen M. Rogge Christopher A. Seams	2

¹ Committee member until his retirement from the Board effective at the 2022 Annual Meeting.

² Committee member from January 2022 until May 2022.

³ Committee member effective as of May 2022.

⁴ Committee chairperson until his retirement from the Board effective at the 2022 Annual Meeting.

⁵ Committee member effective as of appointment to the Board in March 2022.

⁶ Committee chairperson effective as of May 2022.

Audit Committee

The current members of the Audit Committee are Stephen D. Kelley, Karen M. Rogge, May Su, and Christine A. Tsingos, who also serves as the chairperson of the committee. The Audit Committee assists the Board in fulfilling its responsibilities for general oversight of the integrity of our financial statements, our accounting policies and procedures and our compliance with legal and regulatory requirements. Among its functions, the Audit Committee is responsible for:

- The appointment, compensation, performance evaluation, retention, and oversight of the Company's independent registered public accounting firm;
- The approval of services performed by the Company's independent registered public accounting firm;
- Reviewing the responsibilities, functions, and performance of the Company's internal audit function;
- Reviewing the scope and results of internal audits and ongoing assessments of the Company's risk management processes and system of internal control;
- Reviewing and approving in advance any related party transactions; and
- Evaluating the Company's system of internal control over financial reporting and disclosure controls and procedures.

The report of our Audit Committee is found below under the caption "Audit Committee Report."

The Board has determined that each of the Audit Committee members meets the Audit Committee membership requirements set forth by the NYSE and the SEC, including that they be "independent" and financially literate. Furthermore, the Board has

determined that Ms. Tsingos and Ms. Rogge each qualify as an “Audit Committee Financial Expert” as that term is defined under SEC rules and have “accounting or related financial management expertise” as contemplated by NYSE rules.

Compensation Committee

The current members of the Compensation Committee are Leo Berlinghieri, May Su, Christine A. Tsingos, and David B. Miller, who also serves as chairperson of the committee. The Compensation Committee is responsible for reviewing and approving the compensation of the Company’s officers, reviewing and recommending to the Board for approval the compensation policy for the Company’s non-employee directors, and administering the Company’s equity compensation plans, among other things. With respect to the compensation of the Company’s CEO, the Compensation Committee reviews and approves the various elements of the CEO’s compensation. With respect to other officers, including each of our named executive officers (“NEOs”), the Compensation Committee reviews the compensation for such individuals presented to the Compensation Committee by the CEO and the reasons therefor and, in its discretion, may approve or modify the compensation packages for such individuals. The Compensation Committee has delegated to the Company’s CEO the authority, within certain parameters, to approve the grant of restricted stock units (“RSUs”) to employees and consultants who are not directors or executive officers subject Section 16 reporting obligations.

In accordance with its charter, the Compensation Committee may form, and delegate its authority to, subcommittees when appropriate. Further, the Compensation Committee has the authority to retain independent compensation consultants and to obtain advice from internal or external legal, accounting, and other advisors to assist in the evaluation of director, officer, or employee compensation or other matters within the scope of the Compensation Committee’s responsibilities and is directly responsible for the appointment, compensation, and oversight of such consultants and other outside advisors, including their fees and other retention terms. From time to time, the Compensation Committee engages the services of such independent compensation consultants to provide advice on compensation plans and issues related to the Company’s executive officer and non-executive officer employees. In 2022, the Compensation Committee engaged Compensia, Inc. (“Compensia”) to provide such assistance to the Compensation Committee.

Each current member of our Compensation Committee is a “non-employee” director within the meaning of Rule 16b-3 under the Exchange Act. The Board has determined that each of the Compensation Committee members meets the Compensation Committee membership requirements set forth by the NYSE and the SEC, including that they be “independent.”

For further discussion of the Compensation Committee and its processes and procedures, please refer to the “Compensation Program Objectives, Design, and Practices” section in the Compensation Discussion and Analysis below. The Compensation Committee Report is included under the caption “Compensation Committee Report on Executive Officer Compensation” in this Proxy Statement.

Nominating & Governance Committee

The current members of the Nominating & Governance Committee are David B. Miller, Christopher A. Seams, and Leo Berlinghieri, who also serves as chairperson of the committee. The responsibilities of the Nominating & Governance Committee include:

- Identifying prospective director nominees and recommending to the Board director nominees for the next Annual Meeting of Stockholders and replacements of a director in the event of a vacancy on the Board;
- Recommending to the Board the appointment of directors to Board committees;
- Developing and recommending to the Board, and monitoring compliance with, the corporate governance guidelines applicable to the Company;
- Managing the CEO selection process;
- Overseeing evaluation of Company management; and
- Conduct an annual review of management succession planning.

The Nominating & Governance Committee also oversees the annual evaluation of the Board, the committees of the Board and the individual directors. Among other topics, the evaluation in general assesses:

- For both the Board and the committees:
 - Their structure and composition;
 - The format and content of meetings; and
 - The effectiveness of the Board and the committees, as applicable.

- For each individual director:
 - Their performance and approach to their directorship;
 - Their understanding of their role as a director;
 - Their understanding of critical aspects of the Company's business, products and strategy; and
 - Their skills, experience and ongoing training.

The goal of the evaluation is to identify and address any performance issues at the Board, committee or individual level, should they exist, identify potential gaps in the boardroom and to assure the maintenance of an appropriate mix of director skills and qualifications. Upon completion of the evaluation, the Nominating & Governance Committee provides feedback to the Board, the committees and the individual directors regarding the results of the evaluation and raises any issues that have been identified which may need to be addressed.

The Nominating & Governance Committee utilizes a variety of methods for identifying and evaluating potential candidates for joining the Board. For 2022, the Nominating & Governance Committee engaged both Spencer Stuart and ON Partners, each an executive search and leadership consulting firm, to assist with this process. The Nominating & Governance Committee's general policy is to assess the appropriate size and needs of the Board and whether any vacancies are expected due to retirement or otherwise. In addition, candidates for director are typically reviewed in the context of the current composition of the Board, the operating requirements of the Company, the current needs of the Board, and the long-term interests of stockholders, with the goal of maintaining a balance of knowledge, experience and capability. In the event those vacancies are anticipated, or otherwise arise, the Nominating & Governance Committee will consider recommending various potential candidates to fill such vacancies. Candidates may also come to the attention of the Nominating & Governance Committee through its current members, stockholders or other persons.

The Board has determined that each of the Nominating & Governance Committee members meets the Nominating & Governance Committee membership requirements, including the independence requirements of the NYSE and the SEC.

M&A Committee

The current members of the M&A Committee are Karen M. Rogge, Christopher A. Seams, and David B. Miller, who also serves as chairperson of the committee. The Board established the M&A Committee as a standing committee in May 2022 to assist the Board in evaluating potential acquisitions, investments, mergers, divestitures, and similar strategic transactions and to oversee management's execution of such strategic transactions. The M&A Committee's responsibilities include:

- Reviewing and assessing strategic transactions identified by management, including the valuation, strategic rationale and integration strategy for any proposed transaction;
- Approving non-binding term sheets, letters of intent, indications of interest, and other similar documents for strategic transactions;
- Overseeing the diligence processes for strategic transactions; and
- Providing guidance to management as to the desired methodology and processes for identification, development, and presentation of strategic opportunities.

Other Committees

Our Board may from time to time establish other special or standing committees to facilitate the oversight of management of the Company or to discharge specific duties delegated to the committee by the full Board.

Compensation Committee Interlocks And Insider Participation

During fiscal year 2022, Leo Berlinghieri, Edward J. Brown, Jr., David B. Miller, May Su, and Christine A. Tsingos were each a member of the Compensation Committee. Mr. Brown ceased serving on the committee as of his retirement from the Board at the 2022 Annual Meeting. No member of our Compensation Committee was at any time during fiscal year 2022, or formerly, an officer or employee of Onto Innovation or any subsidiary of Onto Innovation. No member of our Compensation Committee had any relationship with us during fiscal year 2022 requiring disclosure under Item 404 of Regulation S-K under the Exchange Act. During fiscal year 2022, none of our executive officers served as a member of the board of directors or compensation committee (or other committee serving an equivalent function) of any entity that had one or more executive officers serving as a member of our Board of Directors or Compensation Committee.

Board Membership Criteria And Nominee Identification

The Nominating & Governance Committee of the Board determines the required selection criteria and qualifications of director nominees based upon the needs of the Company at the time nominees are considered. While the Nominating & Governance Committee has no specific minimum qualifications for director candidates, persons considered for nomination to the Board must demonstrate the following qualifications to be recommended by the Nominating & Governance Committee for election:

- The candidate must exhibit proven leadership capabilities, high integrity, and experience with a high level of responsibilities within his or her chosen field;
- The candidate must possess the ability to apply good business judgment and be of sound mind and high moral character;
- The candidate must have no personal or financial interest that would conflict or appear to conflict with the interests of the Company;
- The candidate must be in a position to properly exercise his or her duties of loyalty and care and be willing and able to commit the necessary time for Board and committee service; and
- The candidate must have the ability to grasp complex principles of business, finance, international transactions and semiconductor inspection, metrology, lithography, and related software technologies.

The Nominating & Governance Committee retains the right to modify these qualifications from time to time.

In selecting director nominees, the Nominating & Governance Committee considers, among other factors:

- The competencies and skills that the candidate possesses and the candidate's areas of qualification and expertise that would enhance the composition of the Board and further its ability to offer advice and guidance to management;
- How the candidate would contribute to the Board's overall balance of expertise, perspectives, backgrounds, and experiences in substantive matters pertaining to the Company's business; and
- The candidate's demonstrated excellence in his or her field and commitment to rigorously representing the long-term interests of the Company's stockholders.

When current Board members are considered for nomination for reelection, the Nominating & Governance Committee also takes into consideration their prior contributions to and performance on the Board and their record of attendance.

The Nominating & Governance Committee considers the above criteria for nominees identified by the Nominating & Governance Committee itself, by stockholders, or through other sources. The Nominating & Governance Committee uses the same criteria for evaluating all nominees, regardless of the original source of nomination. The Nominating & Governance Committee may use the services of a third-party search firm to assist in the identification or evaluation of Board member candidates.

Consideration Of Director Nominees

The Nominating & Governance Committee has a formal policy with regard to consideration of director candidates recommended by the Company's stockholders, which is contained within the Company's Director Candidate Policy, which may be found on our website at:

<https://investors.ontoinnovation.com/governance/governance-documents/>

In accordance with this policy, the Nominating & Governance Committee will consider recommendations for director candidates from stockholders holding no less than 1% of the Company's securities for at least 12 months prior to the date of the submission of the recommendation. Stockholders wishing to recommend persons for consideration by the Nominating & Governance Committee as nominees for election to the Company's Board can do so by writing to the Office of the General Counsel of the Company at its principal executive offices giving:

- The candidate's name, age, business address and residence address;
- The candidate's detailed biographical data and qualifications including principal occupation and employment history;
- The class and number of shares of the Company which are beneficially owned by the candidate;
- The candidate's written consent to being named as a nominee and to serving as a director, if elected;
- Information regarding any relationship between the candidate and the Company in the last three years;

- Any other information relating to the candidate that is required by law to be disclosed in solicitations of proxies for election of directors;
- The name and address of the recommending or nominating stockholder;
- The class and number of shares of the Company which are beneficially owned by the recommending or nominating stockholder; and
- A description of all arrangements or understandings between such stockholder and each nominee and any other person or persons (naming such person or persons) relating to the nomination.

Stockholders also have the right to directly nominate director candidates, without any action or recommendation on the part of the Nominating & Governance Committee or the Board, by following the procedures set forth in Section 2.5 of the Company's Bylaws.

Corporate Governance Guidelines

Our Board has adopted Corporate Governance Guidelines, which, along with the Company's Certificate of Incorporation and Bylaws and the Board committee charters, provide the framework for the governance of Onto Innovation. The Board follows the procedures and standards in the Corporate Governance Guidelines to fulfill its responsibilities and discharge its governance duties. A copy of the Corporate Governance Guidelines is available on our website at:

<https://investors.ontoinnovation.com/governance/governance-documents/>

Codes Of Ethics

We have adopted a Code of Business Conduct and Ethics (applicable to all directors, officers, employees, consultants, and contractors) and a Financial Information Integrity Policy (applicable to our financial officers, including our CEO and Chief Financial Officer ("CFO")) that each set forth principles of ethical and legally compliant conduct and establish procedures for reporting any violations. Copies of the Code of Business Conduct and Ethics and the Financial Information Integrity Policy may be found on our website at:

<https://investors.ontoinnovation.com/governance/governance-documents>

or may be requested (without charge) by writing to:

Onto Innovation Inc.
Attention: Investor Relations
16 Jonspin Road
Wilmington, Massachusetts 01887

The Company will post on its website any amendment or waiver of a provision of our Code of Business Conduct and Ethics as may be required, and within the time period specified, by applicable SEC rules.

Corporate Social Responsibility

An important part of advancing the semiconductor industry through our innovation is being a socially responsible company. Our Company's core values of Passion, Integrity, Collaboration, and Results underpin our commitments to sustainable growth and to making a positive contribution to people and the planet. We strive to achieve responsible and sustainable business practices and continuous improvement in our own operations, in our partnerships with our customers, across our supply chain and in our engagements with our other stakeholders. Our Company invests in environmental, social, and governance ("ESG") initiatives across our business and integrates ESG principles into our day-to-day operations.

Business and Governance. Our Company has established a cross-functional ESG executive leadership team that is responsible for proposing goals, developing and executing strategy, and embedding ESG into our operations management. This ESG leadership team provides regular updates to the Board and engages them to discuss ESG strategy, gain alignment on goals, and report on progress. Our Board is actively engaged in the Company's ESG oversight and has the primary responsibility for our ESG priorities. Board committees provide further guidance and oversight on relevant ESG topics including the Compensation Committee on human capital management, the Audit Committee on information security and the Nominating & Governance Committee on ethics compliance.

Workplace. As described in the “Social Programs” section in our 2021 ESG Report, our Company strives to provide a work environment that fosters inclusion and diversity, ensures every voice is heard, and enables employees to achieve their full potential. Our Company aims to maintain a collaborative, supportive, and opportunity-rich culture that enhances innovation and employee engagement. We strive to protect the health and safety of our personnel throughout our entire operation, including our offices, manufacturing sites, research and development (“R&D”) centers, and our field team working at customer sites.

Community. Our Company believes that positively involving our employees and giving back to our community is central to our culture and an expression of our core values. In 2021, the Company initiated RISE (Reimagining Initiatives for Society and the Environment) Teams, which have direct oversight from the ESG leadership team. These teams are formed at each location globally in order to promote local charitable giving including employee volunteer hours and employee donations. Our RISE Teams’ philanthropy and volunteerism programs provide financial and human services to improve the quality of life in the communities in which we operate. We are committed to creating positive impacts in communities around the world by contributing to local, national, and international organizations that support community needs such as hunger, food and water security, disadvantaged children and senior citizens, health improvement, and environmental protection.

Sustainable Operations. We believe that incorporating environmental sustainability into business leads to better products, more efficient operations, and added value for our customers. As the world tackles climate change and other critical environmental issues, we seek to do our part by responsibly managing our impact with global goals for energy efficiency, greenhouse gas emissions, carbon footprint per employee, water conservation, and landfill hazardous waste reduction and elimination. We carefully monitor and manage our environmental impact across our business and work to implement cost-effective best practices, focusing our efforts where we believe we can have the biggest long-term impact. Our Company looks at impacts from procurement to manufacturing, during R&D and product design, and throughout a product’s lifecycle. We carefully manage our environmental impact, set goals, and report progress annually through our annual ESG report, which is carefully reviewed and verified by our internal audit function.

Products and Customers. Our Company demands excellence in our quality and environmental performance, as demonstrated through our product and process qualification commitments, which resulted in our ISO 9001 Quality Management certification. We continuously strive to develop innovative products and solutions that help our customers improve their product yields and reduce the amount of scrapped materials. We seek to achieve this through our monitoring processes and by alerting customers via our software products before specification limits are reached, thereby helping customers avoid product test failures. In addition, our equipment meets or exceeds safety requirements and incorporates higher throughput to reduce the energy required to process customer products on a per unit basis, benefiting our customers and the environment. Our Company also strives to extend the life of our products and solutions to enable our customers to realize greater value from our products with a potentially lower environmental impact.

Responsible Supply Chain. Our Company understands the importance of an ethical, responsible, resilient, and diverse supply chain, and we engage with our suppliers to address a wide range of issues including human rights, humane treatment, freely chosen employment, labor, anti-corruption, supplier diversity, environmental impact, and responsible mineral sourcing. We are a strong proponent of supply-chain-related industry standards and endeavor to uphold the guidelines published by the Responsible Business Alliance (“RBA”). Since joining in 2021, the Company has been an affiliate member of the RBA, the world’s largest industry coalition dedicated to corporate responsibility in global supply chains. Beginning in 2022, our direct suppliers are expected to adhere to our Global Supplier Code of Conduct, which incorporates the RBA code of conduct and covers topics such as ethics, integrity, transparency, anti-corruption, conflict minerals, human trafficking, environmental sustainability, and social responsibility. Acknowledgment of and consent to adhere to our Global Supplier Code of Conduct is a mandatory requirement of our new supplier onboarding process.

For more information about our ESG efforts, please refer to our Annual ESG Report available in the Company section of our website at <https://ontoinnovation.com/company/environmental-social-governance>. Our ESG Report shall not be deemed “filed” with the SEC for purposes of federal securities law, and it shall not be incorporated by reference into any of the Company’s current, past or future SEC filings unless specifically noted in such filing. The information contained on our website is not part of this document and the ESG report shall not be deemed soliciting material.

Related Person Transactions Policy

There have been no “related person transactions” from January 1, 2022 to the date of this proxy statement, nor are there any currently proposed “related person transactions,” involving any director, director nominee or executive officer of the Company, any known 5% stockholder of the Company or any immediate family member of any of the foregoing persons (which are referred to together as “related persons”). A “related person transaction” generally means a transaction involving more than \$120,000 in which the Company (including any of its subsidiaries) is a participant and in which one of our executive officers, directors, director nominees or 5% shareholders (or their immediate family members), each of whom we refer to as a related person, has a direct or indirect material interest.

The Board has adopted written policies and procedures addressing the Company's procedures with respect to the review, approval and ratification of "related person transactions" that are required to be disclosed pursuant to Item 404(a) of Regulation S-K. Our related person practices and policies are designed to ensure that our directors, officers and employees are proactively screened from any conflicts of interests that may interfere with their obligations to the Company. Our policies are included in the Company's Related Parties Transaction Policy.

Pursuant to the Related Parties Transaction Policy, the Audit Committee, which consists entirely of independent directors, will review any proposed transaction in which the Company or its subsidiaries are to participate if the aggregate amount involved in the transaction will or may exceed \$120,000 and any related person may have a direct or indirect material interest in the transaction. The Audit Committee will consider the facts and circumstances and may approve or ratify a proposed transaction if the Audit Committee determines that the transaction is not inconsistent with the interests of the Company and its stockholders. The Audit Committee may impose such conditions as it deems appropriate in connection with its approval.

Communications With The Board Of Directors

We have a formal policy regarding communications with the Board, our Stockholder & Interested Party Communications Policy, which is found on our website at <https://investors.ontoinnovation.com/governance/governance-documents/>.

Stockholders may communicate with the Board, the Audit, Compensation, or Nominating & Governance Committee, or any of the Company's directors by writing to:

Onto Innovation Inc.
Office of the General Counsel
16 Jonspin Road
Wilmington, Massachusetts 01887

Such communications will be forwarded to the intended recipient(s) to the extent appropriate. Prior to forwarding any communication, the General Counsel will review it and, in his or her discretion, will not forward a communication deemed to be of a commercial nature or otherwise inappropriate.

Compensation Of Directors

Directors who are employees of the Company receive no compensation for their services as members of the Board. Director compensation for non-employee members of the Board is a mix of cash and equity-based compensation, which is meant to align the interests of our directors with the Company's long-term performance and stockholder interests. The compensation during fiscal 2022 for directors who were not employees of the Company is as follows:

Board Compensation Element	Amount/Value
Annual Retainer	\$70,000 ⁽¹⁾
Annual Equity Grant (in RSUs)	\$150,000 ⁽²⁾
Committee Chairperson Stipend	
Audit	\$20,000 ⁽¹⁾
Compensation	\$15,000 ⁽¹⁾
Nominating & Governance	\$10,000 ⁽¹⁾
M&A	\$5,000 ⁽¹⁾
Committee Member Stipend	
Audit	\$10,000 ⁽¹⁾
Compensation	\$7,500 ⁽¹⁾
Nominating & Governance	\$5,000 ⁽¹⁾
M&A	\$2,500 ⁽¹⁾
Chairperson Stipend	\$50,000 ⁽¹⁾
Initial Equity Grant (in RSUs)	\$150,000 ⁽³⁾

- (1) Paid subsequent to the director election results at the Annual Meeting of Stockholders.
- (2) Awarded at the second quarter Board meeting in a number of shares calculated by dividing the listed amount by the closing stock price per share of Company Common Stock on the date of grant.
- (3) Awarded as of the first Board meeting following election or appointment and calculated in the same manner as the annual equity grant above but prorated by the number of quarters between such first meeting and the date on which the next annual equity grant is scheduled to be awarded.

Any initial equity grants and/or annual equity grants typically vest on the first anniversary of the grant date. Equity awards granted to directors are granted under and subject to the terms of the Onto Innovation Inc. 2020 Stock Plan (the "2020 Stock Plan").

For the fiscal year ended December 31, 2022, the non-employee directors received total compensation indicated in the table below. There were no option awards, non-equity incentive plan compensation, or pension and nonqualified deferred compensation earnings granted to such directors. They did not earn any type of compensation during the year other than what is disclosed in the following table:

Name	Fees Earned or Paid in Cash	Stock Awards ⁽¹⁾	All Other Compensation	Total
Leo Berlinghieri	\$87,500	\$151,116	—	\$238,616
Edward J. Brown, Jr. ⁽²⁾	—	—	—	—
Stephen D. Kelley ⁽³⁾	N/A	N/A	N/A	N/A
David B. Miller	\$95,000	\$151,116	—	\$246,116
Bruce C. Rhine ⁽²⁾	—	—	—	—
Karen M. Rogge	\$82,500	\$151,116	—	\$233,616
Christopher A. Seams	\$127,500	\$151,116	—	\$278,616
May Su	\$87,500	\$151,116	—	\$238,616
Christine A. Tsingos	\$97,500	\$151,116	—	\$248,616

- (1) Represents the grant date fair value for each share-based compensation award granted during the year, calculated in accordance with FASB ASC Topic 718. The assumptions used in determining the grant date fair value of these awards are set forth in Note 10 to our consolidated financial statements, which are included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022 filed with the SEC. As of December 31, 2022, our directors had the following stock awards outstanding: Mr. Berlinghieri – 2,100 RSUs; Mr. Miller – 2,100 RSUs; Ms. Rogge – 2,100 RSUs; Mr. Seams – 2,100 RSUs; Ms. Su – 2,100 RSUs ; and Ms. Tsingos – 2,100 RSUs.
- (2) Messrs. Brown and Rhine did not stand for re-election to the Board on May 10, 2022.
- (3) Mr. Kelley did not join the Board until January 2023.

Stock Ownership/Retention Guidelines For Directors

The Company has established guidelines related to stock ownership and retention for its non-employee directors. Currently, the guidelines require that each non-employee director of the Company maintain ownership of shares of the Company's Common Stock equal in value to at least three times the amount of the director's annual cash retainer. For a new director, the stock holding requirement must be attained within five years of his or her initial election or appointment to the Board.

Compliance with the Company's stock ownership and retention guidelines is reviewed annually by the Compensation Committee. As of their last review in January 2023, the Compensation Committee determined that all directors who were with the Company for more than one year were in compliance with the ownership requirements.

PROPOSAL 2

ADVISORY VOTE TO APPROVE NAMED EXECUTIVE OFFICER COMPENSATION

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act, enables our stockholders to vote to approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement in accordance with SEC rules. Consistent with the recommendation of the Board and the preference of our stockholders as reflected in the non-binding advisory vote on the frequency of future advisory votes on named executive officer compensation held at the Nanometrics 2017 Annual Meeting of Stockholders, the Company currently holds an annual “say on pay” vote. In accordance with this policy, this year we are requesting our stockholders to approve an advisory resolution to approve the Company’s named executive officer compensation as reported in this Proxy Statement.

Our executive officer compensation arrangements are designed, consistent with our compensation philosophy and pay-for-performance principles, to provide competitive compensation packages that enable the Company to attract and retain talented executive officers, motivate executive officers to achieve the Company’s short- and long-term business strategies and objectives, align the interests of executive officers with those of stockholders, and are consistent with current market practices and good corporate governance principles. Please read the Compensation Discussion and Analysis beginning on the following page for additional details about our executive officer compensation arrangements, including information about the fiscal year 2022 compensation of our named executive officers.

We are asking our stockholders to indicate their support for our compensation arrangements as described in this proxy statement.

For the reasons discussed above, the Board recommends that stockholders vote in favor of the following resolution:

“RESOLVED, that the Company’s stockholders APPROVE, on an advisory basis, the compensation paid to the Company’s named executive officers, as disclosed in the proxy statement for this meeting pursuant to Item 402 of Regulation S-K, including the Compensation Discussion and Analysis, compensation tables and narrative discussion and other related tables and disclosures.”

Because your vote is advisory, it will not be binding upon or overrule any decisions of the Board, nor will it create any additional fiduciary duty on the part of the Board. This advisory vote is not intended to address any specific item of compensation, but rather the overall compensation of our named executive officers and our compensation philosophy, policies, and practices described in this proxy statement, and does not seek to have the Board or Compensation Committee take any specific action. However, the Board and the Compensation Committee value the views expressed by our stockholders in their vote on this proposal and will take into account the outcome of the vote when considering executive officer compensation matters in the future.

Vote Required

The affirmative vote, in person or by proxy, of a majority of the shares present or represented at the meeting and entitled to vote will be required to approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement.

**The Board recommends a vote “FOR” the approval of the compensation of the
named executive officers as disclosed in this proxy statement pursuant to Item 402
of Regulation S-K.**

EXECUTIVE OFFICER COMPENSATION

COMPENSATION DISCUSSION AND ANALYSIS

Introduction

This Compensation Discussion and Analysis (“CD&A”) describes our compensation philosophy, process, plans, and practices for our executive officers and contains a discussion of the material elements of compensation awarded to, earned by, or paid to the Company’s named executive officers or “NEOs.” The Company’s NEOs for 2022 were:

Onto Innovation’s Named Executive Officers (NEOs)	
NEO Name	Position
Michael P. Plisinski	Chief Executive Officer
Mark R. Slicer	Chief Financial Officer
James (Cody) Harlow	Chief Operating Officer
Robert Fiordalice	Sr. Vice President & General Manager, Metrology Business Unit
Yoon Ah E. Oh	Vice President, General Counsel, and Corporate Secretary
<i>Former Officers</i>	
Steven R. Roth	Former Sr. Vice President & Chief Financial Officer

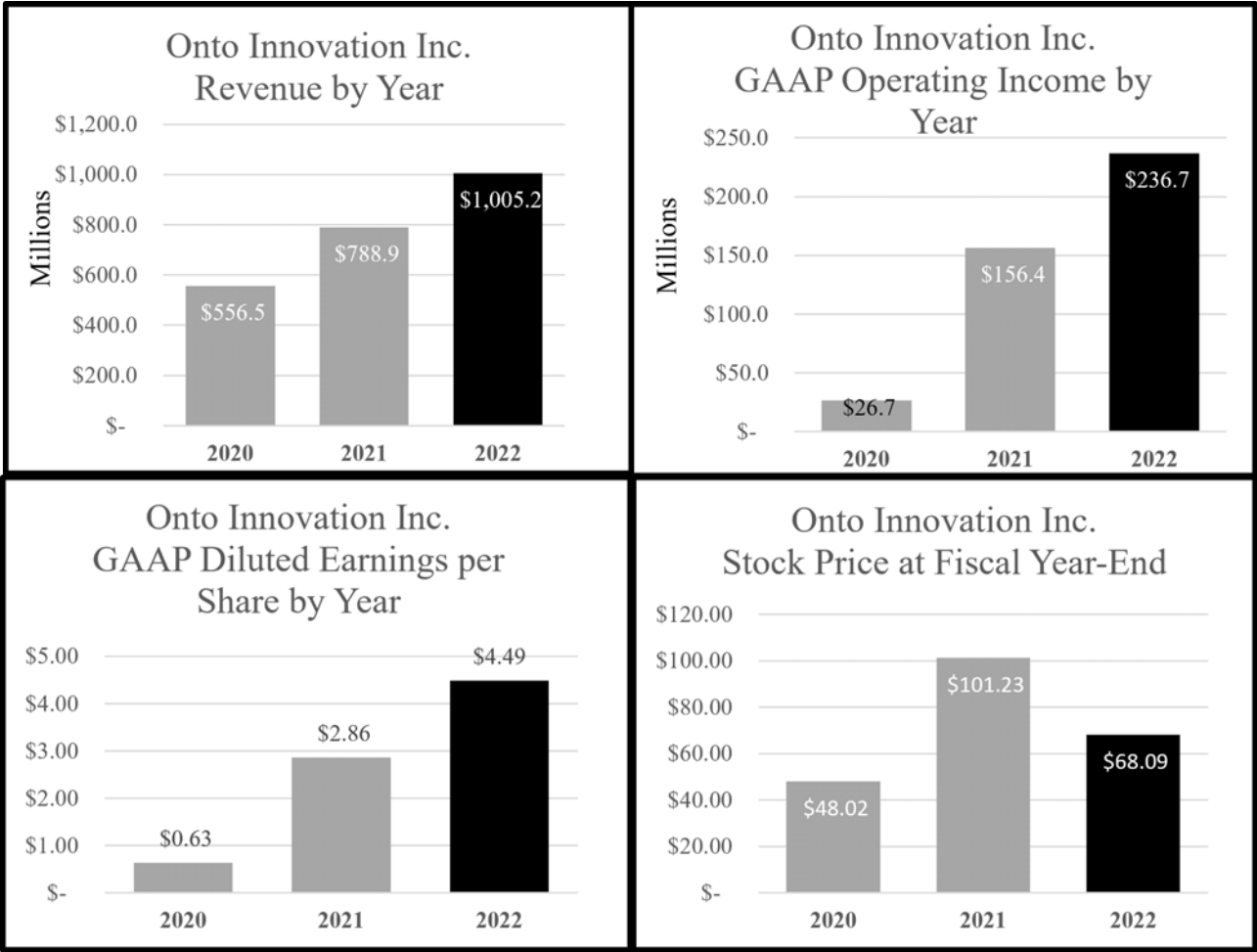
EXECUTIVE SUMMARY

2022 Financial Highlights

In 2022, the Company realized record financial results in critical metrics. These include, but are not limited to:

- Record full year revenue of \$1.005 billion reflecting growth of over 27% year-over-year.
- Record full year GAAP diluted earnings per share of \$4.49 increased 57% year-over-year.

The following reflects some of our financial accomplishments in fiscal 2022 as compared to fiscal 2021 and 2020:



2022 Compensation Highlights

Executive compensation is a key component of our corporate governance practices and our plans to drive long-term profitable growth. We've designed our compensation program to both attract and retain best-in-class executive management and to motivate our executive officers to achieve corporate objectives and create value for shareholders. In 2022, key features of our compensation program included the following:

- Competitive base salary increases: base salaries for executive officers were set based on several factors, including executive officers' unique qualifications, role, and responsibilities, individual performance, and measurable contribution to the Company's profitability and success.
- Rigorous annual incentive goals: executive officer cash incentive compensation is tied to overall corporate performance, achievement of individual performance goals, and, for those executive officers associated with a particular business unit, to individual business unit performance as well.
- An emphasis on performance-based long-term incentives: a substantial portion of executive officer compensation is in the form of long-term equity incentives that incentivize both long-term service at the Company and creating shareholder value.

Results Of The 2022 Stockholder Vote On Executive Officer Compensation

In 2022, stockholders were provided with the opportunity to cast an advisory (non-binding) vote (a "say-on-pay" proposal) on the compensation of our NEOs for fiscal 2021. Our stockholders approved this say-on-pay proposal, with 94.2% of votes cast voting in favor of our executive compensation program. Our Compensation Committee and Board recognize the fundamental interest our stockholders have in the compensation of our executive officers. Noting the strong support for our 2021 compensation program, the Compensation Committee maintained a consistent approach to our executive officer compensation program in 2022.

The Compensation Committee will continue to consider input from our stockholders as reflected in the outcome of our annual say-on-pay vote when making executive compensation program decisions.

COMPENSATION PROGRAM OBJECTIVES, DESIGN, AND PRACTICES

Our Compensation Philosophy And Principles

Our compensation philosophy, which serves as the framework for the Company's executive officer compensation program, is defined by two key tenets: (1) rewarding continuous improvement in financial and operating results and (2) creation of stockholder value. The Compensation Committee acts on behalf of the Board and, by extension, on behalf of our stockholders, to establish, implement and continually monitor adherence to our compensation philosophy. Accordingly, the Compensation Committee has developed a set of core objectives and principles that it has used to develop the executive officer compensation program. The specific objectives of our executive officer compensation program are to:

- attract and retain executive officer talent;
- motivate executive officers to achieve the Company's short- and long-term business strategies and objectives, and
- align the interests of executive officers with those of stockholders.

Consistent with the foregoing, the Compensation Committee believes that the most effective executive officer compensation program is one that rewards the achievement of specific strategic and operating goals of the Company on both an annual and a long-term basis, and that incentivizes executive officers to create value for stockholders. The Compensation Committee evaluates both performance and compensation to ensure that the Company maintains its ability to attract and retain superior employees in key positions. Based on that evaluation, the Compensation Committee designs the compensation provided to executive officers to remain competitive with the compensation paid to similarly situated executive officers at peer group companies. The Compensation Committee believes executive officer compensation packages provided by the Company to its executive officers, including the NEOs, should include base salary, annual cash incentive opportunities, and long-term stock-based compensation, including equity incentive opportunities that reward performance as measured against pre-established goals.

The following principles support the objectives and design of the compensation program:

- The compensation program is designed to be fair and competitive, from an internal and external perspective, taking into account each executive officer's unique qualifications, role, responsibilities, individual performance, and measurable contribution to the Company's profitability;
- A substantial portion of an executive officer's compensation is designed to be at risk and linked to the achievement of both corporate and individual financial, management or other performance goals and changes in stockholder value; and
- All compensation program elements taken as a whole are designed to help focus executive officers on achieving the Company's financial and strategic goals while supporting our culture and core values.

To underscore the importance of "pay-for-performance" in our compensation philosophy, the Compensation Committee has developed incentive arrangements based on performance standards that the Compensation Committee believes, at target achievement, will incentivize our executive officers to meet or exceed industry performance.

The Company also strives to promote an ownership mentality among its key leadership, in part through the guidelines described below under the heading "Stock Ownership/Retention Guidelines." To that end, the CEO is required to maintain ownership of the Company's Common Stock equal in value to at least three times the CEO's year-end base salary. The other executive officers are required to maintain a minimum share ownership level equal in value to their current year-end base salary. In further support of this approach, our Board has established an anti-pledging policy to ensure that personal interests relating to the stock holdings of officers and directors do not conflict with their duties to the Company.

Our Compensation Practices

The Compensation Committee has adopted the following practices and policies with respect to the Company's executive officer compensation program:

What We Do	
<i>Committee Independence</i>	The Compensation Committee consists of independent directors and reserves time at each meeting to meet in executive session without management present.
<i>Independent Compensation Consultant</i>	The Compensation Committee has engaged its own independent compensation consultant and annually assesses the consultant's performance, independence, and whether any potential conflicts of interest exist.
<i>Independent Legal Advisor</i>	The Compensation Committee may engage its own independent legal advisor specializing in corporate compensation issues, as necessary.
<i>CEO Goal Setting and Performance Evaluation</i>	The Compensation Committee, with the input of the full Board, engages in formal goal setting and performance evaluation processes with the CEO.
<i>Peer Group</i>	The Compensation Committee has established formal criteria for the selection of peer groups used as a competitive reference point with respect to executive officer and director compensation, program design and practices, and financial and stock performance.
<i>Stock Ownership Guidelines</i>	The Company maintains rigorous stock ownership guidelines, which apply to executive officers and directors, and serve as a risk-mitigating feature within our compensation structure.
<i>Double Trigger Change-in-Control</i>	The Company has entered into agreements with executive officers, including the CEO, that contain change-in-control severance protection. Executive officers are entitled to severance in the event of both a change in control of the Company and a qualifying termination of employment ("double trigger").
<i>Clawback Policy</i>	The Company has adopted a policy that provides for the reimbursement of incentive compensation (including equity awards granted as compensation) previously awarded or paid to an executive officer in the event that financial results or other performance measures on which the award or payment were determined are restated or adjusted.
<i>Grant Date Policy</i>	The Company has adopted a policy on stock-based awards made to our directors, officers, and employees that prohibits manipulation of award grant dates or the timing of our release of material nonpublic information with the intent of benefitting an award recipient.
What We Do Not Do	
<i>No Pledging</i>	The Company's insider trading policy prohibits our directors, officers and employees from purchasing Company securities on margin, borrowing against Company securities held in a margin account, or pledging Company securities as collateral for a loan.
<i>Tax Gross-Ups on Perquisites or Severance</i>	The Company does not provide any tax gross-up payments to cover personal income taxes on perquisites or severance benefits related to a change in control.

COMPENSATION DECISION-MAKING PROCESS

Determination of Compensation Awards

The Compensation Committee's goal is to target elements of compensation within a competitive range, using a balanced approach that does not use rigid percentiles to target pay levels for each compensation element. For 2022, the Compensation Committee reviewed each element of compensation described below and set the target total direct compensation opportunities of our executive officers after taking into consideration the following factors:

- Company profitability;
- The executive officer's unique qualifications;
- The executive officer's role and responsibilities;
- The executive officer's individual performance and measurable contribution to the Company's profitability and success; and
- Compensation levels of similar positions with comparable companies in the industry.

The Compensation Committee does not assign relative weights or rankings to any of these factors and does not solely use any quantitative formula, target percentile or multiple for establishing compensation among the executive officers or in relation to the competitive market data.

Role of the Compensation Committee

The Compensation Committee is charged with making all final determinations regarding the compensation of our executive officers. In the beginning of each year, the Compensation Committee evaluates the CEO's performance in light of the goals and objectives established at the beginning of the previous fiscal year for measuring his performance. The CEO does not participate in the Compensation Committee's or Board's deliberations regarding his compensation. In addition, the CEO meets with the Compensation Committee to present the proposed compensation plans for each of the Company's executive officers other than the CEO, including the other NEOs. Based on these meetings and internal deliberations, the Compensation Committee then approves the annual compensation for the Company's CEO and other executive officers, including the NEOs, including base salary, cash incentive award opportunity, and equity compensation.

In the same time period, the Compensation Committee also reviews and recommends for approval by the Board:

- the Company Compensation Plan for all non-executive employees, including (i) adjustments to base compensation and profit-sharing, bonus and other cash incentive plans, and (ii) the annual equity award budget; and
- the annual compensation program for non-employee directors.

In reviewing and setting the annual compensation for each executive officer, the Compensation Committee considers the amounts payable under each of the elements of their respective compensation plans, including base salary, annual cash incentive awards, and equity grants. The Compensation Committee takes into consideration both the Company's internal pay equity as well as the competitive environment within which the Company operates. The Compensation Committee then determines whether the base salary and annual and long-term incentive award opportunities for the individual executive officers support the Company's compensation objectives and are both competitive and reasonable in the context of the Company's competitive market.

Role of Management

With regard to compensation for executive officers other than the CEO, the Compensation Committee seeks input from the CEO and the human resources department. Each year, the CEO is responsible for establishing proposed personal and corporate objectives for the Company's other executive officers, including the other NEOs. These objectives, subject to the approval of the Compensation Committee, are reviewed and agreed upon by the CEO with the applicable executive officer. In addition, as part of the annual performance review of the Company's executive officers, the CEO assesses the performance of his direct reports and recommends any merit increase to be proposed for each individual. These recommendations are compiled by the CEO into executive officer compensation plans which include any proposed merit increases, each executive officer's personal and corporate objectives, proposed annual incentive award opportunities (expressed as a percentage of their base salary) and equity grant proposals, and are submitted to the Compensation Committee for review and consideration for approval. At the Compensation Committee meeting during which the executive officer compensation plans are reviewed, the CEO attends the initial session to present the proposed plans and to answer questions. Thereafter, the Compensation Committee meets without the CEO present to review, discuss and approve all executive officer compensation plans, subject to any modifications made by the Compensation Committee.

Role Of The Compensation Consultant

The Compensation Committee may retain independent compensation consultants to assist the Compensation Committee in discharging its duties. During 2022, the Compensation Committee engaged Compensia, an independent executive officer compensation consulting firm, to provide advice on the Company's executive officer compensation arrangements. Compensia does not provide any services other than those related to compensation consulting and does not provide any services to the Company's management. The Compensation Committee determined that Compensia is independent within the meaning of the NYSE Listing Rules, and that the work performed by Compensia does not raise any conflicts of interest.

For 2022, the Compensation Committee requested that Compensia:

- evaluate the efficacy of the Company's existing compensation strategy and practices in supporting and reinforcing the Company's long-term strategic goals;
- assist in refining the Company's compensation strategy and further implementing the executive officer compensation program to execute that strategy; and
- provide market information to assist the Compensation Committee in establishing 2022 executive officer compensation.

Peer Companies

In setting executive officer compensation, the Compensation Committee evaluates compensation levels for executive officers at other similarly situated companies. For 2022, the Compensation Committee engaged Compensia to provide peer group data and perform an assessment of compensation levels provided to executive officers. In addition, the Compensation Committee obtains and evaluates market compensation information using third-party and internal resources. The Compensation Committee reviews data related to compensation levels and programs of other similar companies prior to making its decisions, but only considers such information in a general manner in order to obtain a better understanding of the current compensation practices within our industry.

In the Compensation Committee's review of executive officer compensation for the 2022 fiscal year, the Compensation Committee considered publicly available market data from peer company proxy disclosures and industry compensation surveys for companies that typically include similarly sized semiconductor and semiconductor capital equipment companies or similar firms for each Company executive officer in a like or similar role.

In mid-2021, for compensation decisions for the Company's 2022 fiscal year, Compensia recommended and the Compensation Committee approved the Company's compensation peer group which took into consideration the following factors:

- Semiconductor capital equipment and other electronics and hardware technology companies;
- Revenue between approximately 0.5x and 2x the Company's revenue run-rate; and
- Market cap between approximately 0.3x and 3x the Company's average market cap.

The Company's compensation peer group for the 2021 review (which was used to make decisions regarding 2022 compensation) consisted of the following companies:

Companies Included In The Company's Compensation Peer Group For 2022		
Advanced Energy Industries Inc.	Knowles Electronics, LLC	Rambus Incorporated
Ambarella International LP	Lattice Semiconductor Corporation	Semtech
Axcelis Technologies Inc.	MACOM Technology Solutions Holdings, Inc.	Silicon Laboratories
Azenta, Inc.	MaxLinear, Inc.	Ultra Clean Holdings, Inc.
Cohu, Inc.	Novanta Inc.	Veeco Instruments, Inc.
FormFactor, Inc.	Photronics, Inc.	
Ichor Holdings Ltd.	Power Integrations, Inc.	

The pay practices of the foregoing Company peer group were analyzed for base salary and annual and long-term incentives. Periodically, peer groups are used to evaluate other programs such as executive officer retirement, perquisites and severance policies. Our peer group data is supplemented by broader technology industry data from compensation surveys to further facilitate the evaluation of compensation levels and design. Compensation levels are generally developed at the low (25th percentile), middle (50th percentile) and high (75th percentile) end of the market for each pay element (base salary and short-term and long-term incentives) and for total compensation.

While the Compensation Committee considers market data for each pay element and in total, the Compensation Committee does not specifically target any particular market compensation level. Instead, the Compensation Committee uses its discretion in setting the compensation levels as appropriate.

ELEMENTS OF THE COMPANY'S 2022 COMPENSATION PLAN

Compensation Program Design

Our executive officer compensation program, which applies to all executive officers including our NEOs, is generally composed of three parts, each of which is intended to address different objectives: base salary, annual cash performance incentives, and long-term equity incentives.

Base salaries serve as the foundation of our executive compensation program. The Compensation Committee uses base salary and certain other benefits available to all employees, such as the Onto Innovation Inc. 2020 Employee Stock Purchase Plan ("ESPP"), our 401(k) plan with Company matching contributions, and health and welfare benefits, as a means for providing base compensation to executive officers commensurate with their knowledge and experience and for fulfilling their basic job responsibilities. The Compensation Committee also derives the other executive compensation elements, annual cash incentives and long-term equity incentives, by weighing them against base salary. As discussed above, the Compensation Committee generally establishes base salary levels for executive officers at or near the start of each year.

The annual cash incentive component of the Company's executive officer compensation program rewards executive officers for achieving specific corporate, business unit, as applicable, and individual goals. The Company's annual cash incentive awards are administered through its Management By Objectives ("MBO") bonus plan. The MBO bonus plan provides guidelines for the calculation of annual cash incentive compensation, subject to the Compensation Committee's oversight. At its first meeting each year, the Compensation Committee typically determines final bonuses for executive officers earned in the preceding year based on each individual's performance, the performance of the Company through its audited financial statements, business unit performance (as applicable), and the CEO's recommendations (except with respect to the CEO's own bonus).

The long-term equity incentive component includes grants of (i) performance-based stock units ("PSUs"), which are earned based on the Company's total shareholder return ("TSR") relative to the top 30 companies in the Philadelphia Stock Exchange Semiconductor Index over two- and three-year performance periods, and (ii) time-based RSUs, which vest in equal annual increments over time. All grants are made under the Company's 2020 Stock Plan and shares earned and vested are subject to the Company's stock ownership and retention guidelines and insider trading policy. The Compensation Committee generally approves the grant of annual equity awards to officers at its first regularly scheduled meeting each year. The Compensation Committee does not generally grant equity awards at other times during the year, other than in the case of a new hire, promotion or other exceptional circumstances.

The Compensation Committee aligns both the Company's annual cash incentive plan and long-term equity incentive program with the Company's performance relative to pre-established performance goals based on the Company's stated financial objectives, historical performance, and anticipated market and economic conditions for the performance period. The Compensation Committee seeks to structure the equity and cash incentive compensation program to motivate executive officers to achieve the business goals set by the Company and reward the executive officers for achieving such goals, which we believe aligns the financial incentives of our executive officers with the interests of our stockholders.

The table below summarizes the foregoing key elements of our executive officer compensation structure for 2022.

Executive Officer Compensation Elements		
Element	Form	Description
<i>Base Salary</i>	Fixed Cash Compensation	Competitive cash compensation that takes into consideration the scope and complexity of the role, individual qualifications, experience, and internal value to the Company.
<i>Annual Cash Incentive Plan</i>	Annual Variable Cash Bonus	Annual variable cash bonus contingent on meeting performance criteria related to corporate, business unit/department (as applicable), and individual performance objectives.
<i>Long-Term Equity Incentive Program</i>	Long-Term Stock-Based Compensation	PSUs are earned based on Company TSR performance relative to a designated peer group. Time-based RSUs vest incrementally over a fixed period.

In adopting this design, the Compensation Committee considered a number of parameters, including the advice of its independent compensation consultant, comparable practices within the industry, and the desire to achieve the goals underlying the compensation program. The Compensation Committee and Board further believe that each of the elements as well as the entire compensation package for Company executive officers is appropriate given the Company's performance, industry, current challenges and environment.

The three components of our executive compensation program are commonly used for executive officers at companies within the Company's peer group and, therefore, the Compensation Committee found them to be appropriate in its talent attraction and retention strategy. Given that a substantial portion of an executive officer's overall compensation is tied to individual and Company performance through the annual cash incentive and long-term equity incentive components, we also think the structure of our executive compensation program meets the Company's other objectives of motivating executive officers to achieve the Company's short- and long-term business strategies and objectives and aligning the interests of executive officers with those of our stockholders. The pay-for-performance nature of our compensation structure rewards the achievement of strategic, operational and financial goals, thereby enhancing stockholder value.

The Compensation Committee's compensation determinations vary for each executive officer depending on a number of factors, including but not limited to, the scope of his or her responsibilities, leadership skills and values, and individual performance. The Compensation Committee does not apply formulas or assign specific mathematical weights to any of these factors, but rather exercises its business judgment and discretion to make a subjective determination after considering all of these measures collectively.

Annually, the Compensation Committee reviews the elements of the compensation package as well as the overall package afforded to the executive officers. At such time, the Compensation Committee, in its discretion, can approve adjustments to the elements of the program. This review is typically performed coincident with the evaluation of each executive officer's performance in relation to his or her cash incentive compensation goals, salary adjustment, and equity grants, if any, as discussed in more detail in the sections below.

Impact Of Performance On Compensation

The performance of the Company and of each executive officer has a direct impact on the compensation received by such executive officer. On an annual basis, the CEO reviews the performance and compensation for the Company's non-CEO executive officers to determine any potential salary adjustment for each individual. The CEO then proposes (except with respect to the CEO's own compensation) to the Compensation Committee the annual cash incentive payout to executive officers, including the NEOs, under the MBO bonus plan, the target cash incentive compensation for the upcoming year, any base salary adjustments, and equity award amounts for the upcoming year. Each of these recommendations, and the Compensation Committee's final compensation determination for executive officers, is based on each executive's performance and contributions to the Company, as well as overall Company performance.

The structure of the Company's annual cash incentive and long-term equity incentive components of the compensation program are also both intended to incentivize performance. The MBO bonus plan includes various incentive level opportunities based on the executive officer's accountability and impact on Company operations, with target award opportunities that are established as a percentage of base salary.

Under our MBO bonus plan, payout is based upon achievement of corporate, business unit (as applicable), and personal objectives, with no payout unless the Company meets the threshold level of at least one of the Board-approved corporate financial targets established as part of the plan. Personal objectives are awarded only upon clear achievement of the associated goal. Failure to meet the personal objectives thereby has a negative impact on the ultimate bonus payout, even when the Company achieves its corporate goals.

The CEO recommends to the Compensation Committee individual performance goals for the executive officers (including the NEOs), other than the CEO, for the current year, which are combined with the corporate and business unit (as applicable) targets into an annual cash incentive opportunity proposal. The personal targets that are established are designed to result in additional incremental value to the Company if they are achieved. The target level of the corporate and business unit components of the bonus goals are set based on the Company's financial budget established by the Board at the beginning of the year. The determination of these goals is made annually to meet the changing nature of the Company's business.

Upon completion of the prior year's results and prior to implementation of the current year's proposed executive compensation plan, the results for each executive officer are submitted to, and reviewed by, the Compensation Committee, which considers the CEO's recommendations for executive officers other than the CEO and determines the final bonus earned by each executive officer based on Company and individual performance. The Compensation Committee may exercise discretion in adjusting and approving an individual's award under the bonus plan based upon its review.

The two elements of the Company's long-term equity incentive compensation program are also performance-based. The PSU grants, which are explained in further detail below, measure the Company's TSR over two- and three-year periods as compared to that of companies in the Philadelphia Semiconductor Index (SOX) and reward executives for achieving TSR greater than that of other Companies in the Index. In addition, because the value of PSUs and the service-based RSUs granted to executive officers are tied to the Company's stock price, their value increases or decreases with the performance of the Company stock, further incentivizing executives to manage the Company for the benefit of the Company's stockholders.

Based upon the foregoing, the compensation that an executive officer may realize is significantly impacted by the positive or negative performance of such individual as well as Company performance.

Compensation Plan Design And Decisions For 2022

For 2022, the Compensation Committee conducted a review of the compensation program and determined that the 2022 executive compensation plan would retain the same basic elements as the prior year's plan as these elements aligned the Company's program with its current business strategy and included the pay for performance aspect of its executive compensation program. Taking into account the Company's 2021 financial performance and outlook for 2022, each executive officer's performance and responsibilities, and current market compensation rates for each executive officer position, among other criteria, the Compensation Committee approved the program and compensation plan structure for the executive officers in 2022 as detailed below.

Base Salary

The Company provides executive officers and other employees with a base salary to compensate them for services rendered during the fiscal year. The Compensation Committee supports the compensation philosophy of moderation for elements such as base salary and other executive officer benefits. As noted above under "Impact of Performance on Compensation," base salary decisions are made as part of the Company's formal annual review process and are influenced by the performance of the Company and the individual.

For 2022, the Compensation Committee reviewed and determined salaries after reviewing salary data supplied by the independent compensation consultant, including data regarding the peer comparison group, as well as consideration of the compensation for the executive officers on a company-wide basis, based on their relative duties and responsibilities and the recommendations of the CEO (other than with respect to his own compensation). The Compensation Committee did not apply formulas or assign specific mathematical weights to any of these factors, but rather exercised its business judgment and discretion to make a subjective determination regarding each executive officer's base salary for 2022, as applicable, after

considering all of these factors collectively. The CEO's recommendations for salary adjustments (other than his own) were reviewed, modified and approved as deemed appropriate by the Compensation Committee.

The table below shows the increases in NEO base salary for the 2022 that were approved by the Compensation Committee.

Named Executive Officer	2021 Base Salary	2022 Base Salary	% Increase
Michael P. Plisinski	\$618,341	\$636,892	3%
Mark R. Slicer	N/A	\$450,000	N/A
James (Cody) Harlow	\$300,000	\$309,000	3%
Robert Fiordalice	\$270,783	\$308,693	14%
Yoon Ah E. Oh	\$350,000	\$360,500	3%
Steven R. Roth	\$418,862	\$436,800	4%

Annual Cash Incentive Compensation

For 2022, as in prior years, the annual cash incentive plan was structured such that each NEO's potential cash award was subject to the achievement of 2022 corporate financial objectives. These corporate financial objectives were established at levels in excess of the overall industry projections in order to incentivize the Company to outperform the industry.

The 2022 annual cash incentive plan had three components: corporate goals, business unit goals (if applicable), and personal performance goals, each of which is described in more detail below.

- The corporate goals relate to corporate revenue and corporate non-GAAP operating income. For NEOs who are not aligned with a particular business unit, 70% of their cash bonus potential is based on corporate goals. For NEOs who are aligned with a particular business unit, 30% of their cash bonus potential is based on corporate goals. The entirety of each executive officer's cash bonus payout, however, was contingent on the Company meeting at least one of the 2022 corporate revenue or corporate non-GAAP operating income goals thresholds of 80% of target and 70% of target, respectively. Should the Company not have reached the threshold level for both the 2022 corporate revenue and corporate non-GAAP operating income goals, then no payout under the plan would have been made to the CEO or the executive officers. The performance ranges for each metric included a payout level for threshold performance at 50% of target payout and an established target level to achieve the maximum payout by exceeding the corporate performance objectives for each of the corporate financial metrics. If the corporate goal target is exceeded in either or both corporate goal categories, then the cash payout increases as follows:
 - Corporate Revenue: From 100% to 120% of the corporate goal target, additional cash compensation is earned linearly up to 200% of the target bonus amount.
 - Non-GAAP Operating Income: From 100% to 130% of corporate goal target, additional cash compensation is earned linearly up to 200% of the target bonus amount.

For our NEOs the 2022 target annual cash bonus opportunities were set as follows:

Named Executive Officer	2022 Target Annual Cash Incentive As a Percentage of Base Salary
Michael P. Plisinski	100%
Mark R. Slicer	70%
James (Cody) Harlow	60%
Robert Fiordalice	50%
Yoon Ah E. Oh	50%
Steven R. Roth	65%

- For those executive officers who were associated with a particular Company business unit, 40% of their cash bonus potential was allocated to business unit financial performance goals. In 2022, these goals included achievement of fiscal 2022 business unit revenue and non-GAAP operating income objectives. For an executive officer to earn his or her potential cash award apportioned to the business unit goals, his or her respective business unit needed to achieve at least 80% of the business unit revenue target and/or 70% of the business unit non-GAAP operating income target. Additional cash payout of up to 200% is realized if either of the business unit goals is exceeded, similar to the Corporate goal parameters above. As stated above, the payout of the business unit goal component of the bonus was contingent on achieving the threshold for at least one of the Company corporate goals.

- The final component of the cash incentive compensation plan was the inclusion of personal performance goals that are specific to the individual executive officers. This portion of the plan accounts for 30% of the cash bonus potential for all executive officers. The NEO personal performance goals in 2022 included targets related to additional corporate financial measures, operational measures and activities, quality, product development measures or marketing initiatives and personnel development, depending on the executive officer involved. As with the business unit goal component of the bonus, payout of the personal performance goal component of the bonus was contingent on achieving the threshold for at least one of the Company corporate goals.

The following table reflects the structure of the corporate and business unit goals components of the cash incentive compensation plan. The personal goal payout component is fixed -- if achieved, the payout is for the target amount.

Corporate/Business Unit Goal	Weighting	Threshold (50% Payout)	Target (100% Payout)	Max (200% Payout)
Revenue	50%	80% of target	100% of target	120% of target
Operating Income (Non-GAAP)	50%	70% of target	100% of target	130% of target

The following table reflects the Corporate targets, actual results, and percentage payouts for fiscal 2022 for the CEO and other executive officers.

Cash Incentive Compensation Plan - Corporate Target Categories	2022 Target	2022 Actual	2022 Payout Percentage
Corporate Revenue	\$950.8M	\$1,005.2M	129%
Non-GAAP Operating Income	\$290.1M	\$301.7M	113%

Of the NEOs in 2022, only Mr. Fiordalice included a Business Unit Goal component as part of his cash incentive compensation plan.

Personal goal achievement for the CEO and other NEOs at the time of the incentive award ranged from 76% to 100% of personal goals achieved in 2022.

Actual amounts paid to the CEO and the other NEOs under their respective annual cash incentive plans are reported below in the Non-Equity Incentive Plan Compensation column of the Summary Compensation Table.

Long-Term Equity Incentive Plan

In 2022, the structure of the long-term equity incentives was set by the Compensation Committee through the consideration of a number of factors and recommendations from the CEO (except in connection with his own grants).

The following parameters were included in the design of the long-term equity incentive program in 2022:

Performance-Based Stock Units: 50% of each executive officer's equity grant was comprised of PSUs. The relative TSR plan design includes the following features:

- 50% of the PSU grant will be assessed at each of two performance periods, at two years and at three years from the grant date (e.g. for awards granted in early 2022, the performance periods would be 2022 through 2024 and 2025).
- Performance will be assessed using TSR, which measures growth in stock price, plus any dividends paid, during the performance period.
- TSR performance will be compared to that of other companies in the Philadelphia Semiconductor Index (SOX).

- The performance and standards to earn the PSU equity awards in 2022 are as follows:

TSR Performance Relative to Peers	PSUs Earned as % of Target
Below 25 th Percentile	0%
25 th Percentile	50%
55 th Percentile	100%
80 th Percentile and above	200%

- The PSU award payout will be calculated on a straight-line basis between the 25th & 55th and the 55th & 80th percentile levels referenced above.
- A negative TSR cap has been instituted which limits any PSUs earned to target level if the Company's TSR is negative over the performance period and our TSR ranks above the target performance level.
- Earned PSUs are not subject to additional service-based vesting conditions.

Service-Vesting Restricted Stock Units: 50% of each executive officer's equity grant is comprised of service-based RSUs, which vest in equal annual increments over three years.

The following table summarizes the components of the long-term equity incentive program.

Long- Term Equity Incentive Compensation Program Provisions	2022
Performance-based / Service-based grant breakout	50%-50%
Service-based grant vesting period	33.3% annually over 3 years
Performance-based grant evaluation period	50% of grant at 2 and 3 years
Performance-based grant metric(s)	Relative TSR
Performance-based grant vesting period	100% upon earning
Performance threshold for earning grant	25 th TSR percentile
Percent of performance-based grant earned at threshold	50%
Measure at which 100% of performance-based grant is earned	55 th TSR percentile
Maximum performance-based grant upside	200%
Measure at which maximum upside of performance-based grant is earned	80 th TSR percentile

In February 2023, the first tranche of the PSUs awarded in 2021 vested. The Company's TSR performance based on the 20-day average market value prior to the vesting date was determined and ranked against the participating companies in the SOX. The Company's TSR for this assessment period was 40.1%, which placed the Company at the 89th TSR percentile in the SOX. Therefore, the PSUs earned as a percent of the target number awarded was 200%.

Also in February 2023, the second tranche of the PSUs awarded in 2020 vested. The Company's TSR performance based on the 20-day average market value prior to the vesting date was determined and ranked against the participating companies in the SOX. The Company's TSR for this assessment period was 104.9%, which placed the Company at the 85th TSR percentile in the SOX. Therefore, the PSUs earned as a percent of the target number awarded was 200%.

The actual number of PSUs and RSUs granted to the NEOs in 2022 and the related value are reported below in the table titled Grants Of Plan-Based Awards In 2022.

Personal Benefits And Perquisites

Benefits

All employees of the Company, including its executive officers, are eligible to participate in the following benefit plans and programs:

- Health and dental insurance;
- Elective vision care program;

- Life insurance and accidental death and dismemberment coverage;
- 401(k) plan;
- Short- and long-term disability insurance with supplemental income continuation;
- Health care and dependent care flexible spending account programs;
- Employee assistance program (EAP);
- Employee stock purchase plan;
- Employee referral bonus program;
- IP recognition awards; and
- Matching of charitable donations through the Company-sponsored charitable foundation.

The Company, in its discretion, may offer to reimburse the expenses that an employee incurs as a result of the Company requiring the individual to relocate their primary residence for employment purposes. The Compensation Committee believes that these benefits are consistent with industry practice and are important in recruiting and retaining qualified employees.

Limited Perquisites

The Company does not offer extensive perquisites to our executive officers. For 2022, the Compensation Committee reviewed the potential perquisites to be offered by the Company to the executive officers and determined that such perquisites would be limited to Company-paid tax preparation services and Company-paid membership in one airline executive club. Executive officers are also eligible to participate in the Company's Charitable Match Program, under which the Company will match, dollar for dollar, up to \$1,000 in donations to eligible charitable organizations. The Compensation Committee believes that these benefits are reasonable and consistent with the Company's overall compensation program and enable the Company to attract and retain superior employees for key positions.

Retirement Provision For Equity Awards

All employees, including our NEOs, are also eligible to participate in the Company's post-retirement equity award vesting program. Under that program:

- An employee is "retirement eligible" if they achieve a combination of age plus years of service with the Company totaling 70, with a base minimum age of 58 years old and a minimum service requirement of five years.
- Upon retirement by the employee, any equity awards granted by the Company shall vest based on:
 - The vesting schedule established for service-based equity awards; or
 - The actual performance results for performance-based equity awards.

Employee Stock Purchase Plan

The Company (as successor to Nanometrics) has maintained an Employee Stock Purchase Plan since 1986. The Company's 2020 Employee Stock Purchase Plan was approved by stockholders in 2020 and is currently administered by the Compensation Committee.

Under the terms of our current Employee Stock Purchase Plan, eligible employees may elect to have up to fifteen percent (15%) of eligible compensation deducted from their base salary and applied to the purchase of shares of Company Common Stock. The price the employee pays for each share of stock is eighty-five percent (85%) of the fair market value of the Company Common Stock at the end of the applicable six-month purchase period. The Employee Stock Purchase Plan qualifies as a non-compensatory plan under Code Section 423.

CORPORATE AND GOVERNANCE POLICIES

Employment And Change-In-Control Agreements

Each of the NEOs is entitled to payments upon a qualifying termination of employment following a change-in-control event. The Compensation Committee believes that providing severance in a change-in-control situation is beneficial to stockholders so that executive officers may remain objectively neutral when evaluating a transaction that may be beneficial to stockholders yet could negatively impact the continued employment of the executive officer.

The Company is party to an employment agreement with Mr. Plisinski that provides for certain benefits upon termination or a change in control of the Company. Upon the appointment of Mr. Plisinski to the position of CEO of Rudolph, he entered into a new employment agreement with Rudolph, which was assumed by the Company in connection with the 2019 Merger.

We have also entered into the same form of Executive Change in Control Agreement with each of our other current NEOs. Mr. Roth was party to a management agreement with the Company that provided for certain benefits in the event of termination or a change in control of the Company. Mr. Roth voluntarily resigned at the end of 2022, however, and therefore no termination or change in control benefits were paid to him.

See “Potential Payments Upon Termination of Employment or Change in Control” below for a description of these arrangements and potential payments that the NEOs would have been entitled to receive upon applicable hypothetical termination scenarios as of December 31, 2022.

Other Elements Of Post-Termination Compensation

The Company does not have a practice of providing retirement benefits, including any supplemental executive officer retirement plans (SERP), to its executive officers, other than through its 401(k) plan and post-retirement vesting for equity awards granted by the Company, as described above. The Company retains the discretion to utilize the offer of severance and/or change-in-control protection as an incentive in its hiring and retention of executive officers.

Non-Solicitation And Non-Competition Policy

The Company maintains a policy of entering into an agreement with each of its new executive officers, which contains both non-solicitation and non-competition provisions. Each of our NEOs is party to such an agreement. The non-solicitation provisions apply for one year after termination of the individual’s employment while the non-competition provisions are in effect during the individual’s employment and generally for one year thereafter, except for Mr. Plisinski, whose non-solicitation and non-competition provisions are in place during and extend for two years after the end of his employment with the Company. In all cases, these covenants have been implemented to protect the confidential information, goodwill and other assets of the Company. For those individuals with employment agreements, should a breach of the non-solicitation or non-competition terms of their agreements occur, this could give rise to the Company declaring a breach under the agreement and terminating all severance payments thereunder.

General Termination Benefits

Upon termination of an executive officer’s employment with the Company, the individual is entitled to receive his or her base salary earned through the termination date. Thereafter, further cash compensation to the executive officer is discontinued, except to the extent that severance or change-in-control payments are required to be made in accordance with individual or Company severance protection arrangements. Pursuant to his employment agreement with the Company, Mr. Plisinski is entitled to elect to continue group health or other group benefits as allowed by COBRA with continued Company co-payments for agreed post-termination periods. The Company retains the right to offer severance and/or payment of COBRA benefits to any individual who is terminated from the Company at its discretion. See “Potential Payments Upon Termination of Employment or Change in Control” below for a further description of these arrangements.

Stock Ownership Policy

The Company has established a stock ownership policy for its non-employee directors and executive officers subject to Section 16 reporting requirements, which is designed to align the interests of Company leadership with the interests of stockholders and give Company leadership a stake in the long-term financial future of the Company.

The stock ownership levels currently in effect under the policy are the following:

Company Role	Company Common Stock Holding Requirement	Effective Date
Non-Employee Directors	3x value of the annual retainer	Within 5 years of initial election to Board
CEO	3x value of CEO's base salary	Within 5 years of hire/promotion
Executive Officers Subject to Section 16 Reporting Requirements	1x value of executive officer's base salary	Within 5 years of hire/promotion

In assessing compliance with the foregoing guidelines, the Company takes into consideration only the ownership of Common Stock in the Company and unexercised stock options that are vested and “in-the-money.” As a result, unearned PSUs, unvested service-based RSUs and unvested stock options do not qualify as shares for purposes of compliance with the Company's stock ownership and retention guidelines.

Participants are expected to achieve their ownership guideline target within five years of becoming subject to the policy. Existing participants were subject to this policy as of the date of the policy and any new participants will be subject to the policy on their hire, promotion, election or appointment date, as applicable.

Compliance with the Company's stock ownership and retention guidelines is reviewed annually by the Compensation Committee. As of its last review in January 2023, the Compensation Committee determined that all executive officers and directors who were with the Company and acting in their executive officer/director capacities for periods in excess of one year were in compliance with the ownership requirements. Should any individual in the future not own the minimum number of required shares after notice by the Compensation Committee, additional action, including possible removal from the executive officer role or a determination to not nominate the director for election, would be considered by the Board.

The Compensation Committee has scheduled its review of the Company's stock ownership and retention guidelines for its January 2024 meeting and at this annual review will evaluate the appropriateness of the foregoing stock ownership levels for 2024 based in part on the average closing price of a share of the Company's stock during the 30 consecutive trading days ending on and including the last day of the most recently completed fiscal year, as well as other considerations such as market conditions and comparable practices within the industry.

Prohibition On Pledging, Margining or Hedging Of Company Stock

Our insider trading policy prohibits Company directors and employees, including our executive officers, from purchasing Company securities on margin, borrowing against Company securities held in a margin account, or pledging Company securities as collateral for a loan. Company directors and employees are also prohibited from engaging in short sales, derivative transactions, and hedging transactions involving Company securities.

Adjustments Or Recovery Of Prior Compensation

The Company has also adopted an incentive compensation clawback policy that provides for the recovery or adjustment of performance-based compensation awarded or paid to current or former executive officers during the prior three completed fiscal years in the event that the financial results on which an award or payment was determined are restated to correct a material non-compliance with any financial reporting requirements under applicable securities laws.

In addition, if the Company is required to restate its financial results due to material noncompliance with any financial reporting requirements as a result of misconduct, the Sarbanes-Oxley Act of 2002 requires the CEO and CFO to disgorge:

- Any bonus or other incentive-based or equity-based compensation received from the Company during the 12-month period following the first public issuance of the non-compliant financial reporting document; and
- Any profits realized from the sale of Company stock during that 12-month period.

Compensation Program Risk Assessment

In 2022, the Compensation Committee, with advice and input from Compensia, its independent compensation consultant, reviewed our compensation program and whether compensation design features may have the potential to incentivize executive officers to take risks that are reasonably likely to have a material adverse effect on the Company. Among others, the Committee reviewed the following features of our compensation program: compensation philosophy and pay mix; performance measures used in incentive plans; goal setting and payout leverage and caps; calculation and verification of performance outcomes for incentive payments; and mitigating factors built into the program to reduce risk. Based on this review and the input from Compensia, the Compensation Committee concluded that the Company's compensation program does not create risks that are reasonably likely to have a material adverse effect on the Company.

IRS Limits On Deductibility Of Compensation

Prior to the enactment of the Tax Cuts and Jobs Act of 2017 (the "Tax Act") in December 2017, Section 162(m) of the Internal Revenue Code of 1986, as amended ("IRC"), limited the tax deductibility of annual compensation in excess of \$1 million paid to any public corporation's CEO and three other highest-paid executive officers (other than the chief financial officer). Certain qualifying performance-based compensation was not subject to the \$1 million deduction limit, however. With the passage of the Tax Act, only qualifying performance-based compensation paid pursuant to a binding written contract in effect on November 2, 2017 (and not modified in any material respect on or after November 2, 2017) as set forth under the Tax Act will be eligible for the deduction exception. The Tax Act also expanded the executive officers covered by Section 162(m) to include the chief financial officer as well as any person who ever was a covered executive officer for any prior taxable year, beginning after December 31, 2016. As a result of these changes, starting in 2018, compensation payable by us in excess of \$1 million to any person who was an NEO since fiscal year 2016 is non-deductible, regardless of whether the compensation is performance-based.

Although the Compensation Committee considers deductibility issues when approving executive officer compensation elements, the Compensation Committee believes that the other compensation objectives, such as attracting, retaining and providing appropriate incentives to executive officers, are important and can supersede the goal of maintaining deductibility. Consequently, the Compensation Committee generally makes compensation decisions without regard to deductibility, as the Compensation Committee believes it has appropriately structured its compensation programs to provide incentives to our executive officers to increase Company return and stockholder value.

CONCLUSION

In reviewing its compensation programs, the Company has concluded that each element of compensation as well as the total compensation opportunities for its executive officers, including the NEOs, are reasonable, appropriate and in the interests of the Company and its stockholders. The Company believes that this compensation program appropriately satisfies the Company's goals of establishing a compensation package that attracts and retains a strong, motivated leadership team, aligns the financial incentives of the executive officers with the interests of the stockholders, and rewards the achievement of specific annual, long-term, and strategic goals of the Company. The Company believes that the compensation program, which has been established and is reflected herein has enabled it to recruit and secure a talented and motivated leadership team by which the Company drives toward the ultimate objective of improving stockholder value.

COMPENSATION COMMITTEE REPORT ON EXECUTIVE OFFICER COMPENSATION

We, the Compensation Committee of the Board, have reviewed and discussed the Compensation Discussion and Analysis (“CD&A”) within the Executive Officer Compensation section of this proxy statement with the management of the Company. Based on such review and discussions, we have recommended to the Board that the CD&A be included as part of this proxy statement.

THE COMPENSATION COMMITTEE

David B. Miller (Chairperson)
Leo Berlinghieri
May Su
Christine A. Tsingos

Summary Compensation Table

The following table summarizes the compensation earned by our NEOs in the fiscal years noted.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$)(1)	Non-Equity Incentive Plan Compensation (\$)(2)	All Other Compensation (\$)(3)	Total (\$)
Michael P. Plisinski <i>Chief Executive Officer</i>	2022	\$634,751	—	\$3,977,905	\$697,044	\$3,601	\$5,313,301
	2021	\$639,353	—	\$3,487,747	\$995,529	\$11,681	\$5,134,310
	2020	\$592,089	—	\$2,672,777	\$489,408	\$9,414	\$3,763,688
Mark R. Slicer ⁽⁴⁾ <i>Chief Financial Officer</i>	2022	\$275,192	\$150,000	\$1,000,038	\$240,334	\$5,652	\$1,671,216
James (Cody) Harlow ⁽⁵⁾ <i>Chief Operating Officer</i>	2022	\$307,962	—	\$397,810	\$202,910	\$98,384	\$1,007,066
Robert Fiordalice ⁽⁵⁾ <i>Senior Vice President & General Manager, Metrology Business Unit</i>	2022	\$308,276	—	\$363,773	\$202,381	\$7,999	\$882,429
Yoon Ah E. Oh ⁽⁶⁾ <i>Vice President, General Counsel, and Corporate Secretary</i>	2022	\$359,288	—	\$568,303	\$206,287	\$9,490	\$1,143,368
	2021	\$60,577	\$250,000	\$600,008	\$54,610	\$115	\$965,310
Steven R. Roth ⁽⁷⁾ <i>Former Senior Vice President, Finance & Administration and Chief Financial Officer</i>	2022	\$225,606	—	\$556,934	\$155,794	\$7,458	\$945,792
	2021	\$433,095	—	\$755,707	\$462,843	\$11,844	\$1,663,489
	2020	\$400,975	—	\$545,698	\$215,489	\$9,414	\$1,171,576

- (1) Amounts reflect the grant date fair value for each share-based compensation award granted to the NEOs during the covered year, calculated in accordance with FASB ASC Topic 718. The assumptions used in determining the grant date fair values of awards are set forth in Note 2 to our consolidated financial statements, which are included in our Annual Report on Form 10-K filed with the SEC on February 24, 2023. For 2022, the amount reported for each NEO includes the grant date fair value attributable to the 2022 awards of (i) time-based RSUs and (ii) PSUs, assuming that the performance conditions were satisfied at target at the time of grant. The grant date fair value attributable to the 2022 PSU awards, assuming maximum performance achievement, is as follows: Mr. Plisinski, \$4,455,747; Mr. Harlow, \$445,594; Mr. Fiordalice, \$407,471; Ms. Oh, \$636,465; and Mr. Roth, \$623,834. Mr. Slicer's stock awards in 2022 were entirely in the form of time-based RSUs. The actual amounts earned will be determined following the end of the two-year performance period (February 10, 2022 – February 10, 2024) and the three-year performance period (February 10, 2022 – February 10, 2025).
- (2) The amounts for a given year represent the amount earned in respect of that year under the Company's annual cash performance incentive plan, as applicable, notwithstanding the year in which it was paid. See "Compensation Discussion and Analysis – Annual Cash Incentive Compensation" for further information.
- (3) Refer to the All Other Compensation table for more detailed information about the 2022 compensation reported in this column.
- (4) Mr. Slicer joined the Company as Chief Financial Officer effective May 17, 2022.
- (5) Although employed by Onto Innovation prior to 2022, Mr. Harlow and Mr. Fiordalice were not NEOs prior to 2022.
- (6) Ms. Oh joined the Company as Vice President & General Counsel effective October 25, 2021.
- (7) Mr. Roth served as Principal Financial Officer of the Company from the Merger Date until May 17, 2022.

All Other Compensation

Name	Year	Matching Contribution to 401(k) (\$)	Insurance (\$)(1)	Perquisites and Other Personal Benefits \$(2)	Severance Compensation (\$)	Total (\$)
Michael P. Plisinski	2022	\$2,911	\$690	—	—	\$3,601
Mark R. Slicer	2022	\$5,192	\$460	—	—	\$5,652
James (Cody) Harlow	2022	\$8,530	\$690	\$89,164	—	\$98,384
Robert Fiordalice	2022	\$7,309	\$690	—	—	\$7,999
Yoon Ah E. Oh	2022	\$8,800	\$690	—	—	\$9,490
Steven R. Roth	2022	\$6,768	\$690	—	—	\$7,458

- (1) Insurance is the premium associated with coverage under the group term life insurance and accidental death and dismemberment insurance plans. Coverage is equal to the lesser of two (2) times salary or \$500,000.
- (2) The value of aggregate perquisites and benefits for each NEO except Mr. Harlow is less than \$10,000, and therefore, perquisites for these individuals are not required to be disclosed in accordance with SEC rules. Mr. Harlow's perquisites included income tax return preparation fees of \$785, executive airline club fees of \$695 and moving/relocation expense reimbursements of \$87,684.

Grants Of Plan-Based Awards In 2022

The following table sets forth information with respect to non-equity and equity incentive plan awards that were granted during 2022 to the NEOs. No stock option awards were granted to any NEO in 2022.

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards \$(1)			Estimated Future Payouts Under Equity Incentive Plan Awards (#)(2)			All Other Stock Awards: Number of Shares of Stock or Units (#) (3)	Grant Date Fair Value of Stock and Option Awards (\$)
		Threshold	Target	Maximum	Threshold	Target	Maximum		
Michael P. Plisinski	2/10/2022	\$111,456	\$636,891	\$1,082,715					
	2/10/2022				9,525	19,049	38,098		\$2,227,874
	2/10/2022							19,049	\$1,750,032
Mark R. Slicer	5/17/2022	\$55,125	\$315,000	\$535,500					
	5/17/2022							12,821	\$1,000,038
James (Cody) Harlow	2/10/2022	\$32,445	\$185,400	\$315,180					
	2/10/2022				953	1,905	3,810		\$222,797
	2/10/2022							1,905	\$175,012
Robert Fiordalice	2/10/2022	\$11,678	\$155,700	\$264,690					
	2/10/2022				871	1,742	3,484		\$203,736
	2/10/2022							1,742	\$160,038
Yoon Ah E. Oh	2/10/2022	\$31,544	\$180,250	\$306,425					
	2/10/2022				1,361	2,721	5,442		\$318,232
	2/10/2022							2,722	\$250,070
Steven R. Roth	2/10/2022	\$47,646	\$272,260	\$462,843					
	2/10/2022				1,334	2,667	5,334		\$311,917
	2/10/2022							2,667	\$245,017

- (1) The amounts reported in these columns represent the annual cash incentive opportunities under the Company's cash incentive compensation plan for each of our NEOs for the 2022 performance period. The metrics against which performance was measured under this plan, as well as other details regarding the plan, are discussed above in the Compensation Discussion and Analysis under "Annual Cash Incentive Compensation." The amounts actually earned by our NEOs under the plan are reflected in the "Non-Equity Incentive Plan Compensation" column of the Summary Compensation Table above.
- (2) The amounts reported in these columns represent the award opportunities under the Company's PSU program. The metrics against which performance will be measured under this program, as well as other details regarding the plan, are discussed above in the Compensation Discussion and Analysis under the heading "Long-Term Equity Incentive Plan." The performance periods for these awards are two years and three years with the final determinations of the award ultimately earned being made in 2024 and 2025.

- (3) The amounts reported in this column represent the awards of RSUs which are subject to service-based vesting conditions, as discussed above in the Compensation Discussion and Analysis under the heading “Long-Term Equity Incentive Plan.” These RSUs vest in 33.3% increments on each of the first three anniversaries of the grant date.

Outstanding Equity Awards At 2022 Fiscal Year-End

The following table sets forth information with respect to outstanding equity awards held by the NEOs as of December 31, 2022. No stock option awards were outstanding as of December 31, 2022.

Name	Stock Awards				
	Grant Date (1)	Number of Shares or Units of Stock That Have Not Vested (#)(2)	Market Value of Shares or Units of Stock That Have Not Vested (\$)(3)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)(4)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested (\$) (3)
Michael P. Plisinski	2/7/2020	10,403	\$708,340	15,604	\$1,062,476
	2/8/2021	16,556	\$1,127,298	24,834	\$1,690,947
	2/10/2022	19,049	\$1,297,046	19,049	\$1,297,046
Mark R. Slicer	5/17/2022	12,821	\$872,982		
James (Cody) Harlow	10/1/2021	2,738	\$186,430		
	2/10/2022	1,905	\$129,711	1,905	\$129,711
Robert Fiordalice	2/7/2020	563	\$38,335	845	\$57,536
	2/8/2021	938	\$63,868	1,407	\$95,803
	2/10/2022	1,742	\$118,613	1,742	\$118,613
Yoon Ah E. Oh	10/25/2021	5,362	\$365,099		
	2/10/2022	2,722	\$185,341	2,721	\$185,273
Steven R. Roth ⁽⁵⁾	2/7/2020	2,124	\$144,623	3,186	\$216,935
	2/8/2021	3,587	\$244,239	5,381	\$366,392
	2/10/2022	2,667	\$181,596	2,667	\$181,596

- (1) For a better understanding of this table, we have included an additional column showing the grant date of each stock award.
- (2) Amount includes service-based RSU awards vesting 1/3rd per year on the anniversary of the grant date.
- (3) Based on the Company’s common stock closing price of \$68.09 per share on December 31, 2022.
- (4) PSU awards are reported in this table at number of target shares. The actual number of shares earned will be determined based on performance achievement measured over two (2)- and three (3)-year performance periods, and any earned shares will vest on the second and third anniversaries, respectively, of the grant date.
- (5) Mr. Roth participates in the Company’s post-retirement equity award vesting program.

Stock Vested In 2022

The following table sets forth information with respect to the value realized by the NEOs upon vesting of PSUs and RSUs during 2022, and such values reflect the total pre-tax value realized by each NEO. There were no stock option exercises by any of the NEOs during 2022.

Name	Stock Awards	
	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting (\$)(1)
Michael P. Plisinski	56,453	\$5,124,158
Mark R. Slicer	—	—
James (Cody) Harlow	1,369	\$87,684
Robert Fiordalice	4,117	\$359,528
Yoon Ah E. Oh	2,681	\$180,431
Steven R. Roth	12,616	\$1,144,668

- (1) The aggregate dollar amount realized is based on the fair market value of the shares upon vesting.

Pay Versus Performance

We are required by SEC rules to disclose the following information regarding compensation paid to our NEOs. The amounts set forth below under the headings “Compensation Actually Paid to CEO” and “Average Compensation Actually Paid for NEOs” have been calculated in a manner consistent with Item 402(v) of Regulation S-K. Footnotes (4), (5) and (6) below set forth the adjustments from the Total Compensation for each NEO reported in the Summary Compensation Table above.

The following table sets forth additional compensation information of our Chief Executive Officer (CEO) and our non-CEO NEOs along with total shareholder return, net income and total revenue performance results for fiscal years 2020, 2021 and 2022.

Year ⁽¹⁾	Summary Compensation Table for CEO	Compensation Actually Paid to CEO ⁽²⁾⁽³⁾	Average Summary Compensation Table Total for NEOs	Average Compensation Actually Paid to NEOs ⁽²⁾⁽³⁾	Value of Initial Fixed \$100 Investment Based on:		Net Income	Total Revenue
					Total Shareholder Return ⁽⁷⁾	Peer Group Total Shareholder Return ⁽⁷⁾		
2022	\$5,313,301	\$2,086,925	\$1,129,974	\$711,974	\$86.27	\$42.98	\$223,334	\$1,005,183
2021	\$5,134,310	\$13,985,674	\$1,069,940	\$2,149,621	\$176.97	\$125.09	\$142,349	\$788,899
2020	\$3,763,688	\$4,453,187	\$934,489	\$1,463,581	\$30.11	\$56.09	\$31,025	\$556,496

(1) The CEO and NEOs included in the above compensation columns reflect the following:

Year	CEO	NEOs
2022	Michael P. Plisinski	Mark R. Slicer, James (Cody) Harlow, Robert Fiordalice, Yoon Ah E. Oh, Steven R. Roth
2021	Michael P. Plisinski	Steven R. Roth, Rollin Kocher, Kevin Heidrich, Robert A. Koch, Yoon Ah E. Oh
2020	Michael P. Plisinski	Steven R. Roth, Rollin Kocher, Kevin Heidrich, Robert A. Koch

- (2) Fair value or change in fair value, as applicable, of equity awards in the “Compensation Actually Paid” columns was determined by reference to (1) for RSU awards, closing price on applicable year-end dates or, in the case of vesting dates, the actual vesting price, (2) for TSR-based PSU awards, the fair value calculated by a Monte Carlo simulation model as of the applicable year-end date(s) or, in the case of vesting date, the actual vesting price and probability of achievement.
- (3) For the portion of “Compensation Actually Paid” that is based on year-end stock prices, the following prices were used: for 2022: \$68.09 (32.7% reduction from prior year), for 2021: \$101.23 (110.8% increase from prior year), and for 2020: \$48.02 (1.0% increase from prior year).
- (4) 2022 “Compensation Actually Paid” to the CEO and the average “Compensation Actually Paid” to the NEOs reflect the following adjustments from Total Compensation reported in the Summary Compensation Table:

	CEO	Average of NEOs
Total Reported in 2022 Summary Compensation Table (SCT)	\$5,313,301	\$1,129,974
Less, Value of Stock & Option Awards Reported in SCT	(\$3,977,905)	(\$577,372)
Less, Change in Pension Value and Non-Qualified Deferred Compensation Earnings in SCT	—	—
Plus, Pension Service Cost and impact of Pension Plan Amendments	—	—
Plus, Year-End value of Awards Granted in Fiscal Year that are Unvested and Outstanding	\$2,764,863	\$436,885
Plus, Change in Fair Value of Prior Year awards that are Outstanding and Unvested	(\$2,584,704)	(\$143,057)
Plus, FMV of Awards Granted this Year and that Vested this Year	—	—
Plus, Change in Fair Value (from Prior Year-End) of Prior Year awards that Vested this year	\$571,370	(\$134,457)
Less, Prior Year Fair Value of Prior Year awards that failed to vest this year	—	—
Total Adjustments	(\$3,226,376)	(\$418,000)
“Compensation Actually Paid” for Fiscal Year 2022	\$2,086,925	\$711,974

(5) 2021 “Compensation Actually Paid” to the CEO and the average “Compensation Actually Paid” to the NEOs reflect the following adjustments from Total Compensation reported in the Summary Compensation Table:

	CEO	Average of NEOs
Total Reported in 2021 Summary Compensation Table (SCT)	\$5,134,310	\$1,069,940
Less, Value of Stock & Option Awards Reported in SCT	(\$3,487,747)	(\$533,902)
Less, Change in Pension Value and Non-Qualified Deferred Compensation Earnings in SCT	—	—
Plus, Pension Service Cost and impact of Pension Plan Amendments	—	—
Plus, Year-End value of Awards Granted in Fiscal Year that are Unvested and Outstanding	\$6,761,134	\$879,706
Plus, Change in Fair Value of Prior Year awards that are Outstanding and Unvested	\$5,241,435	\$665,069
Plus, FMV of Awards Granted this Year and that Vested this Year	—	—
Plus, Change in Fair Value (from Prior Year-End) of Prior Year awards that Vested this year	\$336,542	\$68,807
Less, Prior Year Fair Value of Prior Year awards that failed to vest this year	—	—
Total Adjustments	\$8,851,364	\$1,079,680
“Compensation Actually Paid” for Fiscal Year 2021	\$13,985,674	\$2,149,621

(6) 2021 “Compensation Actually Paid” to the CEO and the average “Compensation Actually Paid” to the NEOs reflect the following adjustments from Total Compensation reported in the Summary Compensation Table:

	CEO	Average of NEOs
Total Reported in 2020 Summary Compensation Table (SCT)	\$3,763,688	\$934,489
Less, Value of Stock & Option Awards Reported in SCT	(\$2,672,777)	(\$435,715)
Less, Change in Pension Value and Non-Qualified Deferred Compensation Earnings in SCT	—	—
Plus, Pension Service Cost and impact of Pension Plan Amendments	—	—
Plus, Year-End value of Awards Granted in Fiscal Year that are Unvested and Outstanding	\$2,941,125	\$479,458
Plus, Change in Fair Value of Prior Year awards that are Outstanding and Unvested	\$318,972	\$487,384
Plus, FMV of Awards Granted this Year and that Vested this Year	—	—
Plus, Change in Fair Value (from Prior Year-End) of Prior Year awards that Vested this year	\$102,179	(\$2,036)
Less, Prior Year Fair Value of Prior Year awards that failed to vest this year	—	—
Total Adjustments	\$689,499	\$529,092
“Compensation Actually Paid” for Fiscal Year 2020	\$4,453,187	\$1,463,581

(7) Company and Peer Group TSR reflects the Company’s peer group (PHLX Semiconductor Index) as reflected in our Annual Report on the Form 10-K pursuant to Item 201(e) of Regulation S-K for the fiscal year ended December 31, 2022. Each year reflects what the cumulative value of \$100 would be, including the reinvestment of dividends, if such amount were invested on December 31, 2019.

Pay versus Performance Descriptive Disclosure

We chose Total Revenue as our Company Selected Measure for evaluating Pay versus Performance because it is a key metric, along with operating income, in determining the annual cash incentive compensation paid to the CEO and other NEOs. It also highlights the rapid growth of the Company over the last three years.

Our TSR lagged the TSR for our peer group in 2020 but increased significantly in 2021 both in terms of real dollars and in relation to our peer group TSR, which our TSR exceeded by approximately 40%. In 2022, the dollar value of our TSR dropped but was nonetheless over 100% greater than our peer group TSR. There is a positive relationship between TSR and “Compensation Actually Paid” to our CEO and the other NEOs between 2020 and 2021, when both metrics increased, and between 2021 and 2022, when both metrics dropped, despite our TSR equaling approximately twice our peer group TSR. There is a positive relationship between Net Income and “Compensation Actually Paid” to our CEO and the other NEOs between 2020 and 2021, when both metrics increased. There is an inverse relationship between Net Income and “Compensation Actually Paid” to our CEO and the other NEOs between 2021 and 2020 when Net Income increased, but “Compensation Actually Paid” decreased. Similarly, from 2020 to 2021 there is a positive relationship between Total Revenue and “Compensation Actually Paid”, when both metrics increased, and an inverse relationship between 2021 and 2020 when Total Revenue increased, but “Compensation Actually Paid” to our CEO and the other NEOs decreased.

Pay versus Performance Tabular List

The table below lists our most important performance measures used to link “Compensation Actually Paid” for our NEOs to company performance, over the fiscal year ending December 31, 2022. Both Total Revenue and Operating Income factor into the annual cash incentive compensation paid to NEOs and Company TSR over two- and three-year measurement periods determine the ultimate value of PSUs awarded to NEOs. For a further discussion of how each of these financial measures relates to NEO compensation, see our “Compensation Discussion and Analysis” beginning on page 26 of this Proxy Statement. The performance measures included in this table are not ranked by relative importance.

Most Important Financial Measures
Total Revenue
Operating Income
TSR

Pension And Nonqualified Deferred Compensation

The Company does not have a defined benefit pension program, nor does it offer non-qualified deferred compensation.

Potential Payments Upon Termination Of Employment Or Change In Control

This section (including the following tables) summarizes each NEO’s estimated payments and other benefits that would be received by the NEO or the NEO’s estate if his or her employment had terminated on December 31, 2022, under the hypothetical circumstances set forth below. As Mr. Roth voluntarily resigned from the Company in December 2022, he did not receive any termination payments (other than post-retirement equity award vesting) from the Company and we do not include discussion of potential payments upon his termination or a change in control below.

Certain of our NEOs are entitled to certain termination payments upon his or her death or Disability, his or her involuntary termination without Cause, or his or her voluntary termination with Good Reason as described below. Although the definitions of each of these terms is specific to the NEO’s employment agreement or change-in-control agreement with the Company, the terms generally have the following meanings:

- “Disability” generally means that the executive officer, due to physical or mental impairment, is unable to perform his or her duties to the Company for a specified period of time.
- “Cause” generally means that the executive officer engaged in a crime, willful gross misconduct or other serious act involving moral turpitude; materially breached an agreement between him or her and the Company; or otherwise materially breached his or her obligations to the Company.
- A voluntary termination for “Good Reason” generally means, depending on the particular executive officer’s agreement, that the executive officer’s duties, responsibilities or status with the Company or its successor are materially reduced; his or her primary place of work is moved to a location outside a predetermined radius; in particular cases, certain reduction in compensation; or the Company materially breaches the terms of his or her agreement with the Company or any successor fails to assume the executive officer’s change-in-control agreement.

In addition to the payments and other benefits described below, under our 2020 Stock Plan, in the event of a change in control, unless the Board or Compensation Committee determine that some other treatment is warranted in their discretion, if the acquiror elects not to assume or substitute an equity award, then upon the effective date of the change in control all RSUs and PSUs held by any employees of the Company (including NEOs) become fully vested and the performance goals or other vesting conditions for PSUs shall be deemed achieved at 100% of the target levels.

Mr. Plisinski

Mr. Plisinski's employment agreement provides for the following:

- In the event of any termination of Mr. Plisinski's employment, he is entitled to payment of all base salary due and owing through the termination date and an amount equal to all earned but unused vacation through the termination date.
- In the event Mr. Plisinski's employment is terminated due to his death, his estate would be entitled to:
 - o Payment of his then-current base salary as if his employment had continued for three months following his death;
 - o Continued co-payment for a period of six months following his death of amounts due under COBRA for continuation of the Company's group health and other group benefits for his covered dependents, if the covered dependents so elect;
 - o Payment of his annual incentive cash bonus based on actual performance achievement, prorated for the time employed preceding his death, to be paid out with the Company's annual incentive plan payouts; and
 - o Immediate vesting of stock options and SARs, and immediate vesting of RSU awards granted after his appointment as CEO which by their terms would vest within 12 months after death and, if a performance award, based on actual performance achievement for such performance period completed within 12 months after death.
- In the event Mr. Plisinski's employment is terminated due to his Disability, he would be entitled to:
 - o Payment of his then-current base salary through the end of the month of such termination;
 - o Continued co-payment for a maximum period of six months following his Disability of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he or his covered dependents, as appropriate, so elects;
 - o Payment of his annual incentive cash bonus based on actual performance achievement, prorated for the time employed preceding his termination, to be paid out with the Company's annual incentive plan payouts; and
 - o Immediate vesting of stock options and SARs, and immediate vesting of RSU awards granted after his appointment as CEO which by their terms would vest within 12 months after termination for disability and, if a performance award, based on actual performance achievement for such performance period completed within 12 months after termination.
- In the event Mr. Plisinski's employment is terminated by the Company without Cause or Mr. Plisinski terminates his employment for Good Reason, he would be entitled to:
 - o Payment of two times his then-current base salary, paid over 24 months (i.e., salary continuation for two years);
 - o Continued co-payment for a period of up to 18 months of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he so elects; and
 - o Vesting of any equity incentive awards outstanding as of the termination date that, by their terms:
 - (1) represent either unvested shares which were earned based on a completed performance period under a performance-based award granted on or after the employment agreement effective date and which as of the termination date are then subject to time-based vesting only, or shares under such an equity incentive award granted on or after the employment agreement effective date which will be earned under a performance-based award based on actual achievement under a performance period which has been completed on or prior to the termination date but as to which performance period the actual number of shares earned against the award performance goals has not yet been determined by the Company; and
 - (2) would have become vested based solely on the passage of time within the 12-month period immediately following the termination date had Mr. Plisinski continued in employment with the Company.

- If, within 18 months following the occurrence of a Change in Control, Mr. Plisinski's employment is terminated for any reason other than for Cause or Mr. Plisinski terminates his employment for Good Reason, he would be entitled to:
 - o Payment of two times the sum of his then-current base salary and target annual cash bonus, paid over 24 months;
 - o Continued co-payment for a period of up to 18 months of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he so elects; and
 - o Immediate vesting of all unvested stock options, SARs and all unvested and outstanding performance-based (at target) and service-based RSUs and other equity awards.
 - o To the extent that Change in Control termination payments made to Mr. Plisinski under his agreement are subject to the excise tax imposed by Section 4999 of the IRC, Mr. Plisinski would either have to pay the excise tax or have his benefits reduced so that no portion of his termination payments were subject to the excise tax.
 - o In order to receive these termination or Change in Control termination payments, Mr. Plisinski would be required to sign a general release of all known and unknown claims that he may have against the Company.
 - o As part of his employment agreement, Mr. Plisinski is subject to non-solicitation and non-competition restrictions that limit his ability to compete with the Company during the term of the agreement and for a period of two years following his resignation or termination for any reason.
- For Mr. Plisinski, a "Change in Control" would generally be considered to have occurred if:
 - o a merger or consolidation of the Company or an acquisition by the Company involving the issuance of its securities as consideration for the acquired business results in the stockholders of the Company following such transactions having less than 50% of combined voting power of the surviving entity;
 - o any person or persons becomes the beneficial owner of 30% or more of our outstanding shares;
 - o all or substantially all assets of the Company are disposed of pursuant to a plan of liquidation of the Company;
 - o all or substantially all of our assets are sold; or
 - o during any 12 month consecutive period the individuals who presently make up our Board or who become members of our Board with the approval of at least a majority of our existing Board cease to constitute at least a majority of the Board; provided any transaction or event described above will not constitute a change in control under the agreement unless it qualifies as a "change in control" under Section 409A of the IRC.

The following table reflects the potential payments to Mr. Plisinski in the event of his termination or his termination following a Change in Control as of December 31, 2022:

Potential Payments To Mr. Plisinski Upon Termination Or Change in Control				
Termination Circumstance as of 12/31/2022	Cash Severance		Value of Accelerated Unvested Equity	Benefits Continuation
	Base Salary	Management Incentive Bonus		
By the Company without Cause	\$1,273,782 (2x salary)	—	\$7,183,155	\$48,538
Executive officer resignation for Good Reason	\$1,273,782 (2x salary)	—	\$7,183,155	\$48,538
Death	\$159,223 (3 mos. salary)	\$697,044 (1x bonus)	\$7,183,155	\$16,179
Disability	—	\$697,044 (1x bonus)	\$7,183,155	\$16,179
<i>Within 18 months following Change in Control:</i>				
By the Company without Cause	\$1,273,782 (2x salary)	\$1,394,088 (2x bonus)	\$7,183,155	\$48,538
By the executive officer with Good Reason	\$1,273,782 (2x salary)	\$1,394,088 (2x bonus)	\$7,183,155	\$48,538

Messrs. Slicer, Harlow, and Fiordalice and Ms. Oh

The Executive Change in Control Agreements for Messrs. Slicer, Harlow, and Fiordalice and Ms. Oh provide for the following:

- Upon cessation of the executive's employment at the Company for any reason under the Executive Change in Control Agreement, the executive (or his or her estate) shall be entitled to payment of:
 - o All base salary earned through the executive's termination date but not yet paid;
 - o Any unreimbursed business expenses that are eligible for reimbursement under the Company's policies;
 - o Any accrued but unused vacation pay or paid time off;
 - o Any amount arising from the executive's participation in, or benefits, under any employee benefits plans, programs or arrangements; and
 - o Any amounts earned but not yet paid under any applicable bonus or incentive plan.
- The executive (or his or her estate) shall also be entitled to any applicable indemnification rights.
- If, within one year following the occurrence of a Change in Control, or within 60 days prior to the occurrence of a Change in Control, the executive's employment is terminated for any reason other than for Cause or the executive resigns for Good Reason, the executive shall be entitled to the following benefits in exchange for an unrevoked general release:
 - o Payment of his or her then-current base salary for a period of 12 months;
 - o Accelerated vesting of all unvested stock options, outstanding RSUs and other performance awards;
 - o Any performance award that was assumed, substituted or continued with the Change in Control that had not already satisfied its performance conditions shall be treated as of the termination date as vested at the target level and fully vested as to any service conditions;
 - o Payment of 100% of the executive's target annual bonus for the fiscal year in which the termination date occurs; and
 - o The executive may elect to maintain the executive's and his or her dependent's health care benefit coverage to the same extent provided for by and with the same Company/Executive officer payment contribution percentages under Company's group plans at the time of termination. Such coverage shall extend for a term of one year from the termination date unless she becomes covered as an insured under another employer's or spousal health care plan.
- Under the Executive Change in Control Agreements, a "Change in Control" would generally be considered to have occurred if:
 - o any person or entity, or multiple persons or entities acting as a group, becomes the beneficial owner of more than 50% of our outstanding voting shares;
 - o Continuing Directors no longer constitute a majority of the Board, where "Continuing Director" means a Board member who was a Board member when the Executive Change in Control Agreement was executed or who was nominated, elected or approved by at least a majority of Board members were, at that time, Continuing Directors, but excluding any individual whose initial assumption to office occurred as a result of any actual or threatened election contest or proxy solicitation, unless such person's treatment as a Continuing Director is subsequently approved by a majority of Continuing Directors; or
 - o there is consummation of a merger, consolidation, reorganization, recapitalization or statutory share exchange involving the Company or a sale or other disposition of all or substantially all of the assets of the Company in one or a series of transactions (a "Business Combination"), unless, immediately following such Business Combination, each of the following three conditions is satisfied: (A) all or substantially all of the individuals and entities who were the beneficial owners of the then-outstanding shares of common stock entitled to vote immediately prior to such Business Combination still beneficially own more than 50% of the outstanding securities of the surviving entity in substantially the same proportions as their ownership immediately prior to such Business Combination; (B) the individuals who were members of the Board of Directors of the Company immediately prior to the execution of the agreement providing for such Business Combination constitute at least 50% of the members of the board of directors or other governing body of the acquiring entity; and (C) no person

beneficially owns, directly or indirectly, securities that represent immediately after such merger or consolidation more than 50% of the combined voting power of the then outstanding voting securities of either the Company or the other surviving entity or its ultimate parent, or of the combined voting power of the then-outstanding securities of such entity entitled to vote generally in the election of directors or other governing body (except to the extent that such ownership existed prior to the Business Combination).

The following table reflects the potential payments to Messrs. Slicer, Harlow, and Fiordalice and Ms. Oh in the event any of them is terminated following a change in control as of December 31, 2022:

Potential Payments Within 12 Months Following Change in Control				
Termination Circumstance as of 12/31/2022	Cash Severance (Base Salary)	Management Incentive Bonus	Value of Accelerated Unvested Equity	Benefits Continuation
<i>By the Company without cause</i>				
Mark R. Slicer	\$450,000	\$315,000	\$872,982	\$32,358
James (Cody) Harlow	\$309,000	\$185,400	\$445,853	\$23,611
Robert Fiordalice	\$311,400	\$155,700	\$492,767	\$32,358
Yoon Ah E. Oh	\$360,500	\$180,250	\$735,712	\$8,490
<i>By the executive officer with good reason</i>				
Mark R. Slicer	\$450,000	\$315,000	\$872,982	\$32,358
James (Cody) Harlow	\$309,000	\$185,400	\$445,853	\$23,611
Robert Fiordalice	\$311,400	\$155,700	\$492,767	\$32,358
Yoon Ah E. Oh	\$360,500	\$180,250	\$735,712	\$8,490

The following table reflects the potential payments to Messrs. Slicer, Harlow, and Fiordalice and Ms. Oh in the event any of them is terminated following reasons other than change in control as of December 31, 2022:

Potential Payments Following Termination Circumstance as of 12/31/2022				
Name	Management Incentive Bonus			
	Involuntary Without Cause Termination	Executive Resignation for Good Reason	Death	Disability
Mark R. Slicer	\$240,334	\$240,334	\$240,334	\$240,334
James (Cody) Harlow	\$202,910	\$202,910	\$202,910	\$202,910
Robert Fiordalice	\$202,381	\$202,381	\$202,381	\$202,381
Yoon Ah E. Oh	\$206,287	\$206,287	\$206,287	\$206,287

Each of Messrs. Slicer, Harlow, and Fiordalice and Ms. Oh has also entered into a separate agreement upon employment with the Company that subjects him or her to non-competition and non-solicitation restrictions, which limit his or her ability to compete with the Company during his or her employment and for a period of one year following his or her resignation or termination for any reason.

Retention Bonus Agreements

No NEO has entered into a Retention Bonus Agreement with the Company.

CEO Pay Ratio

In accordance with the Dodd-Frank Act and applicable SEC rules, we are providing the following information about the relationship of our CEO's compensation to the compensation of all our employees. For 2022:

- the annual total compensation of the median employee was \$131,080;
- the annual total compensation of our CEO, Michael P. Plisinski, as reported in the Summary Compensation Table included in this proxy statement, was \$5,313,301; and
- the ratio of the annual total compensation of our CEO to the median employee's annual total compensation was 41 to 1.

This pay ratio is a reasonable estimate calculated in good faith, in a manner consistent with Item 402(u) of Regulation S-K, based on our payroll and employment records and the methodology described below. The SEC rules for identifying the "median employee" and calculating the pay ratio based on that employee's annual total compensation allow companies to adopt a variety of methodologies, to apply certain exclusions, and to make reasonable estimates and assumptions that reflect their compensation

practices. As such, the pay ratios reported by other companies may not be comparable to the pay ratio set forth above, as other companies may have different employment and compensation practices and may utilize different methodologies, exclusions, estimates and assumptions in calculating their own pay ratios.

To identify the employee with the median of the annual total compensation of all our employees that is used for the year ended 2022, we used the following methodology and made the following material assumptions, adjustments and estimates:

- We determined that as of December 31, 2022, our employee population consisted of approximately 1,600 individuals located in the U.S. and in countries in Europe and Asia. This population consisted of our full-time, part-time and temporary employees. We excluded a limited number of temporary agency employees and independent contractors, who are employees of, and whose compensation is determined by third parties unaffiliated with the Company and as such are not considered our employees for the purposes of the pay ratio calculation.
- To identify the “median employee” from our employee population, we used a consistently applied compensation measure which included annual salary as reflected in our payroll records, as well as stock awards and non-equity incentive plan compensation earned in 2022, which was our measurement period. We applied a foreign currency to U.S. dollar exchange rate to the compensation paid in foreign currency and we did not make any cost-of-living adjustments. We selected this compensation measure because it is readily available in our existing payroll records and because it is a reasonable proxy for total compensation for purposes of determining the “median employee.”

Once we identified our “median employee,” we calculated the elements of such employee’s compensation for 2022 in accordance with the requirements of Item 402(c)(2)(x) of Regulation S-K. The median employee’s annual total compensation of \$131,080 may include as applicable salary, stock awards and non-equity incentive plan compensation, as well as Company matching contributions to the 401(k) employee savings plan, and the cost of Company paid premiums associated with coverage under the group term life insurance and accidental death and dismemberment insurance plan.

PROPOSAL 3

ADVISORY VOTE ON THE FREQUENCY OF ADVISORY VOTES ON NAMED EXECUTIVE OFFICER COMPENSATION

Pursuant to Rule 14a-21(b) of the Exchange Act, we are required to submit a non-binding, advisory vote to stockholders at least once every six years to determine whether future advisory votes on the compensation paid to our NEOs should be held every one year, every two years, or every three years. At the 2017 Annual Meeting of Stockholders of Nanometrics, our stockholders indicated their preference that the Company solicit an advisory vote on NEO compensation every one year. In accordance with the results of that vote, our Board of Directors implemented a policy of taking an advisory vote on NEO compensation each year.

We are once again asking stockholders to advise us as to how frequently they wish to cast an advisory vote on the compensation of our NEOs. After careful consideration, our Board of Directors has determined that an advisory vote on the compensation of our NEOs should continue to be held every one year. Although our executive compensation program is designed to promote a long-term correlation between pay and performance, the Board of Directors recognizes that executive compensation disclosures are made annually. Holding an annual advisory vote on executive compensation provides us with more direct and immediate feedback on our compensation decisions. We believe that an annual advisory vote on executive compensation is therefore consistent with our philosophy on good corporate governance practices and our executive compensation philosophy, policies, and practices.

In arriving at our recommendation on the frequency vote, we reviewed the results of our previous shareholder vote in 2017, when an annual vote was approved by a majority of the stockholders. As required by the Dodd-Frank Act, this is an advisory vote, which means that this proposal is not binding on us. Regardless, our Board of Directors values the opinions expressed by stockholders and will take into account the outcome of this advisory vote when considering the frequency of future advisory votes on the compensation of our NEOs.

Vote Required

For the proposal to approve, on any advisory basis, the frequency of votes on named executive officer compensation, stockholders will select from four options: to hold the advisory vote on named executive officer compensation every “1 Year,” “2 Years,” or “3 Years,” or to abstain from voting. The frequency (“1 Year,” “2 Years,” or “3 Years”) receiving the greatest number of votes will be considered the frequency recommended by stockholders to the Board.

**The Board recommends that stockholders vote that future advisory votes on
named executive officer compensation be held every “1 Year.”**

PROPOSAL 4

RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Although ratification by stockholders is not required by law, the Board is submitting the Audit Committee's selection of Ernst & Young LLP ("EY") as the Company's independent registered public accounting firm for fiscal year 2023 for ratification as a matter of good corporate governance and recommends that the stockholders vote for ratification of such appointment. In the event of a negative vote on such ratification, the Board will reconsider its selection. Even if the selection is ratified, the Audit Committee may appoint a new independent registered public accounting firm at any time during the year if the Audit Committee believes that such a change would be in the best interests of the Company and its stockholders. EY has indicated that representatives of EY, the independent registered public accounting firm presented herein, will be in attendance at the Annual Meeting. Such representatives will have the opportunity to make a statement, if they desire to do so, and to respond to appropriate questions.

Independent Registered Public Accounting Firm Selection Process

EY served as the independent registered public accounting firm for Rudolph (the accounting acquirer in the merger with Nanometrics) from 2008 through the Merger Date and has been the Company's independent registered public accounting firm since the Merger Date, serving in this role during fiscal 2022. During this time, the firm has demonstrated:

- A high degree of independence and professionalism in their audit engagement with the Company;
- A solid record of partner and professional staff continuity;
- A knowledge of current and emerging accounting and auditing issues affecting the Company;
- A deep and ongoing understanding of the Company's business model and industry; and
- A readiness to assist the Company and its audit committee in keeping up to date with the latest accounting and auditing pronouncements and their application to the Company's business.

In making its selection of an independent registered public accounting firm, the Audit Committee assesses, among other factors:

- The performance of the independent registered public accounting firm in the prior year;
- The anticipated needs of the Company and ability of the accounting firm to address them in the coming year;
- The proposed fees for the coming year; and
- The potential impact of changing auditors for the coming year.

Ultimately, the selection of the independent registered public accounting firm is made with the best interest of the Company and its stockholders in mind.

Factors Used To Assess Independent Registered Public Accounting Firm Quality

Members of the Audit Committee have experience in dealing with audits of other public companies as well as experience with other accounting firms. After the Merger Date, the Audit Committee's basis for the selection of EY as the Company's independent registered public accounting firm included, among other considerations, familiarity with Rudolph's accounting practices as the accounting acquirer in the 2019 Merger, EY's breadth of services and international footprint as well as expense considerations. On an ongoing basis, EY has been responsive, reliable and professional in their dealings with the Audit Committee and has appropriately assisted the Audit Committee in its oversight of the Company's financial processes and financial statements. In addition, EY makes available to the

Company specialists within EY to assist in the audit when consultation on specific and unique issues is warranted. These processes appear to be effective in assisting EY with their audit engagement.

As a part of the Audit Committee's review of EY's qualifications, EY provides the Company with the firm-wide comments from the Public Company Accounting Oversight Board ("PCAOB") regarding PCAOB's examinations of EY for the prior year. EY also updates the Company with the quality improvements that the firm has made as a result of the PCAOB comments as well as other changes to their quality and risk assessment processes.

Audit Committee's Involvement In The Lead Partner Selection

In accordance with SEC and PCAOB independence guidelines, EY employs a regular schedule of rotation of both the lead engagement partner ("Lead Partner") and the concurring partner. Such a regularly scheduled rotation provides for sufficient overlap of the new Lead Partner with the outgoing Lead Partner. This process allows the members of the Audit Committee and the Company management to become familiar with the new Lead Partner and new staff and to introduce them to the Company's business. Prior to the new Lead Partner's full engagement, the Audit Committee and Company management meet with EY to review and offer feedback on the industry experience, financial acumen and anticipated fit of the new Lead Partner with the Company.

Audit Committee Pre-Approval Of Audit And Permissible Non-Audit Services Of Independent Registered Public Accounting Firm

Pursuant to our Audit Committee charter, our Audit Committee must pre-approve all audit and permissible non-audit services provided by the Company's independent registered public accounting firm. These services may include audit services, audit-related services, tax and other services. Pre-approval is generally provided for up to one year, and any pre-approval is detailed as to the particular service or category of services and is generally subject to a specific budget. The independent registered public accounting firm and management are required to periodically report to the Audit Committee regarding the extent of services provided by the independent registered public accounting firm in accordance with this pre-approval and the fees for the services performed to date. The Audit Committee may also pre-approve particular services on a case-by-case basis. During fiscal 2022, all services provided by EY to the Company were pre-approved by the Audit Committee in accordance with this policy, and the Audit Committee has concluded that the provision of these services is compatible with the accountants' independence.

Audit and Non-Audit Fees

The following table sets forth the fees billed for the fiscal year ended December 31, 2022 and the fiscal year ended January 1, 2022 by EY, the Company's independent registered public accounting firm.

Fees	2022	2021
Audit	\$2,025,000	\$1,816,000
Audit Related	45,000	42,000
Tax	45,000	—
All Other	5,400	5,200
Total	\$2,120,400	\$1,863,200

Audit Fees

Audit fees for the fiscal years ended December 31, 2022 and January 1, 2022 were for the audit of the Company's annual financial statements including management's assessment of internal control over financial reporting, the review of the Company's quarterly financial statements and statutory and regulatory audits, consents, and other services. These fees may include services that are normally provided by the independent registered public accounting firm in connection with regulatory filings or engagements including any comfort letters and consents for financings and filings made with the SEC.

Audit Related Fees

Audit related fees for the fiscal years ended December 31, 2022 and January 1, 2022 were for assurance and related services reasonably related to the performance of the audit or review of the Company's annual financial statements that are not reported under "Audit Fees," and consisted primarily of fees for employee benefit plan audits.

Tax Fees

Tax fees may include fees for tax compliance, tax planning and tax advice. Tax fees for the fiscal year ended December 31, 2022 were for tax advice.

All Other Fees

All other fees would consist of fees for products and services other than the services described above. For the fiscal year ended December 31, 2022 and January 1, 2022, all other fees included payments for an accounting and auditing information tool.

Negotiation of the annual independent registered public accounting firm fees is the responsibility of the Audit Committee with the support of the Company's CFO. All of the EY fees listed in the chart above for fiscal years 2021 and 2022 were pre-approved by the Audit Committee, which concluded that the provision of such services by EY was compatible with the maintenance of that firm's independence in the conduct of its audit functions.

Vote Required

The affirmative vote, in person or by proxy, of a majority of the shares present or represented at the meeting and entitled to vote will be required to ratify the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the year ending December 30, 2023.

The Board recommends voting "FOR" the ratification of the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the year ending December 30, 2023.

AUDIT COMMITTEE REPORT

The following is the Audit Committee's report submitted to the Board for the fiscal year ended December 31, 2022.

As noted in the Audit Committee's charter, management is responsible for the Company's internal controls and the financial reporting process. The independent registered public accounting firm is responsible for performing an independent audit of the Company's consolidated financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States) and for issuing a report thereon. Additionally, the independent registered public accounting firm is responsible for performing an independent audit of the Company's internal control over financial reporting and for issuing a report thereon. The Committee's responsibility is to monitor and oversee these processes.

In this context, the Audit Committee of the Board has:

- reviewed and discussed with management and with Ernst & Young LLP, the Company's independent registered public accounting firm, together and separately, the Company's audited consolidated financial statements contained in its Annual Report on Form 10-K for the fiscal year ended December 31, 2022;
- discussed with Ernst & Young LLP the matters required to be discussed by Statement on Auditing Standards No. 1301, Communications with Audit Committees;
- received the written disclosures and the letter from Ernst & Young LLP required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent registered public accounting firm's communications with the Audit Committee concerning independence, and has discussed with Ernst & Young LLP its independence; and
- discussed and reviewed with the Company's manager - internal audit ("Mgr-IA") and Ernst & Young LLP, with and without management present, the Company's work in complying with the requirements of Section 404 under the Sarbanes-Oxley Act of 2002 regarding internal control over financial reporting. In connection therewith, the Audit Committee also discussed with the Mgr-IA, with and without other members of management present, management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2022. The Audit Committee also discussed Ernst & Young LLP's audit report on internal controls over financial reporting as of December 31, 2022 with management and Ernst & Young LLP.

Based on the foregoing review and discussions, the Audit Committee recommended to the Board that the audited financial statements be included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2022.

THE AUDIT COMMITTEE

Christine A. Tsingos (Chairperson)

Stephen D. Kelley

Karen Rogge

May Su

EXECUTIVE OFFICER BIOGRAPHIES

Set forth below is certain information regarding the executive officers of the Company and their ages as of March 30, 2023. Information relating to Michael P. Plisinski is set forth above under the caption “PROPOSAL 1 - ELECTION OF DIRECTORS.” The individuals listed reflect the Company’s officers designated by the Board as “Executive Officers” for the 2023 fiscal year. The Company is unaware of any arrangements or understandings between the executive officers of the Company and other person(s) pursuant to which an executive officer was or is to be selected, except that Mr. Plisinski was appointed as CEO of the Company pursuant to the Merger Agreement for the 2019 Merger.

Named Executive Officers (NEOs)

Mark R. Slicer Chief Financial Officer Age: 52

- Mr. Slicer has served the Company in his current role since May 2022.
- Prior Experience:
 - September 2019 to May 2022: Senior Vice President and Global Operations Controller at Boston Scientific, a global medical technology manufacturer, where he was responsible for the financial performance of the global manufacturing and distribution network having a production value of approximately \$3 billion.
 - February 2014 to September 2019: Senior Vice President and Corporate Controller, Boston Scientific, in which role he oversaw a team of over 500 finance employees across the globe, managing approximately \$10 billion in revenue.
 - February 2008 to February 2014: Executive roles in finance and internal audit, Boston Scientific.
 - Preceding Mr. Slicer’s tenure at Boston Scientific, he served in various finance and audit roles at General Electric and PricewaterhouseCoopers.
- Mr. Slicer earned a Bachelor of Science in Accounting from Providence College and is licensed as a Certified Public Accountant in the Commonwealth of Massachusetts.

James (Cody) Harlow Chief Operating Officer Age: 50

- Mr. Harlow has served the Company in his current role since October 2021.
- Prior Experience:
 - December 2019 to September 2021: Managing Director, Operations and Supply Chain, Applied Materials, a provider of manufacturing equipment, services and software to the semiconductor, display and related industries.
 - December 2017 to December 2019: Senior Director, Operations and Supply Chain, Applied Materials.
 - September 2013 to December 2017: Director, Worldwide Operations, Applied Materials.
 - March 2013 to September 2013: Chief Operating Officer, Semiconductor Support Services.
 - Prior to 2013, Mr. Harlow held an array of manufacturing management roles in 14 years with Applied Materials.
- Mr. Harlow holds a B.S. in Nuclear Engineering Technology from Thomas Edison State University, a M.S. in organizational and human resource development from Abilene Christian University and an M.B.A. from the University of Phoenix. In addition, Mr. Harlow served as a nuclear propulsion supervisor in the U.S. Navy.

Robert Fiordalice Senior Vice President & General Manager, Metrology Business Unit Age: 61

- Mr. Fiordalice has served the Company in his current role since January 2022.
- Prior Experience:
 - October 2019 to January 2022: Vice President & General Manager, Wafer Solutions Business Unit, Onto Innovation Inc.
 - August 2017 to October 2019: General Manager, Materials Characterization Group, Nanometrics.
 - October 2013 to July 2017: General Manager, Advanced Packaging, Nanometrics.
 - August 2006 to August 2013: Vice President, Account Technology, Intermolecular, Inc.

- Prior to 2006, Mr. Fiordalice held technology management roles with both KLA Tencor Corporation and Motorola Inc.
- Mr. Fiordalice holds a B.S. in Genetics from University of California at Berkeley and a M.S. in Physics from Syracuse University.

Yoon Ah E. Oh Vice President, General Counsel, and Corporate Secretary Age: 41

- Ms. Oh has served the Company in her current role since October 2021.
- Prior Experience:
 - June 2020 to September 2021: Associate General Counsel and Corporate Secretary, Analog Devices, Inc., a semiconductor company.
 - June 2018 to May 2020: Vice President, Associate General Counsel and Corporate Secretary, Endo International Plc., a specialty pharmaceutical company.
 - May 2017 to June 2018: Vice President, Associate General Counsel, Endo International Plc.
 - September 2015 to April 2017: Senior Counsel, Corporate, Endo International Plc.
 - September 2013 to September 2015: Associate, Dechert LLP.
 - September 2007 to August 2013: Associate, Cahill Gordon & Reindel LLP.
- Ms. Oh holds a B.S. in Political Science from Yale University and earned her J.D. from Harvard Law School. Ms. Oh is admitted to practice in the States of Pennsylvania and New York.

Other Executive Officers

Srinivas Vedula, Ph.D. Senior Vice President, Customer Success Group Age: 50

- Dr. Vedula has served the Company in his current role since September 2021.
- Prior Experience:
 - October 2019 to August 2021: Vice President, Business Development, Metrology Business Unit, Onto Innovation Inc.
 - December 2017 to September 2019: Vice President, Global Sales, Nanometrics, Inc.
 - January 2014 to November 2017: General Manager, Optical Metrology Solutions, Nanometrics, Inc.
 - January 2009 to December 2013: Director of Marketing and Applications, KLA Corporation.
 - Prior to 2009, Mr. Vedula held additional roles in product marketing and applications engineering over 12 years with KLA Tencor Corporation.
- Dr. Vedula holds a Bachelor of Technology degree from the Indian Institute of Technology in Bombay, India and a Ph.D. from the University of Tennessee, both in Chemical Engineering.

Ju Jin, Ph.D. Senior Vice President & General Manager, Inspection Business Unit Age: 58

- Dr. Jin has served the Company in his current role since March 2021.
- Prior Experience:
 - October 2019 to March 2021: Vice President & General Manager, Inspection Business Unit, Onto Innovation Inc.
 - July 2019 to October 2019: Vice President & General Manager, Inspection Business Unit, Rudolph Technologies, Inc.
 - August 2016 to July 2019: Sr. Director of Marketing & Business Development, Orbotech Ltd., a supplier of yield-enhancing and process-enabling solutions for the manufacture of electronics products and a subsidiary of KLA Corporation.
 - April 2009 to August 2016: President and CEO, Applied Electro-Optics Inc.
 - March 2004 to April 2009: Director and General Manager, Accretech USA.
- Dr. Jin holds a B.S. from Xian Jiatong University in China, a M.S. from Nagaoka University of Technology in Japan and a Ph.D. from the University of Tokyo in Japan, all in Mechanical Engineering.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS

The following table sets forth certain information with respect to beneficial ownership of the Company's Common Stock as of March 13, 2023 (except as otherwise indicated), by (i) each individual or group known by the Company to own beneficially more than five percent (5%) of the Common Stock; (ii) each of the NEOs; (iii) each of the Company's directors and director nominees; and (iv) all directors, director nominees and executive officers as a group. Except as indicated in the footnotes to this table, the persons named in the table have sole voting and investment power with respect to all shares of Common Stock shown as beneficially owned by them, subject to community property laws where applicable.

Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership	Percent of Class ⁽¹⁾
BlackRock, Inc. ⁽²⁾ 55 East 52nd Street, New York, NY 10055	8,009,729	16.4%
The Vanguard Group ⁽³⁾ 100 Vanguard Boulevard, Malvern, PA 19355	5,605,334	11.5%
Michael P. Plisinski	238,166	*
Mark R. Slicer	-	*
James (Cody) Harlow	1,627	*
Robert Fiordalice	12,768	*
Yoon Ah E. Oh	2,484	*
Steven R. Roth ⁽⁴⁾	14,665	*
Leo Berlinghieri	17,201	*
Stephen D. Kelley ⁽⁵⁾	-	*
David B. Miller	14,608	*
Karen M. Rogge	2,950	*
Christopher A. Seams	32,629	*
May Su	2,100	*
Christine A. Tsingos	39,909	*
All directors, director nominees and executive officers as a group (fifteen (15) persons) ⁽⁶⁾	396,923	*

* Less than 1%

- (1) Applicable percentage ownership is based on 48,845,513 shares of Common Stock outstanding as of March 13, 2023. Beneficial ownership of shares is determined in accordance with the rules of the SEC and generally includes shares as to which a person holds sole or shared voting or investment power. Shares of Common Stock subject to RSUs which will vest within sixty (60) days of March 13, 2023 are deemed to be beneficially owned by the person holding such RSUs for the purpose of computing the percentage ownership of such person but are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise noted, the address for the executive officers and directors named in this table is c/o Onto Innovation Inc., 16 Jonspin Road, Wilmington, Massachusetts 01887.
- (2) Information provided herein is based on the Schedule 13G/A that was filed by BlackRock, Inc. on January 23, 2023, which reported that BlackRock, Inc. had sole voting power over 7,950,008 shares, shared voting power over zero shares, sole dispositive power over 8,009,729 shares and shared dispositive power over zero shares.
- (3) Information provided herein is based on the Schedule 13G/A that was filed by The Vanguard Group on February 9, 2023, which reported that The Vanguard Group had sole voting power over zero shares, shared voting power over 84,195 shares, sole dispositive power over 5,472,717 shares and shared dispositive power over 132,617 shares.
- (4) The number of shares held by Mr. Roth is based on his response to the Company's Director & Officer questionnaire as of December 31, 2022.
- (5) Mr. Kelley did not become a Company director until January 24, 2023.
- (6) Includes 14,550 shares subject to restricted stock units vesting within 60 days of March 13, 2023 for all directors, director nominees, and executive officers as a group.

EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth, as of December 31, 2022, certain information related to our equity compensation plans.

	(a)	(b)	(c)
Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (1)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))(2)
Equity compensation plans approved by security holders	743,034	—	4,201,733
Equity compensation plans not approved by security holders	n/a	n/a	n/a
Total	743,034	—	4,201,733

- (1) Includes 743,034 shares issuable upon vesting of outstanding restricted stock units under the Onto Innovation Inc. 2020 Stock Plan, the Rudolph Technologies, Inc. 2018 Stock Plan and the Nanometrics Incorporated 2005 Equity Incentive Plan.
- (2) As of December 31, 2022, 3,085,817 shares were available under the 2020 Stock Plan and 1,115,916 shares were available under the ESPP.

OTHER MATTERS

The Company knows of no other matters to be submitted for consideration at the Annual Meeting. If any other matters properly come before the Annual Meeting, it is the intention of the persons acting as proxies to vote the shares they represent as the Board may recommend.

QUESTIONS AND ANSWERS ABOUT THE ANNUAL MEETING

What Is The Purpose Of The Annual Meeting?

At the Annual Meeting, stockholders will be asked to vote upon the matters set forth in the accompanying Notice of Annual Meeting, including:

- the election of eight directors;
- an advisory vote to approve named executive officer compensation;
- an advisory vote on the frequency of advisory votes on named executive officer compensation; and
- the ratification of the appointment of our independent registered public accounting firm for fiscal 2023,

all of which are more fully described herein.

Will Other Matters Be Voted On At The Annual Meeting?

We are not currently aware of any matters to be presented at the Annual Meeting other than those described in this proxy statement. If any other matters not described in the proxy statement are properly presented at the meeting, any proxies received by us will be voted in the discretion of the proxy holders.

Who Is Entitled To Vote?

If you were a stockholder of record as of the close of business on March 13, 2023, which is referred to in this proxy statement as the “record date,” you are entitled to receive notice of the Annual Meeting and to vote the shares of common stock that you held as of the close of business on the record date. Each stockholder is entitled to one vote for each share of common stock held by such stockholder on the record date.

May I Attend The Meeting?

All stockholders of record as of the record date may attend the Annual Meeting, which will be held at the Company’s offices located at 16 Jonspin Road, Wilmington, MA 01887. To obtain directions to attend the Annual Meeting and vote in person, please visit our website (www.ontoinnovation.com), and click on “Company,” then “Locations,” and then “Massachusetts” to access the interactive map. As always, we encourage you to vote your shares prior to the Annual Meeting.

What is Required To Be Admitted To The Annual Meeting?

If you have a stock certificate or hold shares in an account with our transfer agent, you are considered the “stockholder of record” with respect to those shares. If you are a stockholder of record, you will need valid picture identification and proof that you are a stockholder of record of the Company as of the record date to gain admission to the Annual Meeting.

If you are a beneficial holder, you will be required to present a valid picture identification and proof from your bank, broker or other record holder of your shares that you are the beneficial owner of such shares to gain admission to the Annual Meeting. If you are a beneficial holder and wish to vote your shares at the meeting, you will need a legal proxy from your bank, broker or other record holder of your shares.

All attendees will be expected to comply with any health and safety protocols in effect at the Company’s facility at the time of the Annual Meeting.

What Constitutes A Quorum?

The required quorum for the transaction of business at the Annual Meeting is a majority of the issued and outstanding shares of Common Stock of the Company, \$0.001 par value per share (“Common Stock”), present in person or by proxy and entitled to vote at the Annual Meeting. On the record date, 48,845,513 shares of the Company’s Common

Stock were issued and outstanding, each entitled to one vote on each matter to be acted upon at the Annual Meeting. Your shares will be counted towards the quorum only if you submit a valid proxy (or one is submitted on your behalf by your broker, bank or other nominee) or if you vote in person at the meeting. Abstentions and broker non-votes will be counted to determine whether there is a quorum present. If a quorum is not present, the Annual Meeting may be adjourned or postponed to a later date.

What Are “Broker Non-Votes”?

A broker non-vote occurs when a bank, broker or other registered holder of record holds shares for a beneficial owner but is not empowered to vote on a particular proposal on behalf of such beneficial owner because the proposal is considered “non-routine” and the beneficial owner has not provided voting instructions on that proposal. The election of directors, the advisory vote to approve named executive officer compensation, and the advisory vote on the frequency of advisory votes on named executive officer compensation are treated as “non-routine” proposals. This means that if a brokerage firm holds your shares on your behalf, those shares will not be voted with respect to any of these proposals unless you provide instructions to that firm. See below under “What Is the Vote Required for Election of Directors?” and “What Is the Vote Required for the Approval of Proposals Other Than Director Elections?” for a discussion of the impact of broker non-votes on each of the proposals that will be presented at the Annual Meeting. **In order to ensure that any shares held on your behalf by a bank, broker or other registered holder of record are voted in accordance with your wishes, we encourage you to provide instructions to that firm or organization in accordance with the Notice or voting instruction form provided by the broker, bank or other registered holder or to contact your broker, bank or other registered holder to request a proxy form.**

Who Bears The Cost Of Soliciting Proxies?

The Company will bear the cost of soliciting proxies. In addition, the Company may reimburse brokerage firms and other persons representing beneficial owners of shares for their expenses in forwarding solicitation material to such beneficial owners. Solicitation of proxies by mail may be supplemented by telephone, facsimile, e-mail or other electronic means or personal solicitation by directors, officers or regular employees of the Company. No additional compensation will be paid to such persons for such services.

Why Did I Receive A “Notice Of Internet Availability Of Proxy Materials” But No Proxy Materials?

We are distributing the Company’s proxy materials to stockholders of record via the Internet in accordance with the “Notice and Access” approach permitted by rules of the SEC. This approach benefits the environment, while providing a timely and convenient method of accessing the materials and voting. Accordingly, we have sent you a Notice because the Board of the Company is soliciting your proxy to vote at the 2023 Annual Meeting of Stockholders, including at any adjournments or postponements of the meeting. On or about March 30, 2023, the Company will begin mailing the Notice to all stockholders of record entitled to vote at the Annual Meeting. All stockholders will have the ability to access the proxy materials on the website referred to in the Notice or request to receive a printed set of the proxy materials. Instructions on how to access the proxy materials over the Internet or to request a printed copy of the proxy materials and the Company’s 2022 Annual Report may be found in the Notice.

What Does It Mean If I Received More Than One Notice?

If you receive more than one Notice, your shares may be registered in more than one name or in different accounts. Please follow the voting instructions on each of the Notices to ensure that all of your shares are voted.

How Do I Go About Voting?

You may vote “For” or “Against” each of the director nominees or you may “Abstain” from voting with respect to any nominee. For the advisory vote on the frequency of advisory votes on named executive officer compensation, you may vote for every “1 Year,” “2 Years,” or “3 Years,” or you may “Abstain” from voting. For each of the other matters to be voted on, you may vote “For” or “Against” or “Abstain” from voting.

Voting For Shares Registered Directly In The Name Of The Stockholder

If you are a stockholder of record with shares registered in your name, you can vote by one of the following methods:

- **In Person** - To vote in person, come to the Annual Meeting and you will receive a ballot when you arrive. You will be required to show valid picture identification and proof that you are a stockholder of record of the Company as of the record date to be admitted to the Annual Meeting.
- **Via the Internet** - To submit your proxy by Internet, go to www.investorvote.com/ONTO and follow the instructions on the secure website. The deadline for proxy submission via the Internet is 11:59 p.m. (EDT) on May 8, 2023.
- **Via Telephone** – To submit your proxy by telephone, call toll free 1-800-652-VOTE (8683) within the United States, US territories and Canada.
- **By Mail** – Stockholders who receive a paper proxy card may complete, sign and date their proxy card and mail it in the pre-addressed postage-paid envelope that accompanies the proxy card. Proxy cards submitted by mail must be received prior to the time of the Annual Meeting in order for your shares to be voted.

Even if you plan to attend the Annual Meeting, we recommend that you submit your proxy in advance so that your shares are represented at the Annual Meeting in the event you are unable to attend the meeting. Each stockholder of record is entitled to one vote for each share of Common Stock owned by such stockholder on all matters presented at the Annual Meeting. Stockholders do not have the right to cumulate their votes in the election of directors.

If you return a signed and dated proxy card but do not indicate how the shares are to be voted, those shares will be voted in accordance with Onto Innovation's Board's recommendations. A valid proxy card also authorizes the individuals named therein as proxies to vote your shares in their discretion on any other matters, which, although not described in the proxy statement, are properly presented for action at the Annual Meeting. If you indicate on your proxy card that you wish to "abstain" from voting on an item, your shares will not be voted on that item.

While Internet proxy voting is being provided to allow you to submit your proxy online, with procedures designed to ensure the authenticity and correctness of your proxy vote instructions, please be aware that you must bear any costs associated with your Internet access, such as usage charges from Internet access providers and telephone companies.

Voting By Proxy For Shares Registered In Street Name

If your shares are held in a stock brokerage account or by a bank or other holder of record, you are considered the "beneficial owner" of shares held in "street name." As the beneficial owner, you have the right to direct your broker, bank or other holder of record on how to vote your shares by submitting voting instructions to such person in accordance with the directions that the entity provides. In the event you are considered the "beneficial owner" of shares held in "street name" and you wish to vote in person at the Annual Meeting, you must obtain a legal proxy from your broker, bank or another agent. Your vote also authorizes the person(s) acting as your proxy to vote your shares in their discretion. Follow the instructions from your broker or bank included with these proxy materials or contact your broker or bank to request a legal proxy.

May I Revoke My Proxy Or My Voting Instructions?

If you are a stockholder of record, you may revoke your proxy or change your vote after submitting your proxy at any time before the polls close at the Annual Meeting by doing any of the following:

- By delivering a written notice of revocation or a duly executed proxy card bearing a later date to the Corporate Secretary of the Company at the Company's principal executive offices prior to the Annual Meeting;
- By submitting a timely and valid later proxy online at www.investorvote.com/ONTO;
- By submitting a timely and valid later proxy by telephone call to 1-800-652-VOTE (8683) within the USA, US territories and Canada; or
- By attending the Annual Meeting and voting in person.

If you are a beneficial owner of shares, please contact your bank, broker or other holder of record for specific instructions on how to change or revoke your voting instructions.

What Happens If I Do Not Vote?

Stockholder Of Record: Shares Registered In Your Name

If you are a stockholder of record and do not submit a proxy by mail, telephone, or the Internet or by attending the Annual Meeting and voting in person, your shares will not be voted.

Beneficial Owner: Shares Registered In The Name Of Broker Or Bank

If you are a beneficial owner and do not instruct your broker, bank, or other agent how to vote your shares, the question of whether your broker or nominee will still be able to vote your shares depends on whether the NYSE deems the particular proposal to be a “routine” matter. Brokers and nominees can use their discretion to vote “uninstructed” shares with respect to matters that are considered to be “routine,” but not with respect to “non-routine” matters. Under the rules and interpretations of the NYSE, “non-routine” matters are matters that may substantially affect the rights or privileges of stockholders, such as mergers, stockholder proposals, elections of directors (even if not contested), executive officer compensation (including any advisory stockholder votes on executive officer compensation and on the frequency of stockholder advisory votes on named executive officer compensation), and certain corporate governance proposals, even if management supported. Accordingly, your broker or nominee may not vote your shares on the election of directors, the advisory proposal to approve the named executive officer compensation, or the advisory proposal on the frequency of advisory votes on named executive officer compensation without your instructions, but may vote your shares on the proposal to ratify the appointment of Ernst & Young LLP as the Company’s independent registered public accounting firm for the fiscal year ending December 30, 2023 even in the absence of your instruction.

What If I Return A Proxy Card Or Otherwise Submit a Proxy But Do Not Make Specific Choices?

If you return a signed and dated proxy card or otherwise submit a proxy without marking voting selections, your shares will be voted, as applicable, “For” the election of all seven nominees for director, “For” the advisory approval of the named executive officer compensation, for future advisory votes on named executive officer compensation to be held every “1 Year,” and “For” the ratification of the appointment of Ernst & Young, LLP as the independent registered public accounting firm of the Company for its fiscal year ending December 30, 2023. If any other matter is properly presented at the meeting, your proxyholder will vote your shares using his or her best judgment.

What Is The Vote Required For Election Of Directors?

For the election of directors, each director is elected by a majority of the votes cast (except that if the number of nominees exceeds the number of directors to be elected, directors will be elected by a plurality voting standard). This means that for a director nominee to be elected to our Board, the number of votes cast “for” a director’s election must exceed the number of votes cast “against” that director’s election (with “abstentions” and “broker non-votes” not counted as a vote cast either “for” or “against” that director’s election, although abstentions and broker non-votes count for the purpose of determining a quorum). Our Bylaws provide for election of directors by a majority of votes cast in uncontested elections, and our Corporate Governance Guidelines provides that any incumbent director nominee in an uncontested election who does not receive an affirmative majority of votes cast must promptly tender such director’s resignation to our Board. Further information regarding the process that will be followed if such an event occurs can be located under the heading “Proposal 1 - Election of Directors.”

What Is The Vote Required For The Approval Of Proposals Other Than Director Elections?

The proposal to approve, on an advisory basis, the compensation of our named executive officers and the proposal to ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year

ending December 30, 2023 each requires the affirmative vote, in person or by proxy, of a majority of the shares present in person or represented by proxy at the meeting and entitled to vote on the matter to be approved. For each of these two proposals, abstentions in effect count as negative votes, because they are shares represented in person or by proxy that are entitled to vote on the matter and not voted in the affirmative. For the proposal to approve, on any advisory basis, the frequency of advisory votes on named executive officer compensation, the frequency (“1 Year,” “2 Years,” or “3 Years”) receiving the greatest number of votes will be considered the frequency recommended by stockholders to the Board. For this proposal, abstentions will have no impact on outcome, since approval by a percentage of the shares present in person or represented by proxy at the meeting and entitled to vote on the matter is not required. For all other proposals, broker non-votes are not counted as part of the vote total (because they are not considered “entitled to vote” on the matter) and have no effect on the outcome.

What Is Householding?

The Company has adopted a procedure approved by the SEC called “householding.” Under this procedure, when multiple stockholders of record share the same address, we may deliver only one (1) Notice or set of householding materials to that address unless we have received contrary instructions from one or more of those stockholders. The same procedure may be followed by brokers and other nominees holding shares of our stock in “street name” for more than one beneficial owner with the same address.

If a stockholder holds shares of stock in multiple accounts (e.g., with our transfer agent and/or banks, brokers or other registered stockholders), we may be unable to use the householding procedures and, therefore, that stockholder may receive multiple copies of the Notice. You should follow the instructions on each Notice that you receive in order to vote the shares you hold in different accounts.

A stockholder that shares an address with another stockholder if such household has received only one Notice, may write or call us as specified below:

- (i) To request a separate copy of such materials, which will be promptly mailed without charge; and
- (ii) To request that separate copies of these materials be sent to his or her home for future meetings.

Conversely, a stockholder of record who shares the same address with another stockholder of record may write or call us as specified below to request that a single set of proxy materials be delivered to that address. Such stockholder requests may be made to our Investor Relations Department either via phone at 978-253-6200 or by mail directed to:

Investor Relations Department
Onto Innovation Inc.
16 Jonspin Road
Wilmington, Massachusetts 01887

If you are a beneficial owner of shares held in street name, please contact your bank, broker or other holder of record regarding such requests.

How Can I Find Out the Results Of The Voting At The Annual Meeting?

Preliminary voting results will be announced at the Annual Meeting. Final voting results will be published in a Current Report on Form 8-K that we expect to file within four business days after the Annual Meeting. If final voting results are not available to us in time to file a Form 8-K within four business days after the meeting, we intend to file a Form 8-K to publish preliminary results and, within four business days after the final results are known to us, file an additional Form 8-K to publish the final results.

What Are The Deadlines For Submission Of Stockholder Proposals For The 2024 Annual Meeting?

Stockholders of the Company are entitled to present proposals for consideration at forthcoming stockholder meetings provided that they comply with the proxy rules promulgated by the SEC, if applicable, and the Bylaws of the Company. Stockholders wishing to present a proposal at the Company’s 2024 Annual Meeting of Stockholders must submit such proposal in writing to the Corporate Secretary at Onto Innovation Inc., 16 Jonspin Road, Wilmington, Massachusetts 01887 no later than December 1, 2023 in accordance with Rule 14a-8 under the Exchange Act, if they wish for it to be eligible for inclusion in the proxy statement and form of proxy relating to that meeting. In addition,

under the Company's Bylaws, a stockholder wishing to nominate a director or make a proposal at the 2024 Annual Meeting of Stockholders outside of Exchange Act Rule 14a-8 must submit such nomination or proposal in writing to the Corporate Secretary at the above address no earlier than January 10, 2024 and no later than February 9, 2024. In addition, to comply with the universal proxy, stockholders who intend to solicit proxies in support of director nominees other than the Company nominees in connection with the 2024 Annual Meeting of Stockholders must provide notice that sets forth the information required by Rule 14a-19 under the Exchange Act, postmarked or submitted electronically to the Company at its principal executive office no later than March 11, 2024.

The Nominating & Governance Committee will also consider qualified director nominees recommended by stockholders. Our process for receiving and evaluating Board member nominations from our stockholders is described above under the caption "Consideration Of Director Nominees."

You are also advised to review the Company's Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations.

ADDITIONAL INFORMATION

Stockholders may obtain a copy of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, including financial statements and schedules included in the Annual Report on Form 10-K, without charge, by visiting the Company's website at <https://investors.ontoinnovation.com/> or by writing to:

Michael Sheaffer
Sr. Director, Investor Relations & ESG Reporting
16 Jonspin Road
Wilmington, Massachusetts 01887

Upon written request to the Company, at the above address for Investor Relations, the exhibits set forth on the exhibit index of the Company's Annual Report on Form 10-K will be made available at reasonable charge (which will be limited to our reasonable expenses in furnishing such exhibits).

BY ORDER OF THE BOARD OF DIRECTORS

Yoon Ah E. Oh
Corporate Secretary

Dated: March 30, 2023

Board of Directors

Christopher A. Seams

Chairman of the Board
Former Chief Executive Officer
Deca Technologies

Leo Berlinghieri

Former Chief Executive Officer and President
MKS Instruments, Inc.

Stephen D. Kelley

President and Chief Executive Officer
Advanced Energy Industries, Inc.

David B. Miller

Former President
DuPont Electronics & Communications

Michael P. Plisinski

Chief Executive Officer

Karen M. Rogge

Founder and President
RYN Group LLC

May Su

Former Chief Executive Officer
Kateeva, Inc.

Christine A. Tsingos

Former Executive Vice President and Chief
Financial Officer
Bio-Rad Laboratories

Executive Officers

Michael P. Plisinski

Chief Executive Officer

Mark R. Slicer

Chief Financial Officer

James (Cody) Harlow

Chief Operating Officer

Robert Fiordalice

Senior Vice President and General Manager,
Metrology Business Unit

Ju Jin

Senior Vice President and General Manager,
Inspection Business Unit

Srinivas Vedula

Senior Vice President, Customer Success

Yoon Ah Oh

Vice President,
General Counsel and Corporate Secretary



NYSE

ONTO

Onto Innovation Inc.

16 Jonspin Road

Wilmington MA 01887

978.253.6200

ontoinnovation.com



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ENDORSEMENT_LINE _____ SACKPACK _____



MR A SAMPLE
DESIGNATION (IF ANY)
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ADD 2
ADD 3
ADD 4
ADD 5
ADD 6

Online



Go to www.investorvote.com/ONTO or scan the QR code – login details are located in the shaded bar below.



Votes submitted electronically must be received by 11:59 PM, (EDT), on May 8, 2023.

Stockholder Meeting Notice

1234 5678 9012 345

**Important Notice Regarding the Availability of Proxy Materials for the
Onto Innovation Inc. Stockholder Meeting to be Held on May 9, 2023.**

Under Securities and Exchange Commission rules, you are receiving this notice that the proxy materials for the annual stockholders' meeting are available on the Internet. Follow the instructions below to view the materials and vote online or request a copy. The items to be voted on and location of the annual meeting are on the reverse side. Your vote is important!

This communication presents only an overview of the more complete proxy materials that are available to you on the Internet. We encourage you to access and review all of the important information contained in the proxy materials before voting. The 2023 proxy statement and 2022 annual report is available to stockholders at:

www.investorvote.com/ONTO

Easy Online Access – View your proxy materials and vote.



- Step 1:** Go to www.investorvote.com/ONTO.
- Step 2:** Click on the icon on the right to view meeting materials.
- Step 3:** Return to the investorvote.com window and follow the instructions on the screen to log in.
- Step 4:** Make your selections as instructed on each screen for your delivery preferences.
- Step 5:** Vote your shares.

When you go online, you can also help the environment by consenting to receive electronic delivery of future materials.



Obtaining a Copy of the Proxy Materials – If you want to receive a copy of the proxy materials, you must request one. There is no charge to you for requesting a copy. Please make your request as instructed on the reverse side on or before April 28, 2023 to facilitate timely delivery.

Stockholder Meeting Notice

Onto Innovation Inc.'s Annual Meeting of Stockholders will be held on May 9, 2023, at Onto Innovation Inc., 16 Jonspin Road
Wilmington, MA 01887 at 12:00 p.m. EDT.

Proposals to be voted on at the meeting are listed below along with the Board of Directors' recommendations.

The Board of Directors recommends a vote FOR all the nominees listed, FOR Proposals 2 and 4, and for 1 YEAR on Proposal 3:

1. Election of Directors:
 - 01 - Christopher A. Seams
 - 02 - Leo Berlinghieri
 - 03 - Stephen D. Kelley
 - 04 - David B. Miller
 - 05 - Michael P. Plisinski
 - 06 - Karen M. Rogge
 - 07 - May Su
 - 08 - Christine A. Tsingos
2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in the proxy statement.
3. To hold an advisory (non-binding) vote on the frequency of advisory votes on named executive officer compensation.
4. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 30, 2023.

PLEASE NOTE – YOU CANNOT VOTE BY RETURNING THIS NOTICE. To vote your shares you must go online or request a paper copy of the proxy materials to receive a proxy card. If you wish to attend and vote at the meeting, please bring this notice with you.



Here's how to order a copy of the proxy materials and select delivery preferences:

Current and future delivery requests can be submitted using the options below.

If you request an email copy, you will receive an email with a link to the current meeting materials.

PLEASE NOTE: You must use the number in the shaded bar on the reverse side when requesting a copy of the proxy materials.

- **Internet** – Go to www.investorvote.com/ONTO.
- **Phone** – Call us free of charge at 1-866-641-4276.
- **Email** – Send an email to investorvote@computershare.com with "Proxy Materials Onto Innovation Inc." in the subject line. Include your full name and address, plus the number located in the shaded bar on the reverse side, and state that you want a paper copy of the meeting materials.

To facilitate timely delivery, requests for a paper copy of proxy materials must be received by April 28, 2023.



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You may vote online or by phone instead of mailing this card.



Go to **www.investorvote.com/ONTO** or scan the QR code – login details are located in the shaded bar below.



Call toll free 1-800-652-VOTE (8683) within
the USA, US territories and Canada



Save paper, time and money!
Sign up for electronic delivery at
www.investorvote.com/ONTO

1234 5678 9012 345

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

1. Election of Directors:

08 - Christine A. Tsingos

□ □ □

1 Year 2 Years 3 Years Abstain

Signature 2 – Please keep signature within the box.

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2023 Annual Meeting Admission Ticket

2023 Annual Meeting of Onto Innovation Inc. Stockholders

May 9, 2023, 12:00 p.m. EDT

Onto Innovation Inc.

16 Jonspin Road, Wilmington, MA 01887

Upon arrival, please present this admission ticket and photo identification at the registration desk.

Important notice regarding the Internet availability of proxy materials for the Annual Meeting of Stockholders.

The material is available at: <https://www.ontoinnovation.com/ar-proxy>



Small steps make an impact.

Help the environment by consenting to receive electronic delivery, sign up at www.investorvote.com/ONTO



▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

Onto Innovation Inc.



Notice of 2023 Annual Meeting of Stockholders

Proxy Solicited by Board of Directors for Annual Meeting – May 9, 2023

Leo Berlinghieri and David B. Miller, or either of them, each with the power of substitution, are hereby authorized to represent and vote the shares of the undersigned, with all the powers which the undersigned would possess if personally present, at the Annual Meeting of Stockholders of Onto Innovation Inc. to be held on May 9, 2023 or at any postponement or adjournment thereof.

Shares represented by this proxy will be voted in the manner directed by the stockholder. If no such directions are indicated, the Proxies will have authority to vote FOR the election of the Board of Directors, FOR items 2 and 4, and for 1 YEAR on item 3.

In their discretion, the Proxies are authorized to vote upon such other business as may properly come before the meeting.

(Items to be voted appear on reverse side)

C Non-Voting Items

Change of Address – Please print new address below.

Comments – Please print your comments below.





Your **Vote** Counts!

ONTO INNOVATION INC.

2023 Annual Meeting

Vote by May 08, 2023

11:59 PM ET



Hextone, Inc.
P.O. Box 9142
Farmingdale, NY 11735

Ricky Campana
P.O. Box 123456
Suite 500
51 Mercedes Way
Edgewood, NY 11717

1 OF 2
322,224
148,294

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FLASHID-JOB#

You invested in ONTO INNOVATION INC. and it's time to vote!

You have the right to vote on proposals being presented at the Annual Meeting. **This is an important notice regarding the availability of proxy material for the shareholder meeting to be held on May 09, 2023.**

Get informed before you vote

View the Combined Document online OR you can receive a free paper or email copy of the material(s) by requesting prior to April 28, 2023. If you would like to request a copy of the material(s) for this and/or future shareholder meetings, you may (1) visit www.ProxyVote.com, (2) call 1-800-579-1639 or (3) send an email to sendmaterial@proxyvote.com. If sending an email, please include your control number (indicated below) in the subject line. Unless requested, you will not otherwise receive a paper or email copy.



For complete information and to vote, visit **www.ProxyVote.com**

Control #

XXXX XXXX XXXX XXXX



Smartphone users

Point your camera here and
vote without entering a
control number



Vote in Person at the Meeting*

May 09, 2023
12:00 PM EDT

16 Jonspin Road
Wilmington, MA 01887

*If you choose to vote these shares in person at the meeting, you must request a "legal proxy." To do so, please follow the instructions at www.ProxyVote.com or request a paper copy of the materials, which will contain the appropriate instructions. Please check the meeting materials for any special requirements for meeting attendance.

THIS IS NOT A VOTABLE BALLOT

This is an overview of the proposals being presented at the upcoming shareholder meeting. Please follow the instructions on the reverse side to vote these important matters.

ONTO INNOVATION INC.

2023 Annual Meeting

Vote by May 08, 2023

11:59 PM ET

Voting Items**Board
Recommend**

1.	Election of Directors Nominees:	
1A	Christopher A. Seams	✓ For
1B	Leo Berlinghieri	✓ For
1C	Stephen D. Kelley	✓ For
1D	David B. Miller	✓ For
1E	Michael P. Plisinski	✓ For
1F	Karen M. Rogge	✓ For
1G	May Su	✓ For
1H	Christine A. Tsingos	✓ For
2.	To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in the proxy statement.	✓ For
3.	To hold an advisory (nonbinding) vote on the frequency of advisory votes on named executive officer compensation.	1 Year
4.	To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 30, 2023.	✓ For

NOTE: Such other business as may properly come before the meeting or any adjournment thereof.

Under New York Stock Exchange rules, brokers may vote "routine" matters at their discretion if your voting instructions are not communicated to us at least 10 days before the meeting. **We will nevertheless follow your instructions, even if the broker's discretionary vote has already been given, provided your instructions are received prior to the meeting date.**