

NANOMETRICS INC
Form 10-Q
October 31, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 29, 2018

OR

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

For the transition period from _____ to _____

Commission file number: 000-13470

NANOMETRICS INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware 94-2276314
(State or other jurisdiction of incorporation or organization) (I.R.S. Employer Identification Number)

1550 Buckeye Drive

Milpitas, California 95035
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (408) 545-6000

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Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

- Large accelerated filer
- Accelerated filer
- Non-accelerated filer
- Smaller reporting company
- Emerging growth company

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

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

As of October 26, 2018, there were 24,215,562 shares of common stock, \$0.001 par value, issued and outstanding.

NANOMETRICS INCORPORATED

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FOR THE QUARTER ENDED SEPTEMBER 29, 2018

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PART I — FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS
NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED BALANCE SHEETS

(In thousands except share and per share amounts)

(Unaudited)

	September 29, 2018	December 30, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 96,103	\$ 34,899
Marketable securities	76,835	82,130
Accounts receivable, net of allowances of \$58 and \$126, respectively	50,349	62,457
Inventories	58,884	52,860
Inventories-delivered systems	1,858	1,534
Prepaid expenses and other	7,070	6,234
Total current assets	291,099	240,114
Property, plant and equipment, net	43,135	44,810
Goodwill	10,611	10,232
Intangible assets, net	4,101	2,206
Deferred income tax assets	7,050	11,924
Other assets	456	413
Total assets	\$ 356,452	\$ 309,699
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 20,870	\$ 13,857
Accrued payroll and related expenses	14,895	12,901
Deferred revenue	11,698	7,408
Other current liabilities	8,470	7,249
Income taxes payable	3,183	2,680
Total current liabilities	59,116	44,095
Deferred revenue	1,575	1,661
Income taxes payable	1,003	860
Deferred tax liability	172	179
Other long-term liabilities	511	521
Total liabilities	62,377	47,316
Commitments and contingencies (Note 9)		
Stockholders' equity:		

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Preferred stock, \$0.001 par value; 3,000,000 shares authorized; no shares issued or outstanding	—	—
Common stock, \$0.001 par value, 47,000,000 shares authorized: 24,215,562 and 24,628,722, respectively, issued and outstanding	24	26
Additional paid-in capital	241,318	255,368
Retained earnings	55,380	9,113
Accumulated other comprehensive loss	(2,647)	(2,124)
Total stockholders' equity	294,075	262,383
Total liabilities and stockholders' equity	\$ 356,452	\$ 309,699

See Notes to Condensed Consolidated Financial Statements

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NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands except per share amounts)

(Unaudited)

	Three Months Ended		Nine Months Ended	
	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
Net revenues:				
Products	\$63,798	\$ 45,571	\$211,521	\$ 147,322
Service	12,792	11,104	35,986	33,094
Total net revenues	76,590	56,675	247,507	180,416
Costs of net revenues:				
Cost of products	25,589	21,349	85,417	72,164
Cost of service	7,332	4,614	19,929	15,368
Amortization of intangible assets	35	52	105	156
Total costs of net revenues	32,956	26,015	105,451	87,688
Gross profit	43,634	30,660	142,056	92,728
Operating expenses:				
Research and development	12,717	8,825	35,410	26,658
Selling	8,902	7,553	28,077	22,730
General and administrative	7,744	6,798	22,950	19,696
Total operating expenses	29,363	23,176	86,437	69,084
Income from operations	14,271	7,484	55,619	23,644
Other income (expense):				
Interest income	4	2	8	6
Interest expense	(108)	(25)	(253)	(84)
Other income, net	322	59	508	330
Total other income, net	218	36	263	252
Income before income taxes	14,489	7,520	55,882	23,896
Provision for income taxes	2,921	1,756	10,258	4,492
Net income	\$11,568	\$ 5,764	\$45,624	\$ 19,404
Net income per share:				
Basic	\$0.48	\$ 0.23	\$1.90	\$ 0.77
Diluted	\$0.47	\$ 0.22	\$1.86	\$ 0.75
Weighted average shares used in per share calculation:				
Basic	24,059	25,494	24,065	25,320
Diluted	24,466	25,932	24,551	25,933

See Notes to Condensed Consolidated Financial Statements

NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In thousands)

(Unaudited)

	Three Months Ended		Nine Months Ended	
	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
Net income	\$11,568	\$ 5,764	\$45,624	\$ 19,404
Other comprehensive income:				
Change in foreign currency translation adjustment	38	764	(530)	3,470
Net change in unrealized gains (losses) on available-for-sale				
investments	44	15	7	(2)
Other comprehensive income (loss):	82	779	(523)	3,468
Comprehensive income	\$11,650	\$ 6,543	\$45,101	\$ 22,872

See Notes to Condensed Consolidated Financial Statements

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NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

(Unaudited)

	Nine Months Ended	
	September 30,	September 30,
	2018	2017
Cash flows from operating activities:		
Net income	\$45,624	\$ 19,404
Reconciliation of net income to net cash provided by operating activities:		
Depreciation and amortization	4,962	5,219
Stock-based compensation	8,229	6,775
Disposal of fixed assets	38	98
Inventory write-down	870	1,412
Deferred income taxes	4,668	2,153
Changes in assets and liabilities:		
Accounts receivable	11,520	1,418
Inventories	(6,351)	(16,828)
Inventories-delivered systems	(324)	(864)
Prepaid expenses and other	(1,224)	(3,850)
Accounts payable, accrued and other liabilities	9,623	709
Deferred revenue	5,126	(1,204)
Income taxes payable	647	942
Net cash provided by operating activities	83,408	15,384
Cash flows from investing activities:		
Payments to acquire certain assets	(2,000)	(2,000)
Sales of marketable securities	19,776	28,624
Maturities of marketable securities	32,195	62,923
Purchases of marketable securities	(46,604)	(104,984)
Purchases of property, plant and equipment	(2,942)	(2,342)
Net cash provided by (used in) investing activities	425	(17,779)
Cash flows from financing activities:		
Proceeds from sale of shares under employee stock option		
plans and purchase plan	3,826	3,678
Taxes paid on net issuance of stock awards	(3,122)	(3,838)
Repurchases of common stock under share repurchase plans	(22,987)	-
Net cash used in financing activities	(22,283)	(160)
Effect of exchange rate changes on cash and cash equivalents	(346)	(466)
Net increase (decrease) in cash and cash equivalents	61,204	(3,021)
Cash and cash equivalents, beginning of period	34,899	47,062

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Cash and cash equivalents, end of period	\$96,103	\$ 44,041
Supplemental disclosure of non-cash investing activities:		
Transfer of property, plant and equipment to inventory	\$893	\$ 205
Transfer of inventory to property, plant and equipment	\$291	\$ —
Property, plant and equipment included in accounts payable, accrued and other liabilities	\$1,684	\$ —

See Notes to Condensed Consolidated Financial Statements

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NANOMETRICS INCORPORATED

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited)

Note 1. Nature of Business, Basis of Presentation and Significant Accounting Policies

Description of Business – Nanometrics Incorporated (“Nanometrics” or the “Company”) and its wholly-owned subsidiaries design, manufacture, market, sell and support optical critical dimension (“OCD”), thin film and overlay dimension metrology and inspection systems used primarily in the manufacturing of semiconductors, solar photovoltaics (“solar PV”) and high-brightness LEDs (“HB-LED”), as well as by customers in the silicon wafer and data storage industries. Nanometrics’ metrology systems precisely measure a wide range of film types deposited on substrates during manufacturing to control manufacturing processes and increase production yields in the fabrication of integrated circuits. The Company’s OCD technology is a patented critical dimension measurement technology that is used to precisely determine the dimensions on the semiconductor wafer that directly control the resulting performance of the integrated circuit devices. The thin film metrology systems use a broad spectrum of wavelengths, high-sensitivity optics, proprietary software, and patented technology to measure the thickness and uniformity of films deposited on silicon and other substrates as well as their chemical composition. The overlay metrology systems are used to measure the overlay accuracy of successive layers of semiconductor patterns on wafers in the photolithography process. Nanometrics’ inspection systems are used to find defects on patterned and unpatterned wafers at nearly every stage of the semiconductor production flow. The corporate headquarters of Nanometrics is located in Milpitas, California.

Basis of Presentation – The accompanying condensed consolidated financial statements (“financial statements”) have been prepared on a consistent basis with the audited consolidated financial statements as of December 30, 2017 and include all normal recurring adjustments necessary to fairly state the information set forth therein. All significant intercompany accounts and transactions have been eliminated in consolidation.

The financial statements have been prepared in accordance with the regulations of the United States Securities and Exchange Commission (“SEC”) for interim periods in accordance with S-X Article 10, and, therefore, omit certain information and footnote disclosure necessary to present the statements in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”). The operating results for interim periods are not necessarily indicative of the operating results that may be expected for the entire year. These financial statements should be read in conjunction with the audited consolidated financial statements and notes thereto for the fiscal year ended December 30, 2017, which were included in the Company’s Annual Report on Form 10-K filed with the SEC on February 26, 2018.

Fiscal Period – The Company uses a 52/53 week fiscal year ending on the last Saturday of the calendar year. All references to the quarter refer to Nanometrics’ fiscal quarter. The fiscal quarters reported herein are 13 week periods.

Use of Estimates – The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported period. Actual results could differ materially from those estimates. Estimates are used for, but not limited to, revenue recognition, the provision for doubtful accounts, the provision for excess, obsolete, or slow-moving

inventories, valuation of intangible and long-lived assets, warranty accruals, income taxes, valuation of stock-based compensation, and contingencies.

Changes to Significant Accounting Policies

Except for the changes below, the Company has consistently applied the accounting policies to all periods presented in these financial statements.

The Company adopted the new accounting standard Topic 606, Revenue from Contracts with Customers and all the related amendments using the modified retrospective method of transition. As a result, the Company has changed its accounting policy for revenue recognition as detailed below. The Company adopted the new standard during the first quarter of 2018 for all contracts not substantially completed at the date of adoption, and the Company expects all new contracts will be governed by the new standard.

Revenue Recognition – The Company derives revenue from the sale of process control metrology and inspection systems and related upgrades (“product revenue”) as well as spare part sales, billable service and service contracts (together “service revenue”). Upgrades are system software and hardware performance upgrades that extend the features and functionality of a product. Upgrades are included in product revenue, which consists of sales of complete, advanced process control metrology and inspection systems (the “system(s)”). Nanometrics’ systems consist of hardware and software components that function together to deliver the essential functionality of the system. Arrangements for sales of systems and upgrades often include defined customer-specified acceptance criteria.

The Company recognizes revenue when control of a good or service has transferred to a customer. The amount of revenue recognized reflects the amount which Nanometrics expects to be entitled to in exchange for the transfer of the goods or services in a contract with a customer. Revenue excludes amounts collected on behalf of third parties including taxes assessed by governmental authorities that are both imposed on and concurrent with a specific revenue producing transaction. Shipping and handling costs associated with outbound freight both before and after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of revenues. Nanometrics records revenue on a gross basis, rather than net, as it acts as the principal in all of its contractual arrangements and not as an agent.

Nanometrics follows a 5-Step process to evaluate its contracts with customers to determine the amount and timing of revenue recognition.

Nanometrics first identifies whether a legally enforceable contract with a customer exists. A legally enforceable contract creates enforceable rights and obligations on both parties. Nanometrics evaluates the following criteria in its evaluation and if all criteria are not met, a contract does not exist and any revenue that otherwise would be recorded because a good or service had been transferred to a customer is deferred until such time that a contract exists: (1) both Nanometrics and the customer have approved the contract and are committed to perform, (2) Nanometrics can identify each party's rights regarding the goods or services to be transferred, (3) Nanometrics can identify the payment terms for the goods or services to be delivered, (4) the contract has commercial substance, and (5) it is probable that Nanometrics will collect substantially all of the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. Historically, the Company has not experienced Customer payment defaults that would lead it to conclude that it does not have a contract under the new standard. Nanometrics evidences all its contracts in writing and the identification of the contract may include (1) reference to a master agreement that governs for multiple years, (2) a Volume Purchase Agreement that generally governs for 12 months and is negotiated with the larger customers to establish pricing for a committed volume of business, or (3) purchase orders which often govern the purchase of a single system or service item.

Once the contract has been identified, Nanometrics evaluates the promises in the contract to identify performance obligations. Many of the contracts include more than one performance obligation – for example the delivery of a system generally includes the promise to install the system in the customer's facility. Additionally, a contract could include the purchase of multiple systems or the purchase of a system and an upgrade. Promises in contracts which do not result in the transfer of a good or service are not performance obligations, as well as those promises that are administrative in nature, or are immaterial in the context of the contract. Generally, Nanometrics performance obligations can be categorized as (1) systems – including refurbished systems, (2) installation obligations, (3) hardware upgrades, (4) non-operating system software options / upgrades, (5) spare parts, (6) service contracts, (7) billable services and (8) other miscellaneous service items.

Once the performance obligations in the contract have been identified, Nanometrics estimates the transaction price of the contract. The estimate includes amounts that are fixed as well as those that can vary based on contractual terms (e.g., performance bonuses/penalties, amounts payable to customers, rebates, prompt payment discounts, etc.) These variable consideration items are rare as most Nanometrics contracts include only fixed amounts. It is expected that estimates of variable consideration will be immaterial for Nanometrics and would occur if customers did not meet their contractual purchase commitments and Nanometrics is entitled to recover additional contract consideration.

Once the transaction price of the contract has been identified, Nanometrics allocates the transaction price to the identified performance obligations. This is done on a relative selling price basis using standalone selling prices ("SSP"). For most performance obligations, Nanometrics does not have observable SSP's as they are not regularly sold on a standalone basis however if a performance obligation does have an observable SSP it is used for allocation purposes (e.g. spares parts are sold using a standard price list and often sold separately). Without observable SSP's,

Nanometrics estimates the SSP using a methodology which maximizes the use of observable inputs – namely a cost plus gross margin approach.

Lastly, Nanometrics records the amount allocated to each performance obligation as revenue when control of that good or service has transferred to the customer. Nanometrics first evaluates whether a good or service is transferred over time, and if it is not, then it is recorded at a point in time. For service contracts, Nanometrics records revenue based on its measurement of progress, and the best method to determine this is the percentage of the stand-ready obligation that is completed to date as this best reflects the value of the service transferred to the customer. All other items at Nanometrics are recorded at a point in time other than the service contracts with customers. The timing of satisfaction of the performance obligation to payment is dependent upon the negotiated payment terms but generally occurs within 30 to 60 days. Nanometrics evaluates the following indicators to determine the point in time at which control transfers to the Customer, and may apply judgment in this evaluation: (1) whether Nanometrics has a present right to payment, (2) whether the customer has legal title, (3) whether the customer has physical possession, (4) whether the customer has significant risks and rewards of ownership, and (5) whether customer acceptance is a formality (i.e., whether customer acceptance of the tool is reasonably assured). Typically, for new product introductions, Nanometrics defers revenue recognition until formal customer acceptance is received from the customer. In almost all other situations, there is little or no significant judgment applied by Nanometrics in determining if control of a good or service has transferred to a customer. Additionally, for system shipments to Japan, revenue is deferred because typical contractual terms indicate that payment is not due, and title does not transfer until customer acceptance occurs.

The Company warrants its products against defects in manufacturing. Upon recognition of product revenue, this assurance-type warranty is recorded as a liability for anticipated warranty costs. On occasion, customers request a warranty period longer than the Company's standard warranty. In those instances, in which extended warranty services are separately quoted to the customer or if the warranty includes services beyond just an assurance that the product will work as intended, an additional performance obligation is created, and the associated revenue is deferred and recognized as service revenue ratably over the term of the extended warranty period. The portion of service contracts and extended warranty services agreements that are uncompleted at the end of any reporting period are included in deferred revenue.

Frequently, the Company delivers products and various services in a single transaction. The Company's deliverables consist of tools, installation, upgrades, billable services, spare parts, and service contracts. The Company's typical multi-element arrangements include a sale of one or multiple tools that include installation and standard warranty. Other arrangements consist of a sale of tools bundled with service elements or delivery of different types of services. The Company's tools, upgrades, and spare parts are generally delivered to customers within a period of up to six months from order date. Installation is usually performed soon after delivery of the tool. The portion of revenue associated with installation is deferred based on relative selling price and that revenue is recognized upon completion of the installation and receipt of final acceptance. Billable services are billed on a time and materials basis and performed as requested by customers. Under service contract arrangements, services are provided as needed over the fixed arrangement term, with terms normally up to twelve months. The Company does not grant its customers a general right of return or any refund terms and may impose a penalty on orders cancelled prior to the scheduled shipment date. Consideration received from customers for cancelled orders is rare as orders are typically not cancelled once placed.

When performance obligations are not transferred to a customer at the end of a reporting period, the amount allocated to those performance obligations is deferred until control of these performance obligations is transferred to the customer. If performance obligations cannot be accounted for as separate units of accounting, the entire arrangement is accounted for as a single unit of accounting and revenue is deferred until all elements are delivered and all revenue recognition requirements are met. These liabilities arising from contracts with customers are reported as Deferred Revenue in the consolidated balance sheet. The amount of revenue recognized in the three months ended September 29, 2018 that was included in the contract liability balance as of the beginning of the quarter was \$3.1 million. Generally, all contracts have expected durations of one year or less. Accordingly, Nanometrics applies the practical expedient allowed for in U.S. GAAP and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

Nanometrics incurs costs related to the acquisition of its contract with customers in the form of sales commissions. Sales commissions are paid to the internal direct sales team as well as to third-party representatives, and distributors. Contractual agreements, with each of these parties, outline commissions structures and rates to be paid. Generally, the contracts are all individual procurement decisions by the customers and are not for significant periods of time, nor do they include renewal provisions. As such, most of the contracts have an economic life of significantly less than a year, although some volume purchase agreements might extend beyond 12 months (the capitalization and amortization of commission costs for contracts that extend beyond one year is immaterial for Nanometrics). Accordingly, the Company expense these contract acquisition costs in accordance with the practical expedient outlined in U.S. GAAP when the underlying contract asset is less than one year.

Nanometrics does not incur any costs to fulfill the contracts with customers that is not already reported in compliance with another applicable standard (for example, inventory or plant, property and equipment). Given the nature of the systems, the Company does not have costs which are separately identifiable to just a particular contract (for example,

dedicated labs).

Nanometrics records accounts receivable when revenue has been recorded and the amount due from the customer is reasonably assured and unconditionally due. In certain situations, Nanometrics may record revenue because goods or services have been transferred to the customer, but the amount is not unconditionally due. In these situations, a contract asset is reflected in the consolidated balance sheet (Unbilled A/R). This amount is subsequently reported as accounts receivable when the condition that made the amount conditional is resolved (for example, when the final installation obligation is completed, and Nanometrics has recorded revenue for the delivery of the system in an amount larger than what has been invoiced). The balance of contract assets included in the Accounts Receivable at September 29, 2018 was \$3.0 million. The opening balance of contract assets was \$4.5 million and \$4.3 million for the three and nine months ended September 29, 2018, respectively, reflecting no significant change during either period.

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The following tables summarize the impacts of Topic 606 adoption on the Company's financial statements for the three and nine months ended September 29, 2018 (in thousands, except per share data):

	Three Months Ended September 29, 2018			Nine Months Ended September 29, 2018		
	Balances			Balances		
	Without			Without		
	Effect of			Effect of		
	Adoption	Change		Adoption	Change	
	of			of		
	As			As		
	Reported	ASC 606	Higher/(Lower)	Reported	ASC 606	Higher/(Lower)
Net Revenue	\$76,590	\$77,478	\$ (888)	\$247,507	\$244,668	\$ 2,839
Net Income	\$11,568	\$12,169	\$ (601)	\$45,624	\$43,779	\$ 1,845
Net income per share:						
Basic	\$0.48	\$0.51	\$ (0.03)	\$1.90	\$1.82	\$ 0.08
Diluted	\$0.47	\$0.50	\$ (0.03)	\$1.86	\$1.78	\$ 0.08

Note 2. New Accounting Pronouncements

Recently Adopted Accounting Standards

In October 2016, the Financial Accounting Standards Board (the "FASB") issued an accounting standard update which requires the recognition of the income tax consequences of an intra-entity transfer of an asset, other than inventory, when the transfer occurs. The Company adopted this standard in the first quarter of fiscal 2018 using a modified retrospective approach. The adoption did not have a material impact on the financial statements.

In August 2016, the FASB issued an accounting standard which addresses eight specific cash flow classification issues. This update is effective for public companies for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years. Early adoption is permitted, including in an interim period. The standard is to be applied through a retrospective transition method to each period presented. If it is impracticable to apply retrospectively for some of the issues, the amendments for those issues would be applied prospectively as of the earliest date practicable. The adoption of this guidance did not have an impact on the Company's consolidated statement of cash flows.

In May 2014, the FASB issued an accounting standard update which requires an entity to recognize the amount of revenue to which it expects to be entitled to for transferring promised goods or services to customers. The Company adopted Topic 606 Revenue from Contracts with Customers with a date of initial application of December 31, 2017. The Company applied Topic 606 using the modified retrospective method by recognizing the cumulative effect of initially applying Topic 606 as an adjustment to the opening balance of equity at December 31, 2017. This method was chosen due to the Company's inability to review all necessary contract information to adopt the standard using the full retrospective method. Both methods are allowed per U.S. GAAP. Therefore, the comparative information has not been adjusted and continues to be reported under Topic 605.

Recently Issued Accounting Standards

In August 2018, the FASB issued an accounting standard update to provide additional guidance on the accounting for costs of implementation activities performed in a cloud computing arrangement. The amendments in this update align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software and hosting arrangements that include an internal-use software license. The accounting for the service element of a hosting arrangement that is a service contract is not affected by the amendments in this update. The amendments in this update are effective for public business entities for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. The amendments in this update should be applied retrospectively or prospectively to all implementation costs incurred after the date of adoption. The Company is currently evaluating the effect of this update on its consolidated financial condition and results of operations.

In August 2018, the FASB issued an accounting standard update which improves the effectiveness of fair value measurement disclosures in the notes to the financial statements. The update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Certain amendments within the update should be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date. Early adoption is permitted. Entities are permitted to early adopt any removed or modified disclosures upon issuance of this Update and delay adoption of the additional disclosures until their effective date. The adoption of this guidance is not expected to have a significant impact on the Company's consolidated results of operations or consolidated statement of cash flows.

In June 2018, the FASB issued an accounting standard update which simplifies the accounting for nonemployee share-based payment transactions. The accounting for share-based payments to nonemployees and employees will be substantially aligned because of this update. The standard is effective for public companies for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted, but no earlier than an entity's adoption date of Topic 606. The adoption of this guidance is not expected to have a significant impact on the Company's consolidated results of operations or consolidated statement of cash flows.

In January 2017, the FASB issued an accounting standard update which simplifies the subsequent measurement of goodwill and removes step 2 from the goodwill impairment test. Instead, an entity should record an impairment charge based on excess of a reporting unit's carrying amount over its fair value. The standard is effective for public companies for fiscal years beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The adoption of this guidance is not expected to have a significant impact on the Company's consolidated financial condition and results of operations.

In June 2016, the FASB issued an accounting standard which requires measurement and timely recognition of expected credit losses for financial assets. The update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted as of the fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. The standard is to be applied through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The Company is currently evaluating the effect of this update on its consolidated financial condition and results of operations.

In February 2016, the FASB issued an accounting standard update which requires lessees to record a right-of-use asset and a corresponding lease liability on the balance sheet (with the exception of short-term leases). For lessees, leases will continue to be classified as either operating or financing in the income statement. The standard is effective for public companies for annual reporting periods beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. This standard is required to be applied with a modified retrospective transition approach. The Company generally does not finance purchases of equipment or other capital but does lease some equipment and facilities. The Company has established a cross-functional implementation team to evaluate and identify the impact of this update on its financial position, results of operations and cash flows. Based on the preliminary work completed, the Company is considering the possible implications of the update, including the discount rate to be used in valuing new and existing leases, procedural and operational changes that may be necessary to comply with the provisions of the guidance and all applicable financial statement disclosures required by the new guidance. The Company is also in the process of identifying changes to its business processes, systems and controls to support adoption of the new standard. The Company expects to adopt this standard on December 30, 2018 and anticipates most its existing operating lease commitments will be recognized as operating lease liabilities and right-of-use assets.

In July 2018, the FASB issued an accounting standard update which provided certain transition relief on the comparative reporting requirement for lessees. Under this update, the FASB provided an additional transition method in addition to the existing transition method by allowing entities to initially apply Topic 842 at the adoption date (such as January 1, 2019, for calendar-year-end public business entities) and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The amendments in this update change only when the Company is required to initially apply Topic 842 Leases, it does not change how such Topic will be applied. Since the Company has not yet adopted Topic 842 Leases, the amendments in this update will be effective for the Company when Topic 842 becomes effective for the Company. The Company expects to adopt Topic 842 Leases on December 30, 2018.

Note 3. Fair Value Measurements and Disclosures

The Company determines the fair values of its financial instruments based on the fair value hierarchy established in FASB Accounting Standards Codification (“ASC”) 820, Fair Value Measurement, which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The classification of a financial asset or liability within the hierarchy is based upon the lowest level input that is significant to the fair value measurement. The fair value hierarchy prioritizes the inputs into the following three levels that may be used to measure fair value:

Level 1 — Quoted prices in active markets for identical assets or liabilities.

Level 2 — Inputs other than Level 1 that are observable, either directly or indirectly, such as 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 financial instrument.

Level 3 — Unobservable inputs that are supported by little or no market activity and are significant to the fair value of the assets or liabilities. Such unobservable inputs include an estimated discount rate used in the Company’s discounted present value analysis of future cash flows, which reflects the Company’s estimate of debt with similar terms in the current credit markets. As there is currently minimal activity in such markets, the actual rate could be materially different.

Fair value is defined as the price that would be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The standard assumes that the transaction to sell the asset or transfer the liability occurs in the principal or most advantageous market for the asset or liability and establishes that the fair value of an asset or liability shall be determined based on the assumptions that market participants would use in pricing the asset or liability.

The following tables present the Company’s assets and liabilities measured at estimated fair value on a recurring basis, excluding accrued interest components, categorized in accordance with the fair value hierarchy (in thousands), as of the following dates:

	September 29, 2018				December 30, 2017			
	Fair Value Measurements				Fair Value Measurements			
	Using Input Types				Using Input Types			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Cash equivalents:								
Money market funds	\$1,684	\$—	\$—	\$1,684	\$256	\$—	\$—	\$256
Marketable securities:								
U.S. Government agency debt securities	—	—	—	—	—	1,495	—	1,495
Certificates of deposits	—	14,502	—	14,502	—	14,497	—	14,497
Commercial paper	—	11,185	—	11,185	—	7,949	—	7,949
Corporate debt securities	—	36,950	—	36,950	—	47,968	—	47,968
Asset-backed Securities	—	14,198	—	14,198	—	10,221	—	10,221

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Total marketable securities	\$—	\$76,835	\$ —	\$76,835	\$—	\$82,130	\$ —	\$82,130
Total ⁽¹⁾	\$1,684	\$76,835	\$ —	\$78,519	\$256	\$82,130	\$ —	\$82,386

⁽¹⁾Excludes \$94.4 million and \$34.6 million held in operating accounts as of September 29, 2018 and December 30, 2017, respectively. See “Note 4. Cash and Investments” of the Notes to Condensed Consolidated Financial Statements for more information.

The fair values of the marketable securities that are classified as Level 1 in the table above were derived from quoted market prices for identical assets or liabilities in active markets that the Company can access. The fair value of marketable securities that are classified as Level 2 in the table above were derived from non-binding market consensus prices that were corroborated by observable market data, quoted market prices for similar instruments, or pricing models, such as discounted cash flow techniques with all significant inputs derived from or corroborated by observable market data. There were no transfers of instruments between Level 1, Level 2 and Level 3 during the financial periods presented.

Derivatives

The Company uses foreign currency exchange forward contracts to mitigate variability in gains and losses generated from the re-measurement of certain monetary assets and liabilities denominated in foreign currencies. These derivatives are carried at fair value with changes recorded in other income (expense), net in the condensed consolidated statements of operations. Changes in the fair value of these derivatives are largely offset by re-measurement of the underlying assets and liabilities. The derivatives have maturities of approximately 30 days.

The settlement of forward foreign currency contracts included in the three months ended September 29, 2018 and September 30, 2017 was a gain of \$0.2 million and \$0.3 million, respectively. The settlement of forward exchange contracts included in the nine months ended September 29, 2018 and September 30, 2017 was a loss of \$1.5 million and a gain of \$1.0 million, respectively. These are included in other income (expense), net, in the condensed consolidated statements of operations.

The following table presents the notional amounts and fair values of the Company's outstanding derivative instruments in U.S. Dollar equivalent as of the following dates (in millions):

	September 29, 2018			December 30, 2017		
	Fair Value			Fair Value		
	Notional	Amount	Asset Liability	Notional	Amount	Asset Liability
Undesignated Hedges:						
Forward Foreign Currency Contracts						
Purchase	\$20.8	\$—	\$ 0.1	\$27.5	\$—	\$ 0.1
Sell	\$27.3	\$0.1	\$ —	\$16.8	\$0.1	\$ —

Note 4. Cash and Investments

The following tables present cash, cash equivalents, and available-for-sale investments as of the following dates (in thousands):

	September 29, 2018				Estimated Fair Market Value	
	Cost	Gross		Unrealized Losses		
		Amortized	Unrealized			
			Unrealized			Unrealized
Cash	\$94,419	\$ —	\$ —	\$94,419		
Cash equivalents:						
Money market funds	1,684	—	—	1,684		

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Marketable securities:				
Certificates of deposit	14,496	6	—	14,502
Commercial paper	11,185	—	—	11,185
Corporate debt securities	37,038	—	(88)	36,950
Asset-backed securities	14,224	—	(26)	14,198
Total cash, cash equivalents, and marketable securities	\$173,046	\$ 6	\$ (114)	\$172,938

	December 30, 2017			Estimated
	Gross	Gross		Fair
	Amortized	Unrealized	Unrealized	Market
	Cost	Gains	Losses	Value
Cash	\$34,643	\$ —	\$ —	\$34,643
Cash equivalents:				
Money market funds	256	—	—	256
Marketable securities:				
U.S. Government agency securities	1,500	—	(5)	1,495
Certificates of deposits	14,498	—	(1)	14,497
Commercial paper	7,952	—	(3)	7,949
Corporate debt securities	48,073	—	(105)	47,968
Asset-backed securities	10,240	—	(19)	10,221
Total cash, cash equivalents, and marketable securities	\$117,162	\$ —	\$ (133)	\$117,029

Available-for-sale marketable securities, readily convertible to cash, with maturity dates of 90 days or less are classified as cash equivalents, while those with maturity dates greater than 90 days are classified as marketable securities within short-term assets. All marketable securities as of September 29, 2018 and December 30, 2017, were available-for-sale and reported at fair value based on the estimated or quoted market prices as of the balance sheet date.

Realized gains and losses on sale of securities are recorded in other income (expense), net, in the Company's condensed consolidated statement of operations. For the three and nine months ended September 29, 2018 and September 30, 2017, net realized gains and losses were not material.

Unrealized gains or losses, net of tax effect, are recorded in accumulated other comprehensive income (loss) within stockholders' equity. Both the gross unrealized gains and gross unrealized losses for the three and nine months ended September 29, 2018 and September 30, 2017 were not material, and no marketable securities had other than temporary impairment.

All marketable securities as of September 29, 2018 and December 30, 2017, had maturity dates of less than 36 and 24 months, respectively.

Note 5. Accounts Receivable

The Company maintains arrangements under which eligible accounts receivable in Japan are sold without recourse to unrelated third-party financial institutions. These receivables were not included in the condensed consolidated balance sheets as the criteria for sale treatment had been met. The Company pays administrative fees as well as interest, which ranged 0.62% to 1.68% during the nine months ended September 29, 2018, based on the anticipated length of time between the date the sale is consummated, and the expected collection date of the receivables sold.

The Company sold \$12.8 million and \$6.1 million of receivables during the three months ended September 29, 2018 and September 30, 2017, respectively, and \$47.5 million and \$15.5 million of receivables during the nine months ended September 29, 2018 and September 30, 2017, respectively. There were no amounts due from such third party financial institutions at September 29, 2018 and December 30, 2017.

Note 6. Financial Statement Components

The following tables provide details of selected financial statement components as of the following dates (in thousands):

	At	
	September 29, 2018	December 30, 2017
Inventories:		
Raw materials and sub-assemblies	\$31,619	\$ 32,187
Work in process	20,590	13,498
Finished goods	6,675	7,175
Inventories	58,884	52,860
Inventories-delivered systems	1,858	1,534
Total inventories	\$60,742	\$ 54,394
Property, plant and equipment, net:⁽¹⁾		
Land	\$15,571	\$ 15,573
Building and improvements	21,226	20,880
Machinery and equipment	39,652	36,380
Furniture and fixtures	2,494	2,420
Software	9,915	9,558
Capital in progress	2,919	4,418
Total property, plant and equipment, gross	91,777	89,229
Accumulated depreciation and amortization	(48,642)	(44,419)
Total property, plant and equipment, net	\$43,135	\$ 44,810

⁽¹⁾ Total depreciation and amortization expense was \$1.6 million and \$1.6 million for the three months ended September 29, 2018 and September 30, 2017, respectively, and \$4.9 million and \$5.1 million for the nine months ended September 29, 2018 and September 30, 2017, respectively.

Other Current Liabilities:		
Accrued warranty	\$4,258	\$ 4,863
Accrued taxes	1,201	813
Third party commissions	837	76
Accrued professional services	537	534
Other	1,637	963
Total other current liabilities	\$8,470	\$ 7,249

Components of Accumulated Other Comprehensive Income (Loss)

Foreign Defined Unrealized Accumulated

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	Currency Translations	Benefit Pension Plans	Income (Loss) on Investment	Other Comprehensive Income (Loss)
Balance as of December 30, 2017	\$ (1,647)	\$ (387)	\$ (90)	\$ (2,124)
Current period change	(530)	—	7	(523)
Balance as of September 29, 2018	\$ (2,177)	\$ (387)	\$ (83)	\$ (2,647)

The items above, except for unrealized income (loss) on investment, did not impact the Company's income tax provision. The amounts reclassified from each component of accumulated other comprehensive income (loss) into income statement line items were insignificant.

Note 7. Goodwill and Intangible Assets

The following table summarizes the activity in the Company's goodwill during the nine months ended September 29, 2018:

	(in thousands)
Balance as of December 30, 2017	\$ 10,232
Foreign currency movements	379
Balance as of September 29, 2018	\$ 10,611

Finite-lived intangible assets are recorded at cost, less accumulated amortization. Finite-lived intangible assets as of September 29, 2018 and December 30, 2017 consisted of the following (in thousands):

	September 29, 2018		Net
	Adjusted	Accumulated	carrying
	cost	amortization	amount
Developed technology	\$20,917	\$ (16,816)	\$ 4,101
Customer relationships	9,445	(9,445)	—
Brand names	1,927	(1,927)	—
Patented technology	2,252	(2,252)	—
Trademark	80	(80)	—
Total	\$34,621	\$ (30,520)	\$ 4,101

	December 30, 2017		Net
	Adjusted	Accumulated	carrying
	cost	amortization	amount
Developed technology	\$18,887	\$ (16,681)	\$ 2,206
Customer relationships	9,438	(9,438)	—
Brand names	1,927	(1,927)	—
Patented technology	2,252	(2,252)	—
Trademark	80	(80)	—
Total	\$32,584	\$ (30,378)	\$ 2,206

The amortization of finite-lived intangibles is computed using the straight-line method. Estimated lives of finite-lived intangibles range from two to ten years. The total amortization expense for the three months ended September 29, 2018 and September 30, 2017 was \$35,000 and \$51,000, respectively, and \$105,000 and \$155,000 for the nine months ended September 29, 2018 and September 30, 2017, respectively.

There were no impairment charges related to intangible assets recorded during the nine months ended September 29, 2018 and September 30, 2017.

The estimated future amortization expense of finite intangible assets as of September 29, 2018 is as follows (in thousands):

Fiscal Years	Amounts
2018 (remaining three months)	35
2019	209
2020	571
2021	571
2022	571
Thereafter	2,144
Total future amortization expense	\$ 4,101

Note 8. Warranties

The Company generally sells its products with a 12 months repair or replacement warranty from the date of acceptance or shipment date. The Company accrues estimated future warranty costs based upon the historical relationship of warranty costs to the cost of products sold. The estimated future warranty obligations related to product sales are recorded in the period in which the related 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 were to differ from the Company's estimates, revisions to the estimated warranty obligations would be required. For new product introductions where limited or no historical information exists, the Company may use warranty information from other previous product introductions to guide it in estimating its warranty accrual.

Components of the warranty accrual, which were included in the accompanying condensed consolidated balance sheets with other current liabilities, were as follows (in thousands):

	Three Months Ended		Nine Months Ended	
	September 29, 2018	September 30, 2017	September 29, 2018	September 30, 2017
Balance as of beginning of period	\$4,906	\$ 4,602	\$4,863	\$ 3,838
Accruals for warranties issued during				
period	1,020	1,020	3,915	3,800
Settlements during the period	(1,668)	(1,080)	(4,520)	(3,096)
Balance as of end of period	\$4,258	\$ 4,542	\$4,258	\$ 4,542

Note 9. Commitments and Contingencies

Intellectual Property Indemnification Obligations – The Company will, from time to time, in the normal course of business, agree to indemnify certain customers, vendors or others against third party claims that the Company's products, when used for their intended purpose(s), or the Company's intellectual property, infringe the intellectual property rights of such third parties or other claims made against parties with whom it enters into contractual relationships. It is not possible to determine the maximum potential amount of liability under these indemnification obligations due to the limited history of prior indemnification claims and the unique facts and circumstances that are likely to be involved in each particular claim. Historically, the Company has not made payments under these obligations and believes that the estimated fair value of these agreements is immaterial. Accordingly, no liabilities have been recorded for these obligations in the accompanying condensed consolidated balance sheets as of September 29, 2018 and December 30, 2017.

Legal Proceedings - From time to time, the Company is subject to various legal proceedings or claims arising in the ordinary course of business.

On August 2, 2017, the Company was named as defendant in a complaint filed in New Hampshire Superior Court ("Complaint"). The Complaint, brought by Optical Solutions, Inc. ("OSI"), alleges claims arising from a purported exclusive purchase contract between OSI and the Company pertaining to certain product. On September 18, 2017, the

Company removed the action to the United States District Court for the District of New Hampshire. On September 25, 2017, the Company moved to transfer the Complaint to the District Court for the Northern District of California. On December 20, 2017, the Company 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 Company's complaint was later removed by OSI to the Northern District of California. On May 29, 2018, the District Court of New Hampshire issued an order granting the Company's motion to transfer OSI's Complaint to the Northern District of California and denying the Company's motion to dismiss the Complaint without prejudice. On June 14, 2018, OSI's Complaint was consolidated with the Company's complaint against OSI. On August 9, 2018, OSI filed an Amended Complaint. On September 19, 2018, the Company filed a motion to dismiss OSI's Amended Complaint for failure to state a claim. The Company's motion to dismiss is set to be heard on February 28, 2019. Trial has been set for May 16, 2022.

The Company records a provision for a loss when it believes that it is both probable that a loss has been incurred and the amount can be reasonably estimated. Based on current information, the Company believes it does not have any probable and reasonably estimable losses related to any current legal proceedings and claims. Although it is difficult to predict the outcome of legal proceedings, the Company believes that any liability that may ultimately arise from the resolution of these ordinary course matters will not have a material adverse effect on the business, financial condition and results of operations.

Note 10. Net Income Per Share

The Company presents both basic and diluted net income per share on the face of its condensed consolidated statements of operations. Basic net income per share excludes the effect of potentially dilutive shares and is computed by dividing net income by the weighted-average number of shares of common stock outstanding for the period. Diluted net income per share is computed using the weighted-average number of shares of common stock outstanding for the period plus the effect of all dilutive securities representing potential shares of common stock outstanding during the period.

A reconciliation of the share denominator of the basic and diluted net income per share computations for three and nine months ended September 29, 2018 and September 30, 2017 is as follows (in thousands):

	Three Month Ended		Nine Months Ended	
	September 29, 2018	September 30, 2017	September 29, 2018	September 30, 2017
Weighted average common shares				
outstanding used in basic net				
income per share calculation	24,059	25,494	24,065	25,320
Potential dilutive common stock				
equivalents, using treasury stock method	407	438	486	613
Weighted average shares used in diluted				
net income per share calculation	24,466	25,932	24,551	25,933

Note 11. Stockholders' Equity and Stock-Based Compensation

Options and Employee Stock Purchase Plan ("ESPP") Awards

The fair value of each option and ESPP award is estimated on the grant date using the Black-Scholes valuation model and the assumptions noted in the following table. The expected lives of options granted were calculated using the simplified method allowed by the Staff Accounting Bulletin No. 107, Share-Based Payment. The risk-free rates were based on the U.S Treasury rates in effect during the corresponding period of grant. The expected volatility was based on the historical volatility of the Company's stock price. The dividend yield reflects that the Company has not paid any cash dividends since inception and does not intend to pay any cash dividends in the foreseeable future.

	Three Months Ended		Nine Months Ended	
	September 29, 2018	September 30, 2017	September 29, 2018	September 30, 2017
Employee Stock Purchase Plan:				

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Expected life	0.5 years	0.5 years	0.5 years	0.5 years
Volatility	52.5%	38.9%	39.1%	37.2%
Risk free interest rate	2.14%	1.13%	1.86%	0.91%
Dividends	—	—	—	—

No stock options were awarded during the nine months ended September 29, 2018 and September 30, 2017.

A summary of activity of stock options during the nine months ended September 29, 2018 is as follows:

	Number of Shares Outstanding (Options)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in Thousands)
Options				
Outstanding at December 30, 2017	216,326	\$ 16.82	1.76	\$ 1,748
Exercised	(132,932)	17.46		
Cancelled	—	—		
Outstanding at September 29, 2018	83,394	15.80	1.44	1,811
Exercisable at September 29, 2018	83,394	\$ 15.80	1.44	\$ 1,811

The aggregate intrinsic value in the above table represents the total pretax intrinsic value, based on the Company's closing stock price of \$37.52 and \$24.92 as of September 28, 2018 and December 29, 2017, respectively, the last trading day of each period, which would have been received by the option holders had all option holders exercised their options as of such date. The total intrinsic value of options exercised during the three months ended September 29, 2018 and September 30, 2017 was \$1.4 million and \$1.0 million, respectively, and during the nine months ended September 29, 2018 and September 30, 2017 was \$2.5 million and \$2.4 million, respectively.

Restricted Stock Units ("RSUs")

Time-based RSUs are valued using the market value of the Company's common stock on the date of grant, assuming no expectation of dividends paid.

A summary of activity for RSUs during the nine months ended September 29, 2018 is as follows:

	Number	Weighted Average Fair Value
Summary of activity for RSUs	of RSUs	Value
Outstanding RSUs as of December 30, 2017	790,299	\$ 22.46
Granted	423,891	37.20
Released	(315,621)	20.51
Cancelled	(131,571)	25.80
Outstanding RSUs as of September 29, 2018	766,998	\$ 30.83

Market-Based Performance Stock Units ("PSUs")

In addition to granting RSUs that vest on the passage of time only, the Company granted PSUs to certain executives. The PSUs vest in three tranches over one, two and three years based on the relative performance of the Company's stock during those periods, compared to a peer group over the same period. If target stock price performance is achieved, 66.7% of the shares of the Company's stock subject to the PSUs will vest and up to a maximum of 100% of the shares subject to the PSUs will vest if the maximum stock price performance is achieved for each tranche.

A summary of activity for PSUs for the nine months ended September 29, 2018 is as follows:

	Number	Weighted Average Fair Value
Summary of activity for PSUs	of PSUs	Value
Outstanding PSUs as of December 30, 2017	129,950	\$ 15.60
Granted	63,133	24.54
Released	(47,929)	12.14
Cancelled	(32,991)	25.92

Outstanding PSUs as of September 29, 2018	112,163	\$ 19.25
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The preceding table reflects the maximum awards that can be achieved upon full vesting.

Valuation of PSUs

On the date of grant, the Company estimated the fair value of PSUs using a Monte Carlo simulation model. The assumptions for the valuation of PSUs are summarized as follows:

	2018 Award	2017 Award
Grant Date Fair Value Per Share	\$20.73-\$25.18	\$ 26.75
Weighted-average assumptions/inputs:		
Expected Dividend	—	—
Range of risk-free interest rates	2.39%-2.63%	1.40%
Range of expected volatilities for peer group	22%-66%	23%-62%

Stock-based Compensation Expense

Stock-based compensation expense for all share-based payment awards made to the Company's employees and directors pursuant to the employee stock option and employee stock purchase plans by function were as follows (in thousands):

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Cost of products	\$224	\$ 216	\$455	\$ 628
Cost of service	223	161	564	463
Research and development	744	509	1,727	1,262
Selling	779	639	2,049	1,707
General and administrative	1,242	922	3,434	2,715
Total stock-based compensation				
expense related to employee				
stock options and employee stock				
purchases	\$3,212	\$ 2,447	\$8,229	\$ 6,775

Note 12. Income Taxes

The Company accounts for income taxes under the provisions of ASC 740, Accounting for Income Taxes. The Company adjusts its effective tax rate each quarter to be consistent with the estimated annual effective tax rate. The Company also records the tax effect of unusual or infrequently occurring discrete items, including changes in judgment about valuation allowances and effects of changes in tax laws or tax rates, in the interim period in which they occur. The Company's effective tax rate reflects the impact of a portion of its earnings being taxed in foreign jurisdictions as well as a valuation allowance maintained on certain deferred tax assets.

The Company's tax provision takes into account the changes in the tax laws under Tax Cuts and Jobs Act (the "Act" or "TCJA"), signed into law on December 22, 2017, including the reduction of the federal corporate tax rate from 35% to 21%. Other components of the Act are accounted for based on the Company's interpretation of the most current guidance available and are subject to revisions as the Company completes its analysis of the Act, collects and prepares necessary data, and interprets any additional guidance issued by the U.S. Treasury Department, Internal Revenue Service ("IRS"), FASB, and other standard-setting and regulatory bodies. The Company's accounting for the tax effects of the Act will be completed during the measurement period, which should not extend beyond one year from the enactment date.

The TCJA creates a new Global Intangible Low-Taxed Income ("GILTI") requirement under which certain income earned by controlled foreign corporations ("CFC"s) must be included currently in the gross income of the CFCs' U.S. shareholder. GILTI is the excess of the shareholder's "net CFC tested income" over the net deemed tangible income return, which is currently defined as the excess of (1) 10 percent of the aggregate of the U.S. shareholder's pro rata

share of the qualified business asset investment of each CFC with respect to which it is a U.S. shareholder over (2) the amount of certain interest expense taken into account in the determination of net CFC-tested income.

Because of the complexity of the new GILTI tax rules, the Company is continuing to evaluate this provision of the TCJA and the application of ASC 740. Under U.S. GAAP, the Company is allowed to make an accounting policy choice of either (1) treating taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the “period cost method”) or (2) factoring such amounts into a company’s measurement of its deferred taxes (the “deferred method”). The Company’s selection of an accounting policy with respect to the new GILTI tax rules will depend, in part, on analyzing the Company’s global income to determine what the impact is expected to be. The Company is not yet able to reasonably estimate the effect of this provision of the TCJA. Therefore, the Company has not made a policy decision regarding whether to record deferred taxes on GILTI. As a result, for the period ended September 29, 2018, the Company has treated GILTI as a period cost and will continue to refine the calculations as additional analysis is completed.

The provision for income taxes consists of the following (in thousands):

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2018	2017	2018	2017
Provision for income taxes	\$2,921	\$ 1,756	\$10,258	\$ 4,492

The Company recorded a tax provision of \$2.9 million and \$1.8 million for the three months ended September 29, 2018 and September 30, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to the Company's increased profitability for the three months ending September 29, 2018, offset by less U.S. tax required on foreign earnings under the TCJA.

The Company recorded a tax provision of \$10.3 million and \$4.5 million for the nine months ended September 29, 2018 and September 30, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to the Company's increased profitability and less U.S. tax required on foreign earnings under the TCJA for the nine months ended September 29, 2018, a one-time benefit for an entity classification change, and a higher tax benefit associated with the settlement of equity options/awards for the nine months ended September 30, 2017.

The Company continues to maintain a valuation allowance against its California and Switzerland deferred tax assets as a result of uncertainties regarding the realization of the assets due to cumulative losses and uncertainty of future taxable income. The Company will continue to assess the realizability of the deferred tax assets in each of the applicable jurisdictions and maintain the valuation allowances until sufficient positive evidence exists to support a reversal. In the event the Company determines that the deferred tax assets are realizable, an adjustment to the valuation allowance will be reflected in the tax provision for the period such determination is made.

The Company is subject to taxation in the U.S. and various states including California, and foreign jurisdictions including Korea, Japan, Taiwan, China, Singapore, Germany, U.K., France, and Israel. Due to tax attribute carry-forwards, the Company is subject to examination for tax years 2003 forward for U.S. tax purposes. The Company is also subject to examination in various states for tax years 2002 forward. The Company is subject to examination for tax years 2010 forward for various foreign jurisdictions.

The Company accrues interest and penalties related to unrecognized tax benefits in its provision for income taxes. The total amount of penalties and interest were not material as of September 29, 2018 and September 30, 2017. During the next twelve months, the Company anticipates increases in its unrecognized tax benefits of approximately \$0.5 million.

Note 13. Segment, Geographic, Product and Significant Customer Information

The Company has one operating segment, which is the sale, design, manufacture, marketing and support of optical critical dimension and thin film systems. The following tables summarize total net revenues and long-lived assets (excluding intangible assets) attributed to significant countries (in thousands):

	Three Months Ended		Nine Months Ended	
	September 29,	September 30,	September 29,	September 30,
	2018	2017	2018	2017
Total net revenues:				
South Korea	\$23,598	\$ 22,269	\$92,397	\$ 72,388

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Japan	19,693	4,781	48,090	17,400
United States	8,414	6,231	22,545	28,101
China	14,486	3,403	50,861	17,420
Taiwan	1,883	2,304	4,918	19,016
Singapore	5,842	9,774	20,377	12,229
Other	2,674	7,913	8,319	13,862
Total net revenues	\$76,590	\$ 56,675	\$247,507	\$ 180,416

	September 29, 2018	December 30, 2017
Long-lived tangible assets:		
United States	\$ 42,013	\$ 43,427
International	1,122	1,383
Total long-lived tangible assets	\$ 43,135	\$ 44,810

With respect to customer concentration, Samsung Electronics Co. Ltd., Yangtze Memory Technologies Co. Ltd., SK Hynix, and Toshiba Corporation each accounted for more than 10% of total sales for the three months ended September 29, 2018, and Samsung Electronics Co. Ltd., SK Hynix, Toshiba Corporation, Yangtze Memory Technologies Co. Ltd., and Micron Technology, Inc. each accounted for more than 10% of total sales for the nine months ended September 29, 2018. Samsung Electronics Co. Ltd., Intel Corporation, and Micron Technology, Inc. each accounted for more than 10% of total sales for the three months ended September 30, 2017, and Samsung Electronics Co. Ltd., SK Hynix, Intel Corporation, and Micron Technology, Inc. each accounted for more than 10% of total sales for the nine months ended September 30, 2017.

With respect to accounts receivable concentration, Toshiba Corporation and SK Hynix each accounted for more than 10% of total accounts receivable as of September 29, 2018. Samsung Electronics Co. Ltd., Micron Technology, Inc., and Intel Corporation each accounted for more than 10% of total accounts receivable as of December 30, 2017.

Note 14. Subsequent Event

Acquisition – 4D Technology Corporation

On October 26, 2018, the Company entered into a Stock Purchase Agreement with 4D Technology Corporation (“4D”) and each of the 4D stockholders pursuant to which the Company agreed to acquire all the outstanding stock of 4D in exchange for \$36 million in cash and 125,117 shares of the Company’s common stock, par value \$0.001 per share, valued at approximately \$4 million, subject to adjustment based on the amount of cash, working capital, indebtedness, and transaction expenses of 4D (collectively, the “Purchase Price”). The closing of the transaction, which is subject to the satisfaction of customary closing conditions, is expected to occur prior to the end of the current fiscal year – December 29, 2018.

The shares of the Company’s common stock are to be issued to the three principal stockholders of 4D (the “Principal Stockholders”). Pursuant to the terms of the Stock Purchase Agreement and related Escrow Agreement, \$4 million in cash and 125,117 of the shares of the Company’s common stock will be withheld from the Purchase Price and placed in escrow to fund any post-closing adjustments to the purchase price and to secure the indemnification obligations of the Principal Stockholders to the Company. The Principal Stockholders have agreed to indemnify the Company for inaccuracies in the representations or the breach of the warranties or covenants made by 4D, and for certain other matters, subject to certain limitations.

4D is a supplier of high-performance interferometric measurement and inspection systems located in Tucson, Arizona. Their solutions are used primarily in the manufacture of advanced aerospace and industrial systems as well as for scientific research and semiconductor applications. 4D pioneered Dynamic Interferometry, which enables specialized applications for high-precision surface shape and profile. The addition of this business and technology will enable the Company to serve new markets in advanced process control metrology and inspection. In addition to expanding the Company’s served markets, 4D’s technology will enable next-generation systems for leading

semiconductor device applications and is a natural complement to the Company's current optical metrology and inspection solutions.

Given the short period of time from entering into the Stock Purchase Agreement to the filing of this Form 10-Q, the Company is in the process of compiling the initial accounting for the 4D combination, including the determination of the fair value of tangible assets acquired and liabilities assumed, the valuation of intangibles acquired, income and non-income based taxes, residual goodwill and the amount of goodwill that will be deductible for tax purposes.

Gain on Disposal of Fixed Asset – Condominium

On October 31, 2018, the Company closed escrow on the sale of one of two condominiums it owns in Milpitas, California, at a sales price of \$1.0 million. The Company expects to report a gain on the sale of the asset, net of certain fees and commissions, as a component of other income, during its fiscal year ended December 29, 2018 of approximately \$0.9 million. As part of its facilities strategy, the Company has determined that it will no longer house traveling employees in owned condominiums and has begun divesting such assets.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Quarterly Report on Form 10-Q contains forward-looking statements that involve risks and uncertainties. The statements contained in this document that are not purely historical are forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, including, without limitation, statements regarding future periods, financial results, revenues, margins, growth, customers, tax rates, product performance, and the impact of accounting rules on our business and the future implications of our statements regarding goals, strategy, and similar terms. We may identify these statements by the use of words such as “anticipate,” “believe,” “continue,” “could,” “expect,” “might,” “project,” “will,” and other similar expressions. All forward-looking statements included in this document are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements, except as may otherwise be required by law.

Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain risks, uncertainties and changes in circumstances, many of which may be difficult to predict or beyond our control, including those factors referenced in this document, including in Part II, Item 1A, Risk Factors below, and in Part I, Item 1A, Risk Factors, in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the Securities and Exchange Commission (“SEC”) on February 26, 2018 (our “Annual Report”). In particular, our results could vary significantly based on: changes in customer and industry spending; rate and extent of changes in product mix; adoption of new products; timing of orders, shipments, and acceptance of products; our ability to secure volume supply agreements; uncertainties related to our acquisition of 4D Technology Corporation; and general economic conditions. In evaluating our business, investors should carefully consider these factors in addition to any other risks and uncertainties set forth elsewhere. The occurrence of the events described in the risk factors of our Annual Report and risk factors elsewhere in this report as well as other risks and uncertainties could materially and adversely affect our business, operating results and financial condition. While management believes that the discussion and analysis in this report is adequate for a fair presentation of the information presented, we recommend that you read this discussion and analysis in conjunction with (i) our audited consolidated financial statements and notes thereto for the fiscal year ended December 30, 2017, which were included in our Annual Report, (ii) the section captioned “Risk Factors” in this Quarterly Report and our Annual Report, and (iii) our other filings with the SEC.

Overview

Together with our subsidiaries, we are an innovator in the field of metrology systems, inspection systems and advanced analytics for semiconductor manufacturing and other industries. Our systems and solutions are designed to precisely monitor optical critical dimensions, film thickness, and other parameters that are necessary to control the manufacturing process, identify defects, and detect manufacturing equipment anomalies that can affect production yields and device performance.

Principal factors that impact our revenue growth include capital expenditures by manufacturers of semiconductors to increase capacity and to enable their development of new technologies, and our ability to improve market share. The increasing complexity of the manufacturing processes for semiconductors is an important factor in the demand for our innovative metrology systems. Our strategy is to continue to innovate organically as well as to evaluate strategic acquisitions to address business challenges and opportunities.

Our revenues are derived primarily from product and software sales but are also derived from customer service, upgrades and software for the installed base of our products. For the nine months ended September 29, 2018, we derived 85% of our total net revenues from product, upgrade and software sales, and 15% of our total net revenues from services.

Nanometrics Products

We offer a diverse line of systems to address the broad range of process control requirements of the semiconductor manufacturing industry. In addition, we believe that our product development and engineering expertise, as well as strategic acquisitions will enable us to develop and offer advanced process control solutions that, in the future, should address industry advancement and trends.

Automated Systems

Our automated systems primarily consist of fully automated metrology systems that are employed in semiconductor production environments. The Atlas® III, Atlas II+, and Atlas XP+ represent our line of high-performance metrology systems providing optical critical dimension (“OCD”®), thin film metrology and wafer stress for transistor and interconnect metrology applications. The thin film and OCD technology is supported by our suite of solutions including our NanoDiffract® software, SpectraProbe™ software, and NanoGen™ scalable computing engine that enables visualization, modeling, and analysis of complex structures. The UniFire™ system measures multiple parameters at any given process step in the advanced packaging process flow for critical dimension, overlay, and topography applications, and has recently added inspection capabilities for both front-end of line patterned wafer and advanced packaging related applications.

Integrated 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®+ and IMPULSE represent our latest metrology platform for OCD, and thin film metrology, and have been successfully qualified on numerous independent Wafer Fabrication Equipment Suppliers’ platforms. Our NanoCD suite of solutions is sold in conjunction with our IMPULSE systems. Our Trajectory® system provides in-line measurement of layers in thin film thickness and composition in semiconductor applications and is qualified in production with major device makers.

Software

NanoDiffract® is a modeling, visualization and analysis software that takes signals from the automated and integrated 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 NanoDiffract 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 NanoDiffract with a simple machine learning interface for rapid recipe deployment. SpectraProbe expands the types of structures that can be used for metrology and control including in-die and on-device areas. Both analysis packages are supported by the automated and integrated systems, can be deployed in run-time environments and support off-line processing as part of a factory control solution when deployed on NanoCentral and NanoGen servers.

NanoGen is 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 NanoDiffract analysis. NanoCentral is a fab-based networking and server system providing connectivity and compute support to SpectraProbe and connected measurement systems including Atlas and Impulse products.

Materials Characterization

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.

The RPMBLue™ is our photoluminescence mapping system designed specifically for the HB-LED market, and is complemented by the RPMBLue-FS, enabling a breadth of research and development configurability. We sell Fourier-Transform Infrared (“FTIR”) automated and manual systems in the QS2200/3300 and QS1200, respectively, for substitute quality and epitaxial thickness metrology. The NanoSpec® line, including the NanoSpec II, supports thin film measurement across all applications in both low volume production and research applications.

We are continually working to strengthen our competitive position by developing new technologies and products in our market segment. We have expanded our product offerings to address growing applications within the semiconductor manufacturing and adjacent industries. In pursuit of our goals, we have:

- Introduced new products, applications, and upgrades in every core product line and primary market served;
- Diversified our product line and served markets through acquisitions; and

Continued development of new measurement and inspection technologies for advanced fabrication processes and packaging.

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Important Themes and Significant Trends

The semiconductor equipment industry is characterized by new manufacturing processes (node) coming to market every two to three years. At every new node in the semiconductor industry, our customers drive the need for metrology as a major component of device manufacturing. These trends include:

• **Proliferation of Optical Critical Dimension Metrology across Fabrication Processes.** Device dimensions must be carefully controlled during each step of processing. These patterned structures are measured at many subsequent production steps including Chemical Mechanical Polishing, Etch, and Thin Film processing, all driving broader OCD adoption. Our proprietary OCD systems can provide the critical process control of these circuit dimensions that is necessary for successful manufacturing of these state-of-the-art devices. Nanometrics OCD technology is broadly adopted across 3D-NAND, DRAM, and logic semiconductor manufacturing processes.

• **Proliferation of 3D Transistor Architectures.** Our end customers continue to improve device density and performance by scaling front-end-of-line transistor architectures. Many of these designs, including FinFET transistors, have buried features and high aspect ratio stacked features that enable improved performance and density. The advanced designs require additional process control to manage the complex shapes and materials properties, driving additional applications of our systems.

• **Proliferation of High-Density 3D-NAND.** Our end customers have migrated to multi (many) layered high aspect ratio 3D-NAND devices. Many stacks of NAND cells are formed in parallel. These 3D-NAND architecture enables cost effective density scaling, removing the burden of density from lithography to deposition and etch processes. These devices require additional process control of deposition stacks, planarization processes, and critical high aspect ratio etch processes. Nanometrics thin films and OCD technologies are adopted across the 3D-NAND process including the periphery CMOS processing, NAND cell formation, and Interconnect of the devices.

• **Adoption of New Types of Thin Film Materials.** The need for ever increasing device circuit speed coupled with lower power consumption has pushed semiconductor device manufacturers to new materials and processing methods with single atom/sub nanometer control over these processes.

• **Need for Improved Process Control to Drive Process Efficiencies.** Competitive forces influencing semiconductor device manufacturers, such as price-cutting, shorter product life cycles and time to market, place pressure on manufacturers to rapidly achieve production efficiency. Device manufacturers are using our integrated and automated systems, as well as advanced metrology algorithms and analytics throughout the fabrication process to ensure that manufacturing processes scale rapidly, are accurate and can be repeated on a consistent basis.

Potential Acquisition of 4D Technology

On October 26, 2018, we entered into a Stock Purchase Agreement with 4D Technology Corporation (“4D”) and each of the 4D stockholders pursuant to which we agreed to acquire all the outstanding stock of 4D in exchange for \$36 million in cash and approximately \$4 million in stock, subject to adjustment based on the amount of cash, working capital, indebtedness, and transaction expenses of 4D. The closing of the transaction, which is subject to the satisfaction of customary closing conditions, is expected to occur prior to the end of the current fiscal year – December 29, 2018.

If this acquisition is successfully closed, we expect that the gross profits generated by 4D Technology would offset any additional research and development, selling and general administrative expenses we will incur. However, if 4D is unable to meet our current revenue and other financial performance expectations, this could negatively impact our operating results.

Critical Accounting Policies and Estimates

The preparation of our financial statements conforms to accounting principles generally accepted in the United States of America, which requires management to make estimates and judgments in applying our accounting policies that

have an important impact on our reported amounts of assets, liabilities, revenue, expenses and related disclosures at the date of our financial statements. On an ongoing basis, management evaluates its estimates including those related to bad debts, inventory valuations, warranty obligations, impairment and income taxes. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from management's estimates.

Except for the changes noted below, there were no significant changes in our critical accounting policies during the nine months ended September 29, 2018. Please refer to Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," in our Annual Report for a complete discussion of our critical accounting policies.

Change in Revenue Recognition Standard (Adoption of ASU 2014-09) - We adopted the new accounting standard ASC 606 and related amendments in the first quarter of fiscal 2018 using the modified retrospective transition method. As such, we recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of retained earnings. Please refer to Note 1. Nature of Business, Basis of Presentation and Significant Accounting Policies” for further discussion of this change.

Recent Accounting Pronouncements

See Note 2 of the Unaudited Condensed Consolidated Financial Statements for a description of recent accounting pronouncements, including the respective dates of adoption and effects or anticipated effects on our results of operations and financial condition.

Results of Operations

Net Revenues

Our net revenues were comprised as follows (in thousands, except percentages):

	Three Months Ended			Change	Nine Months Ended			Change	
	September 29, 2018	September 30, 2017			September 29, 2018	September 30, 2017			
Product	63,798	45,571	18,227	40.0%	211,521	147,322	64,199	43.6%	
Service	12,792	11,104	1,688	15.2%	35,986	33,094	2,892	8.7%	
Total net revenues	\$76,590	\$56,675	\$19,915	35.1%	\$247,507	\$180,416	\$67,091	37.2%	

Capital spending by our customers is dependent on the timing of new semiconductor fabrication plants, capacity expansion within existing plants, and the adoption of modern technology for current and future manufacturing needs. Results may vary significantly based on changes in any of these factors. For the three months ended September 29, 2018, total net revenues increased by \$19.9 million relative to the comparable period in fiscal 2017. The increase comprised a \$18.2 million increase in product revenue and a \$1.7 million increase in service revenue compared to the same prior year period. For the nine months ended September 29, 2018, total net revenues increased by \$67.1 million relative to the comparable period in fiscal 2017. The increase resulted from a \$64.2 million increase in product revenue and a \$2.9 million increase in service revenue compared to the same prior year period.

A significant portion of the world’s semiconductor manufacturing capacity is in Asia. We generated 86% and 88% of our revenues in Asia in the three and nine months ended September 30, 2018, respectively, compared to 75% and 77% for the three and nine months ended September 30, 2017, respectively, an increase of 11%. Although sales to customers within individual countries of that region will vary from time to time, we expect that a substantial portion of our revenues will continue to be generated in Asia.

Gross margin

Our gross margin breakdown was as follows:

	Three Months Ended		Nine Months Ended		
	September 29, 2018	September 30, 2017	September 29, 2018	September 30, 2017	
Products	59.8 %	53.0	%	59.6 %	50.9 %
Service	42.7 %	58.4	%	44.6 %	53.6 %

The calculation of product gross margin includes both cost of products and amortization of intangibles.

The gross margin on product revenue increased to 59.8% in the three months ended September 29, 2018 from 53.0% in the three months ended September 30, 2017. The increase was due to a favorable product and customer mix, improved installation cycle times and lower warranty costs. The gross margin on our services business decreased to 42.7% in the three months ended September 29, 2018 from 58.4% in the three months ended September 30, 2017. The decrease was due to lower labor utilization and higher material fulfillment costs for service contracts resulting from a higher rate of field maintenance requests.

The gross margin on product revenue increased to 59.6% in the nine months ended September 29, 2018 from 50.9% in the nine months ended September 30, 2017. The increase was due to a favorable product and customer mix, improved installation cycle times and lower warranty costs. The gross margin on our services business decreased to 44.6% in the nine months ended September 29,

2018 from 53.6% in the nine months ended September 30, 2017. The decrease was due to lower service labor utilization, higher material fulfillment costs, and product portfolio mix.

Operating expenses

Our operating expenses comprised the following categories (in thousands, except percentages):

	Three Months Ended			Change	Nine Months Ended			Change
	September 29, 2018	September 30, 2017			September 29, 2018	September 30, 2017		
Research and development	\$12,717	\$ 8,825	\$3,892	44.1%	\$35,410	\$ 26,658	\$8,752	32.8%
Selling	8,902	7,553	1,349	17.9%	28,077	22,730	5,347	23.5%
General and administrative	7,744	6,798	946	13.9%	22,950	19,696	3,254	16.5%
Total operating expenses	\$29,363	\$ 23,176	\$6,187	26.7%	\$86,437	\$ 69,084	\$17,353	25.1%

Research and development

Investments in research and development personnel and associated projects are part of our strategy to ensure our products remain competitive and meet customers' needs. For the three months ended September 29, 2018, research and development costs increased by \$3.9 million, or 44.1%, compared to the same period in 2017. The increase was driven by additional headcount and higher variable compensation costs and new product development costs.

For the nine months ended September 29, 2018, research and development costs increased by \$8.8 million, or 32.8%, compared to the same period in 2017. The increase was driven by additional headcount, higher variable compensation costs and new product development costs.

Selling

Selling expenses for the three months ended September 29, 2018 increased by \$1.3 million, or 17.9% compared to the same period in 2017. The increase was driven by additional headcount, higher variable compensation costs and higher sales commission expenses. For the nine months ended September 29, 2018, selling expenses increased by \$5.3 million, or 23.5%, compared to the same period in 2017. The increase was driven by additional headcount, higher variable compensation costs including commissions, severance, and higher travel related expenses.

General and administrative

General and administrative expenses increased by \$0.9 million, or 13.9%, in the three months ended September 29, 2018 compared to the same period in 2017. The increase was primarily due to executive transition and search costs, higher variable compensation costs and higher professional services fees. For the nine months ended September 29, 2018, general and administrative expenses increased by \$3.3 million, or 16.5%, compared to the same period in 2017.

The increase was primarily due to executive transition and search costs, higher variable compensation costs and higher professional service fees.

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Other income (expense), net.

Our other income (expense), net, consisted of the following items (in thousands, except percentages):

	Three Months Ended			Nine Months Ended		
	September 2018	September 2017	Change	September 2018	September 2017	Change
Interest Income	\$4	\$ 2	\$ 2	\$8	\$ 6	\$ 2
Interest Expense	(108)	(25)	(83)	(253)	(84)	(169)
Interest income (expense), net	(104)	(23)	(81)	(245)	(78)	(167)
Net gains on investments	455	366	89	1,038	932	106
Other gains (losses), net	(133)	(307)	174	(530)	(602)	72
Other income (loss), net	322	59	263	508	330	178
Total other income (expense), net	\$218	\$ 36	\$ 182	\$263	\$ 252	\$ 11

Other income (expense), net, increased by \$0.2 million in the three months ended September 29, 2018 relative to the comparable period in 2017. The change was principally due to unfavorable foreign exchange net gains and losses. For the nine months ended September 29, 2018, other income (expense), net, was relatively unchanged.

Provision for income taxes

We recorded a tax provision of \$2.9 million and \$1.8 million for the three months ended September 29, 2018 and September 30, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to our increased profitability for the three months ended September 29, 2018, offset by less U.S. tax required on foreign earnings under the TCJA.

We recorded a tax provision of \$10.3 million and \$4.5 million for the nine months ended September 29, 2018 and September 30, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to our increased profitability, offset by less tax required on foreign earnings under the TCJA for the nine months ended September 29, 2018, a one-time benefit for an entity classification change, and a higher tax benefit associated with the settlement of equity options/awards for the nine months ended September 30, 2017.

Our provision for income taxes for the three and nine months ended September 29, 2018 of \$2.9 million and \$10.3 million, respectively, reflects an effective tax rate of 20.2% and 18.4%, respectively. The tax rate for the three and nine months ended September 29, 2018 differs from the Federal statutory rate of 21.0% primarily due to Foreign and R&D Tax credits and tax benefits associated with the settlement of equity options/awards which partially offset foreign income being subject to tax at higher rates, state income taxes, and non-deductible equity compensation.

The TCJA creates a new Global Intangible Low-Taxed Income (“GILTI”) requirement under which certain income earned by controlled foreign corporations (“CFC”s) must be included currently in the gross income of the CFCs’ U.S. shareholder. GILTI is the excess of the shareholder’s “net CFC tested income” over the net deemed tangible income return, which is currently defined as the excess of (1) 10 percent of the aggregate of the U.S. shareholder’s pro rata share of the qualified business asset investment of each CFC with respect to which it is a U.S. shareholder over (2) the amount of certain interest expense taken into account in the determination of net CFC-tested income.

Because of the complexity of the new GILTI tax rules, the Company is continuing to evaluate this provision of the TCJA and the application of ASC 740. Under U.S. GAAP, the Company is allowed to make an accounting policy choice of either (1) treating taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the “period cost method”) or (2) factoring such amounts into a company’s measurement of its deferred taxes (the “deferred method”). The Company’s selection of an accounting policy with respect to the new GILTI tax rules will depend, in part, on analyzing the Company’s global income to determine what the impact is expected to be. The Company is not yet able to reasonably estimate the effect of this provision of the TCJA. Therefore, the Company has not made a policy decision regarding whether to record deferred taxes on GILTI. As a result, for the period ended September 29, 2018, the Company has treated GILTI as a period cost and will continue to refine the calculations as additional analysis is completed.

As of September 29, 2018, we continue to maintain a valuation allowance against our California and Switzerland deferred tax assets as a result of uncertainties regarding the realization of the assets due to cumulative losses and uncertainty of future taxable income. We will continue to assess the realizability of the deferred tax assets in each of the applicable jurisdictions and maintain the valuation allowances until sufficient positive evidence exists to support a reversal. In the event we determine that the deferred tax assets are realizable, an adjustment to the valuation allowance will be reflected in the tax provision for the period such determination is made.

We are subject to taxation in the U.S. and various states including California, and foreign jurisdictions including Korea, Japan, Taiwan, China, Singapore, U.K., Germany, France, and Israel. Due to tax attribute carry-forwards, we are subject to examination for tax years 2003 forward for U.S. tax purposes. We are also subject to examination in various states for tax years 2002 forward. We are subject to examination for tax years 2010 forward for various foreign jurisdictions.

We accrue interest and penalties related to unrecognized tax benefits in our provision for income taxes. The total amount of penalties and interest were not material as of September 29, 2018 and September 30, 2017. During the next twelve months, we anticipate increases in our unrecognized tax benefits of approximately \$0.5 million.

Liquidity and Capital Resources

Our principal sources of liquidity are cash and cash equivalents, and marketable securities, and cash flow generated from our operations. Our liquidity is affected by many factors, including those that relate to our specific operations and those that relate to the uncertainties of global and regional economies and the sectors of the semiconductor industry in which we operate in. Although our cash requirements will fluctuate based on the timing and extent of these factors, we believe our existing cash, cash equivalents and marketable securities, combined with cash currently projected to be generated from our operations, will be sufficient to satisfy our working capital needs, capital asset purchases, outstanding commitments and other liquidity requirements associated with our existing operations over the next twelve months.

The following tables present selected financial information and statistics as of September 29, 2018 and December 30, 2017 and for the nine months ended September 29, 2018 and September 30, 2017 (in millions):

	As of	
	September 30,	December 31,
	2018	2017
Cash, cash equivalents and		
marketable securities	\$172.9	\$ 117.0
Working capital	\$232.0	\$ 196.0

	Nine Months Ended	
	September 30,	September 30,
	2018	2017
Cash provided by operating		
activities	\$83.4	\$ 15.4
Cash provided by (used in)		
investing activities	\$0.4	\$ (17.8)
Cash used in financing activities	\$(22.3)	\$ (0.2)

Cash, cash equivalents and marketable securities totaled \$172.9 million at September 29, 2018, which reflects an increase of \$55.9 million from December 30, 2017. Of our total cash, cash equivalents and marketable securities at September 29, 2018, approximately \$16.9 million were held by foreign subsidiaries, a portion of which would have to be repatriated to the United States. We continuously evaluate if there is a need to repatriate these funds. We believe our existing cash, cash equivalents and marketable securities will be sufficient to satisfy our working capital needs, capital asset purchases, outstanding commitments and other liquidity requirements associated with our existing operations over at least the next twelve months. Working capital was \$232.0 million at September 29, 2018, which reflects an increase of \$36.0 million when compared to \$196.0 million at December 30, 2017.

Cash provided by operating activities during the nine months ended September 29, 2018 was \$83.4 million, consisting primarily of net income of \$45.6 million, adjusted for non-cash items of \$18.8 million, and \$19.0 million of net cash inflows related to changes in operating assets and liabilities. The change in accounts receivable are generally driven by guaranteed payments from certain new customers on letters of credit, and early payment programs from some of our larger customers. Improvements in accounts payable balances have been driven through extended payment terms from some critical vendors and this has been partially offset by higher inventory purchases as we prepare for new product introductions and changes in product mix. We expect that cash provided by operating activities may fluctuate in future periods due to several factors, including variations in our operating results, accounts receivable collections performance, inventory and supply chain management, vendor payment initiatives, tax benefits or charges from stock-based compensation, and the timing and amount of compensation and other payments.

Cash provided by investing activities of \$0.4 million during the nine months ended September 29, 2018 consisted primarily of sales and maturities of marketable securities of \$52.0 million, partially offset by \$46.6 million of purchases of marketable securities and payments for acquisition of property, plant and equipment and certain assets of \$4.9 million. We expect that additional cash of approximately \$36.0 million will be used in investing activities to pay for the acquisition of 4D Technology Corporation.

Cash used in financing activities of \$22.3 million during the nine months ended September 29, 2018 consisted primarily of \$23.0 million of common stock repurchases and \$3.1 million cash paid for taxes on net issuance of stock awards, partially offset by proceeds from the issuance of common stock from the employee stock purchase program and the exercise of stock options of \$3.8 million.

Cash provided by operating activities during the nine months ended September 30, 2017 was \$15.4 million, consisting primarily of net income of \$19.4 million, adjusted for non-cash items of \$15.7 million, partially offset by \$19.7 million of net cash outflows related to changes in operating assets and liabilities. The changes in operating assets and liabilities is generally driven by the timing of our customer payments for accounts receivable and timing of our vendor payments in accounts payable.

Cash used in investing activities of \$17.8 million during the nine months ended September 30, 2017 consisted primarily of \$105.0 million purchases of marketable securities and payments for acquisition of property, plant and equipment and certain assets of \$4.3 million, net of sales and maturities of marketable securities of \$91.5 million.

Cash used in financing activities of \$0.2 million during the nine months ended September 30, 2017 consisted primarily of \$3.8 million cash paid for taxes on net issuance of stock awards, partially offset by proceeds from the issuance of common stock from the employee stock purchase program and the exercise of stock options of \$3.7 million.

Repurchases of Common Stock

On November 15, 2017 our Board of Directors authorized the repurchase of up to \$50.0 million of our common stock. This plan is referred to as the Stock Repurchase Plan. During the three months ended March 31, 2018, the Stock Repurchase Plan was completed, and we repurchased 896,187 shares at an average purchase price of \$25.65 per share for a total of \$23.0 million. Accordingly, we did not repurchase any shares in either of the three-month periods ended June 30, 2018 and September 29, 2018.

Shares repurchased and retired in the three months ended March 31, 2018 under the Stock Repurchase Plan, with the associated cost of repurchase and amount available for repurchase were as follows (in thousands, except number of shares and weighted average price per share):

	Three months ended
	March 31, 2018
Number of shares of common stock repurchased	896,187
Weighted average price per share	\$25.65
Total cost of repurchase	\$22,987
Amount available for repurchase at end of period	\$—

Off-Balance Sheet Arrangements

As of September 29, 2018, we had no off-balance sheet arrangements or obligations.

Contractual Obligations

There have been no material changes outside the ordinary course of our business from those reported in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018.

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ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk does not differ materially from that discussed in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018. However, we cannot give any assurance as to the effect that future changes in interest rates or foreign currency rates will have on our consolidated balance sheet, results of operations or cash flows.

Foreign Currency Risk

Our exposure to foreign currency exchange rate fluctuations arises in part from intercompany balances in which costs are charged between our U.S. headquarters and our foreign subsidiaries. On our consolidated balance sheet these intercompany balances are eliminated and thus no consolidated balances are associated with these intercompany balances; however, since each foreign entity's functional currency is generally its respective local currency, there is exposure to foreign exchange risk on a consolidated basis for transactions not denominated in each foreign entity's functional currencies. Intercompany balances are denominated primarily in U.S. dollars and, to a lesser extent, other local currencies.

To manage the level of exposure to the risk of foreign currency exchange rate fluctuations, we enter into foreign currency forward exchange contracts to protect against currency exchange risks associated with existing assets and liabilities. A foreign currency forward exchange contract acts as a hedge by increasing in value when underlying assets decrease in value or underlying liabilities increase in value due to changes in foreign exchange rates. Conversely, a foreign currency forward exchange contract decreases in value when underlying assets increase in value or underlying liabilities decrease in value due to changes in foreign exchange rates. These forward contracts are not designated as accounting hedges, so the unrealized gains and losses are recognized in other income (expense), net, in advance of the actual foreign currency cash flows with the fair value of these forward contracts being recorded as accrued liabilities or other current assets.

We do not use forward contracts for trading purposes. Our forward contracts generally have maturities of 30 days or less. We enter into foreign currency forward exchange contracts based on estimated future asset and liability exposures, and the effectiveness of our hedging program depends on our ability to estimate these future asset and liability exposures. Recognized gains and losses with respect to our current hedging activities will ultimately depend on how accurately we are able to match the amount of foreign currency forward exchange contracts with actual underlying asset and liability exposures.

We actively monitor our foreign currency risks, but there is no guarantee that our foreign currency hedging activities will substantially offset the impact of fluctuations in currency exchange rates on our results of operations, cash flows and financial position. See "Note 3, Fair Value Measurement and Disclosures" in the Notes to Consolidated Financial Statements for more information regarding our derivatives and hedging activities.

Interest Rate Risk

Our exposure to market risk resulting from changes in interest rates relates primarily to our investment portfolio. As of September 29, 2018 and December 30, 2017, we held \$76.8 million and \$82.1 million, respectively, in marketable securities. The fair value of our marketable securities could be adversely impacted due to a rise in interest rates. A hypothetical immediate and consistent increase in interest rates by 100 basis points from levels as of September 29, 2018, the fair value of our marketable securities would have declined by \$0.4 million, as compared to \$0.5 million as of December 30, 2017. Securities with longer maturities are subject to a greater interest rate risk than those with shorter maturities and as of September 29, 2018 and December 30, 2017, the average duration of our portfolio was less than nine months. We do not hold securities for trading purposes.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management evaluated, with the participation of our Chief Executive Officer (“CEO”), and our Vice President, Finance (who is our Principal Financial Officer (“PFO”)), the effectiveness of our disclosure controls and procedures as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on the evaluation, our CEO and PFO concluded that as of September 29, 2018, our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Securities Exchange Act of 1934 were (i) recorded, processed, summarized and reported within the time periods specified in SEC rules and forms and (ii) accumulated and reported to our management, including our Chief Executive Officer and Principal Financial Officer, to allow timely discussions regarding required disclosures.

Changes in Internal Control over Financial Reporting

During the quarter ended September 29, 2018, there were no changes in our internal controls over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our CEO and PFO, has designed our disclosure controls and procedures and our internal control over financial reporting to provide reasonable assurances that the controls’ objectives will be met. However, management does not expect that disclosure controls and procedures or our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within Nanometrics have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any system’s design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of a system’s control effectiveness into future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

PART II — OTHER INFORMATION

ITEM 1 LEGAL PROCEEDINGS

The information set forth under Note 9. Commitments and Contingencies of Notes to Consolidated Financial Statements in Part I, Item 1 of this Quarterly Report on Form 10-Q is incorporated herein by reference.

ITEM 1A. RISK FACTORS

Investing in our securities involves a high degree of risk. In assessing these risks, you should carefully consider the information included in this report, including our financial statements and the related notes thereto. You should carefully review and consider all of the risk factors set forth in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018.

The risks described in our Annual Report on Form 10-K are not the only ones we face. Additional risks and uncertainties that are not currently known to us or that we currently believe are immaterial may also impair our business operations. Our business, operating results and financial conditions could be materially harmed by any of these risks. The trading price of our common stock could decline due to any of these risks and investors may lose all or part of their investment.

There have been no material changes in our risk factors from those discussed in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, except as follows:

We have entered into an agreement to acquire 4D Technology Corporation, and if we are unable to complete this acquisition or successfully integrate 4D in a cost-effective and non-disruptive manner, our business may be harmed.

We have entered into an agreement to acquire 4D Technology Corporation (“4D”) but have not yet closed this transaction. The closing of the acquisition is subject to closing conditions which, if not met or waived, would cause us not to be able to acquire 4D. If this were to occur, we would not obtain the benefits that we expect from this transaction. Even if we are able to close the acquisition of 4D, we will then need to integrate the operations of 4D into our company, which may be more difficult than we currently foresee. Additional risks relating to the acquisition of 4D include:

- we may not be able to realize the benefits or cost savings that we expect to realize from the acquisition of 4D;
- the integration of 4D into our business will require management's attention, which will then be diverted at least in part from the operation of our current business;
- we may face difficulties in integrating the controls, procedures and policies, business cultures and compensation structures among our company and 4D;
- we may face difficulties in consolidating and streamlining sales, marketing and corporate operations;
- potential exposure to unknown liabilities of 4D;
- loss of key employees and customers of 4D; and
- managing tax costs or inefficiencies associated with integrating our operations following completion of the acquisition.

If the acquisition of 4D is not successfully completed or integrated into our existing operations, our business, financial condition and results of operations could be adversely impacted.

ITEM 6. EXHIBITS

The following exhibits are filed, furnished or incorporated by reference with this Quarterly Report on Form 10-Q:

Exhibit No.	Description
3.(i)	Certificate of Incorporation
3.1(1)	<u>Certificate of Incorporation of the Registrant</u>
3.(ii)	Bylaws
3.2 (2)	<u>Bylaws of the Registrant</u>
4	Instruments Defining the Rights of Security Holders, Including Indentures
4.1	Reference is made to Exhibits <u>3.1</u> and <u>3.2</u>
10	Material Contracts
10.1 (3)	<u>Separation Agreement between Registrant and Jonathan Chou, dated June 25, 2018</u>
31	Rule 13a-14(a)/15d-14(a) Certifications
31.1^	<u>Certification of Pierre-Yves Lesaichere, principal executive officer of the Registrant, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
31.2^	<u>Certification of Greg Swyt, principal financial officer and controller of the Registrant, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
32	Section 1350 Certifications
32.1*	<u>Certification of Pierre-Yves Lesaichere, principal executive officer of the Registrant, and Greg Swyt, principal financial officer and controller of the Registrant pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
101*	The following financial statements, formatted in XBRL: (i) Condensed Consolidated Balance Sheets at September 29, 2018, and December 30, 2017, (ii) Condensed Consolidated Statements of Operations for the three and three months ended September 29, 2018 and September 30, 2017, (iii) Condensed Consolidated Statements of Cash Flows for the nine months ended September 29, 2018 and September 30, 2017, and (v) Notes to Unaudited Condensed Consolidated Financial Statements.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document

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101.DEF XBRL Taxonomy Extension Definition Linkbase Document

101.LAB XBRL Taxonomy Extension Label Linkbase Document

101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

(1)Incorporated by reference to Exhibit 3.1 filed with the Registrant's Current Report on Form 8-K (File No. 000-13470) filed with the SEC on October 5, 2006.

(2)Incorporated by reference to Exhibit 3.1 filed with the Registrant's Current Report on Form 8-K (File No. 000-13470) filed with the SEC on April 12, 2012.

(3)Incorporated by reference to Exhibit 10.1(5) filed with the Registrant's Quarterly Report on Form 10-Q (File No. 000-13470) filed with the SEC on August 2, 2018

^Filed herewith.

*Furnished herewith

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SIGNATURES

Pursuant to the requirements 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.

NANOMETRICS INCORPORATED
(Registrant)

By: /S/ GREG SWYT
Greg Swyt
Vice President, Finance
(Duly Authorized Officer, Principal Financial Officer)

Dated: October 31, 2018