

MACOM Technology Solutions Holdings, Inc.
Form 10-Q
February 06, 2019

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 December 28, 2018

or

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

For the transition period from _____ to _____

Commission File Number: 001-35451

MACOM Technology Solutions Holdings, Inc.
(Exact name of registrant as specified in its charter)

Delaware 27-0306875
(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification No.)
100 Chelmsford Street
Lowell, MA 01851
(Address of principal executive offices and zip code)
(978) 656-2500
(Registrant's telephone number, including area code)

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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

As of February 1, 2019, there were 65,385,338 shares of the registrant's common stock outstanding.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
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PART I—FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

(In thousands)

(Unaudited)

	December 28, 2018	September 28, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 87,089	\$ 94,676
Short-term investments	98,670	98,221
Accounts receivable (less allowances of \$6,340 and \$6,795, respectively)	109,683	97,375
Inventories	120,858	122,837
Income tax receivable	17,820	17,601
Assets held for sale	—	4,840
Prepaid and other current assets	25,308	23,311
Total current assets	\$ 459,428	\$ 458,861
Property and equipment, net	148,884	149,923
Goodwill	314,340	314,076
Intangible assets, net	492,317	512,785
Deferred income taxes	2,285	2,272
Other investments	26,538	31,094
Other long-term assets	14,051	13,484
TOTAL ASSETS	\$ 1,457,843	\$ 1,482,495
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of lease payable	\$ 1,131	\$ 467
Current portion of long-term debt	6,885	6,885
Accounts payable	32,567	41,951
Accrued liabilities	45,064	49,945
Deferred revenue	7,532	7,757
Total current liabilities	\$ 93,179	\$ 107,005
Lease payable, less current portion	29,545	29,023
Long-term debt, less current portion	659,318	658,372
Warrant liability	7,661	13,129
Deferred income taxes	442	389
Other long-term liabilities	10,442	5,902
Total liabilities	\$ 800,587	\$ 813,820
Stockholders' equity:		
Common stock	65	65
Treasury stock, at cost	(330) (330
Accumulated other comprehensive income	2,841	2,188
Additional paid-in capital	1,086,052	1,074,728
Accumulated deficit	(431,372) (407,976
Total stockholders' equity	\$ 657,256	\$ 668,675
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$ 1,457,843	\$ 1,482,495

See notes to condensed consolidated financial statements.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share data)

(Unaudited)

	Three Months Ended	
	December 2018	December 29, 2017
Revenue	\$ 150,689	\$ 130,925
Cost of revenue	74,064	69,971
Gross profit	76,625	60,954
Operating expenses:		
Research and development	43,525	41,651
Selling, general and administrative	42,519	37,634
Restructuring charges	4,978	4,662
Total operating expenses	91,022	83,947
Loss from operations	(14,397)	(22,993)
Other (expense) income		
Warrant liability gain	5,468	14,608
Interest expense, net	(8,773)	(7,239)
Other (expense) income	(4,569)	7
Total other (expense) income, net	(7,874)	7,376
Loss before income taxes	(22,271)	(15,617)
Income tax expense	1,125	1,353
Loss from continuing operations	(23,396)	(16,970)
Loss from discontinued operations	—	(5,599)
Net loss	\$(23,396)	\$(22,569)
Net loss per share:		
Basic loss per share:		
Loss from continuing operations	\$(0.36)	\$(0.26)
Loss from discontinued operations	—	(0.09)
Loss per share - basic	\$(0.36)	\$(0.35)
Diluted loss per share:		
Loss from continuing operations	\$(0.44)	\$(0.49)
Loss from discontinued operations	—	(0.09)
Loss per share - diluted	\$(0.44)	\$(0.57)
Shares used:		
Basic	65,277	64,325
Diluted	65,444	65,109

See notes to condensed consolidated financial statements.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
 CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
 (In thousands)
 (Unaudited)

	Three Months Ended	
	December 2018	December 29, 2017
Net loss	\$(23,396)	\$ (22,569)
Unrealized loss on short-term investments, net of tax	(256)	(267)
Foreign currency translation gain, net of tax	909	289
Other comprehensive income, net of tax	653	22
Total comprehensive loss	\$(22,743)	\$ (22,547)

See notes to condensed consolidated financial statements.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
(In thousands)
(Unaudited)

	Three Months Ended				Accumulated Other Comprehensive Income	Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity
	Common Stock Shares	Common Stock Amount	Treasury Stock Shares	Treasury Stock Amount				
Balance at September 28, 2018	65,202	\$ 65	(23)	\$(330)	\$ 2,188	\$ 1,074,728	\$(407,976)	\$ 668,675
Vesting of restricted common stock and units	55	—	—	—	—	—	—	—
Issuance of common stock pursuant to employee stock purchase plan	156	—	—	—	—	2,392	—	2,392
Shares repurchased for stock withholdings on restricted stock awards	(18)	—	—	—	—	(341)	—	(341)
Share-based compensation	—	—	—	—	—	9,273	—	9,273
Other comprehensive income, net of tax	—	—	—	—	653	—	—	653
Net loss	—	—	—	—	—	—	(23,396)	(23,396)
Balance at December 28, 2018	65,395	\$ 65	(23)	\$(330)	\$ 2,841	\$ 1,086,052	\$(431,372)	\$ 657,256

See notes to condensed consolidated financial statements.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

(Unaudited)

	Three Months Ended	
	December 2018	December 29, 2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	\$(23,396)	\$ (22,569)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation and intangibles amortization	28,184	26,874
Share-based compensation	9,273	9,992
Warrant liability gain	(5,468)	(14,608)
Deferred financing cost amortization	1,015	1,029
Deferred income taxes	27	403
Restructuring and impairment related charges	2,746	—
Loss on minority equity investment	4,556	—
Changes in assets held for sale from discontinued operations	—	(6,219)
Other adjustments, net	214	1,190
Change in operating assets and liabilities:		
Accounts receivable	(12,308)	38,874
Inventories	1,985	(8,017)
Prepaid expenses and other assets	2,584	(6,583)
Accounts payable	(6,905)	(14,445)
Accrued and other liabilities	145	(2,225)
Income taxes	257	(3,162)
Net cash provided by operating activities	2,909	534
CASH FLOWS FROM INVESTING ACTIVITIES:		
Acquisition of businesses, net	(375)	—
Purchases of property and equipment	(11,521)	(13,823)
Proceeds from sales and maturities of short-term investments	68,034	57,382
Purchases of short-term investments	(68,484)	(17,987)
Purchases of other investments	—	(5,000)
Proceeds associated with discontinued operations	—	(263)
Net cash (used in) provided by investing activities	(12,346)	20,309
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from stock option exercises and employee stock purchases	2,392	3,241
Payments on notes payable	—	(1,721)
Payments of capital leases and assumed debt	(185)	(216)
Repurchase of common stock	(341)	(259)
Net cash provided by financing activities	1,866	1,045
Foreign currency effect on cash	(16)	93
NET CHANGE IN CASH AND CASH EQUIVALENTS	(7,587)	21,981
CASH AND CASH EQUIVALENTS — Beginning of period	\$94,676	\$ 130,104
CASH AND CASH EQUIVALENTS — End of period	\$87,089	\$ 152,085

See notes to condensed consolidated financial statements.

MACOM TECHNOLOGY SOLUTIONS HOLDINGS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Unaudited Interim Financial Information—The accompanying unaudited, condensed consolidated financial statements have been prepared according to the rules and regulations of the United States (the “U.S.”) Securities and Exchange Commission (“SEC”) and, in the opinion of management, reflect all adjustments, which include normal recurring adjustments, necessary for a fair statement of the condensed consolidated balance sheets, condensed consolidated statements of operations, condensed consolidated statement of comprehensive loss, condensed consolidated statement of stockholders' equity and condensed consolidated statements of cash flows of MACOM Technology Solutions Holdings, Inc. (“MACOM”, the “Company”, “us”, “we” or “our”) for the periods presented. We prepare our interim financial information using the same accounting principles we use for our annual audited consolidated financial statements. Certain information and note disclosures normally included in the annual audited consolidated financial statements have been condensed or omitted in accordance with prescribed SEC rules. We believe that the disclosures made in our condensed consolidated financial statements and the accompanying notes are adequate to make the information presented not misleading.

The consolidated balance sheet at September 28, 2018 is as reported in our audited consolidated financial statements as of that date. Our accounting policies are described in the notes to our September 28, 2018 consolidated financial statements, which were included in our Annual Report on Form 10-K for our fiscal year ended September 28, 2018 filed with the SEC on November 16, 2018. We recommend that the financial statements included in this Quarterly Report on Form 10-Q be read in conjunction with the consolidated financial statements and notes included in our Annual Report on Form 10-K for our fiscal year ended September 28, 2018.

Principles of Consolidation—We have one reportable segment, semiconductors and modules. The accompanying consolidated financial statements include our accounts and the accounts of our majority-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

We have a 52- or 53-week fiscal year ending on the Friday closest to the last day of September. The fiscal years 2019 and 2018 include 52 weeks. To offset the effect of holidays, for fiscal years in which there are 53 weeks, we typically include the extra week arising in such fiscal years in the first quarter.

Use of Estimates—The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the U.S. requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities during the reporting periods, the reported amounts of revenue and expenses during the reporting periods, and the disclosure of contingent assets and liabilities at the date of the financial statements. On an ongoing basis, we base estimates and assumptions on historical experience, currently available information and various other factors that management believes to be reasonable under the circumstances. Actual results may differ materially from these estimates and assumptions.

Revenue Recognition—Substantially all of our revenue is derived from sales of high-performance radio frequency (“RF”), microwave, millimeterwave and lightwave semiconductor solutions into three primary markets: Telecom, Data Centers and Industrial and Defense (“I&D”). Revenue is recognized when a customer obtains control of products or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements within the scope of Accounting Standards Codification (“ASC”) 606, Revenue from Contracts with Customers, we perform the following five steps: (1) identify the contract(s) with a customer; (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) we satisfy performance obligations. Sales, value add and other taxes collected on behalf of third parties are excluded from revenue. Our revenue arrangements do not contain significant financing components.

Contracts with our customers principally contain only one distinct performance obligation, which is the sale of products. However, due to multiple products potentially being sold on a single order, we are required to allocate consideration based on the estimated relative standalone selling prices of the promised products.

Our revenue is recognized when the customer obtains control of the product or services, which generally occurs at a point in time, and is based on the contractual shipping terms of a contract. We also have immaterial non-product revenue for which revenue is generally recognized overtime. For each contract, the promise to transfer the control of the products or services, each of which is individually distinct, is considered to be the identified performance obligation. We provide an assurance type warranty which is not sold separately and does not represent a separate performance obligation. Therefore, we account for such warranties under ASC 460, Guarantees, and the estimated costs of warranty claims are generally accrued as cost of revenue in the period the related revenue is recorded. We have agreements with certain customers which may include certain rights of return and pricing programs, including returns

for aged inventory, stock rotation and price protection which affect the transaction price. Sales to these customers and programs offered are in accordance with terms set forth in written agreements, which require us to assess the potential revenue effects of this variable consideration utilizing the expected value method. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. As such, revenue on sales to customers that include rights of return and pricing programs are recorded net of estimated variable consideration, utilizing the expected value method based on historical sales data. We believe that the judgments and estimates we utilize are reasonable based upon current facts and circumstances, however utilizing different judgments and estimates could result in different amounts.

Practical Expedients and Elections— ASC 606 requires that we disclose the aggregate amount of transaction price that is allocated to performance obligations that have not yet been satisfied as of the reporting periods presented. The guidance provides certain practical expedients that limit this requirement and, therefore, we do not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which revenue is recognized at the amount to which we have the right to invoice for services performed. We have elected not to disclose the aggregate amount of transaction prices associated with unsatisfied or partially unsatisfied performance obligations for contracts where these criteria are met.

Our policy is to capitalize any incremental costs incurred to obtain a customer contract, only to the extent that the benefit associated with the costs is expected to be longer than one year. Capitalizable contract costs were not significant both at the date of adoption and as of December 28, 2018.

We account for shipping and handling activities related to contracts with customers as costs to fulfill the promise to transfer the associated products. When shipping and handling costs are incurred after a customer obtains control of the products, we have elected to account for these as costs to fulfill the promise and not as a separate performance obligation. Shipping and handling costs associated with the distribution of products to customers are recorded in costs of revenue generally when the related product is shipped to the customer.

Recent Accounting Pronouncements—Our Recent Accounting Pronouncements are described in the notes to our September 28, 2018 consolidated financial statements, which were included in our Annual Report on Form 10-K for our fiscal year ended September 28, 2018.

Pronouncements Adopted in Fiscal Year 2019

We adopted Accounting Standards Update ("ASU") 2014-09, Revenue from Contracts with Customers, on September 29, 2018. The FASB subsequently issued several amendments and updates to the new revenue standard. We refer to ASU 2014-09 and its related ASUs as "ASC 606". We applied ASC 606 using the modified retrospective method and elected to apply this initial application of the standard only to contracts that are not completed at the date of initial application. We have analyzed this effect and found the adoption of the new guidance did not have a material impact on our consolidated financial statements as of the adoption date and for the period ended December 28, 2018. The reported results for our fiscal year 2019 reflect the application of ASC 606 guidance while the reported results for our fiscal year 2018 were prepared under the guidance of ASC 605, Revenue Recognition.

We adopted ASU 2016-01, Recognition and Measurement of Financial Assets and Financial Liabilities, on September 29, 2018. In February 2018 the FASB issued further amendments to this guidance. This update made amendments to the guidance in generally accepted accounting principles in the U.S. ("GAAP") on the classification and measurement of financial instruments. The new standard significantly revised an entity's accounting related to (1) the classification and measurement of investments in equity securities and (2) the presentation of certain fair value changes for financial liabilities measured at fair value. It also amended certain disclosure requirements associated with the fair value of financial instruments. The adoption of this update did not have a material impact on our consolidated financial statements and related disclosures.

We adopted ASU 2016-15, Classification of Certain Cash Receipts and Cash Payments, on September 29, 2018. This update addressed debt prepayment or debt extinguishment costs, settlement of zero-coupon debt instruments or other debt instruments with coupon interest rates that are insignificant in relation to the effective interest rate of the borrowing, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, proceeds from the settlement of corporate-owned life insurance policies, distributions received from equity method investees, beneficial interests in securitization transactions and separately identifiable cash flows and

application of the predominance principle. The adoption of this update did not have a material impact on our consolidated financial statements and related disclosures.

We adopted ASU 2016-16, Intra-Entity Transfers of Assets Other Than Inventory, on September 29, 2018. This update amended the guidance on recognizing the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs. Consequently, the amendment eliminated the exception for an intra entity transfer of an asset other than inventory. The adoption of this updated standard did not have a material impact on our consolidated financial statements and related disclosures.

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Pronouncements for Adoption in Subsequent Periods

In February 2016, the FASB issued ASU 2016-02, Leases ("Topic 842"). In September 2017 and January, July and December 2018, the FASB issued additional guidance related to Topic 842. The new standard increases transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. Certain qualitative and quantitative disclosures are required, as well as a retrospective recognition and measurement of impacted leases. The new guidance is effective for fiscal years and interim periods within those years beginning after December 15, 2018, with early adoption permitted. We are evaluating the effect that the updated standard will have on our consolidated financial statements and related disclosures and we anticipate that this new guidance will materially impact our financial statements as we have a significant number of operating leases.

2. REVENUE

Disaggregation of Revenue

We disaggregate revenue from contracts with customers by markets and geography, as we believe it best depicts how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors.

The following tables presents our revenue disaggregated by markets and geography (in thousands):

	Three Months Ended December December 28, 2018 29, 2017	
Revenue by Market:		
Industrial & Defense	\$57,283	\$40,714
Data Center	43,247	34,761
Telecom	50,159	55,450
Total	\$150,689	\$130,925

	Three Months Ended December December 28, 2018 29, 2017	
Revenue by Geographic Region:		
United States	\$68,118	\$55,356
China	44,622	37,688
Asia Pacific, excluding China ⁽¹⁾	23,415	22,886
Other Countries ⁽²⁾	14,534	14,995
Total	\$150,689	\$130,925

⁽¹⁾ Asia Pacific represents Taiwan, Japan, Singapore, India, Thailand, South Korea, Australia, Malaysia, New Zealand, the Philippines and Vietnam.

⁽²⁾ No international country or region represented greater than 10% of the total revenue as of the dates presented, other than China and the Asia Pacific region as presented above.

Contract Balances

We record contract assets or contract liabilities depending on the timing of revenue recognition, billings and cash collections on a contract-by-contract basis. Our contract liabilities primarily relate to the deferred revenue, including advance consideration received from customers for contracts prior to the transfer of control to the customer, and therefore revenue is recognized on delivery of products and services.

The following table presents the changes in contract liabilities during the three months ended December 28, 2018 (in thousands):

	December 28, 2018	September 28, 2018	\$ Change	% Change
Contract liabilities	\$ 12,532	\$ 7,757	\$(4,775)	(62)%

As of December 28, 2018, approximately \$5.0 million of our contract liabilities were recorded as other long term liabilities on our balance sheet with the remainder recorded as deferred revenue. The change in contract liabilities during the three months ended December 28, 2018 was primarily from the deferral of revenue for funds received prior to when the customer obtains control of the product or services.

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During the three months ended December 28, 2018, we recognized the following net sales as a result of changes in the contract liabilities balance (in thousands):

Three Months Ended

Net revenue recognized

in the period from:

Amounts included in

contract liabilities at the \$ 323

beginning of the period

3. DIVESTED BUSINESS AND DISCONTINUED OPERATIONS

Divested Business

On May 10, 2018, we completed the sale and transfer of certain assets associated with our Japan-based long-range optical subassembly business (the "LR4 Business"), pursuant to an Asset Purchase and Intellectual Property License Agreement, dated April 30, 2018 (the "LR4 Agreement"). The LR4 Agreement provided that the buyer would pay us \$5.0 million within 30 days following the closing of the transactions contemplated by the LR4 Agreement, provide us with the opportunity to supply components, and would pay us further amounts to be determined for inventory and fixed assets within 60 days of receipt of required government approvals. As of December 28, 2018, we have received \$5.0 million of consideration and expect additional consideration before the end of fiscal 2019 of \$12.2 million, net of tax, which has been recorded as other current assets. As of September 28, 2018, \$7.4 million had been recorded as other current assets and \$4.8 million had been recorded as assets held for sale, as the assets had not been transferred to the buyer as of September 28, 2018.

As a result of the transaction, during fiscal year 2018 we recorded a loss on disposal of \$34.3 million associated with the LR4 Business as other expense, comprised of expected proceeds of \$17.2 million, subject to receipt of required government approvals, less the carrying value of assets sold, primarily including customer relationship intangible assets of \$27.7 million, inventory of \$13.7 million, fixed assets of \$7.6 million and goodwill of \$2.6 million. The transaction did not meet the criteria of discontinued operations. We also entered into a transition services agreement (the "LR4 TSA") with the buyer, pursuant to which we agreed to incur up to \$2.0 million of operating expenses for certain ongoing administrative services to support the buyer for up to six months after the closing of the transaction. During the three months ended December 28, 2018, we have incurred no expenses associated with the LR4 TSA.

Discontinued Operations

On October 27, 2017, we entered into a purchase agreement to sell the Compute business. In consideration for the transfer and sale of the Compute business, we received an equity interest in the buyer, a privately held limited liability company ("Compute"), valued at approximately \$36.5 million, and representing less than 20.0% of Compute's total outstanding equity. The operations of the Compute business were accounted for as discontinued operations through the date of divestiture.

We also entered into a transition services agreement (the "Compute TSA"), pursuant to which we agreed to perform certain primarily general and administrative functions on Compute's behalf during a migration period and for which we are reimbursed for costs incurred. During the three months ended December 28, 2018, we received \$0.1 million of reimbursements under the Compute TSA, which was recorded as a reduction of our general and administrative expenses. During the three months ended December 29, 2017, we received no reimbursements under the Compute TSA.

The accompanying consolidated statements of operations include the following operating results related to these discontinued operations (in thousands):

	Three Months Ended December 29, 2017
Revenue	\$ (2)
Cost of revenue	(540)
Gross profit	538
Operating expenses:	
Research and development	4,710
Selling, general and administrative	1,427
Total operating expenses	6,137
Loss from operations	(5,599)
Loss before income taxes	(5,599)
Income tax provision	—
Loss from discontinued operations	\$ (5,599)

Cash flow from operating activities (10,309)

4. INVESTMENTS

Our short-term investments are invested in corporate bonds and commercial paper, and are classified as available-for-sale. The amortized cost, gross unrealized holding gains or losses, and fair value of our investments by major investment type as of December 28, 2018 and September 28, 2018 are summarized in the tables below (in thousands):

	December 28, 2018			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Aggregate Fair Value
Corporate bonds	\$28,879	\$ —	\$ (633)	\$ 28,246
Commercial paper	70,523	—	(99)	70,424
Total short-term investments	\$99,402	\$ —	\$ (732)	\$ 98,670
	September 28, 2018			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Aggregate Fair Value
Corporate bonds	\$28,731	\$ —	\$ (460)	\$ 28,271
Commercial paper	69,966	—	(16)	69,950
Total short-term investments	\$98,697	\$ —	\$ (476)	\$ 98,221

The contractual maturities of investments were as follows (in thousands):

	December 28, 2018	September 28, 2018
Less than 1 year	\$ 71,162	\$ 70,200
Over 1 year	27,508	28,021
Total short-term investments	\$ 98,670	\$ 98,221

Available-for-sale investments are reported at fair value and as such, their associated unrealized gains and losses are reported as a separate component of stockholders' equity within accumulated other comprehensive income.

Other Investments— As of December 28, 2018, we held two non-marketable equity investments classified as other long-term investments.

One of these is an investment in a Series B preferred stock ownership of a privately held manufacturing corporation with preferred liquidation rights over other equity shares. As the equity securities do not have a readily determinable fair value and do not qualify for the practical expedient under ASC 820 we have elected to hold this investment at cost less any impairment. As of December 28, 2018, the cost of this investment was \$5.0 million. We evaluate this investment for impairment at each balance sheet date, and through December 28, 2018 no impairment has been recorded for this investment.

In addition, we have a minority investment of less than 20.0% of the outstanding equity of Compute that was acquired in conjunction with the divestiture of the Compute business during the fiscal quarter ended December 29, 2017 and had an initial value of \$36.5 million. We have no obligation to provide further funding to Compute. This was a non-cash transaction as we contributed net assets valued at approximately \$36.5 million in exchange for this equity interest. This investment value is updated quarterly based on our proportionate share of the losses or earnings of Compute utilizing the equity method. During the three months ended December 28, 2018 we recorded a \$4.6 million loss associated with this investment as other expense in our consolidated statements of operations. During the three months ended December 29, 2017, no loss associated with this investment was recorded. As of December 28, 2018, the carrying value of this investment was \$21.5 million.

5. FAIR VALUE

We group our financial assets and liabilities measured at fair value on a recurring basis in three levels, based on the markets in which the assets and liabilities are traded and the reliability of the assumptions used to determine fair value. These levels are:

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

Level 2 - Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, quoted prices in markets with insufficient volume or infrequent transactions (less active markets), or model-driven valuations in which all significant inputs are observable or can be derived principally from, or corroborated with, observable market data.

Level 3 - Fair value is derived from valuation techniques in which one or more significant inputs are unobservable, including assumptions and judgments made by us.

Assets and Liabilities Measured and Recorded at Fair Value on a Recurring Basis

We measure certain assets and liabilities at fair value on a recurring basis such as our financial instruments and derivatives. There have been no transfers between Level 1, 2 or 3 assets or liabilities during the three months ended December 28, 2018.

Assets and liabilities measured at fair value on a recurring basis consist of the following (in thousands):

	December 28, 2018			
Fair Value	Active Markets for Identical Assets (Level 1)	Observable Inputs (Level 2)	Unobservable Inputs (Level 3)	
Assets				
Money market funds	\$52	\$ 52	\$ —	\$ —
Commercial paper	70,424	—	70,424	—
Corporate bonds	28,246	—	28,246	—
Total assets measured at fair value	\$98,722	\$ 52	\$ 98,670	\$ —
Liabilities				
Contingent consideration	\$650	\$ —	\$ —	\$ 650
Common stock warrant liability	7,661	—	—	7,661
Total liabilities measured at fair value	\$8,311	\$ —	\$ —	\$ 8,311

	September 28, 2018			
	Fair Value	Active Markets for Identical Assets (Level 1)	Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets				
Money market funds	\$253	\$ 253	\$ —	\$ —
Commercial paper	69,950	—	69,950	—
Corporate bonds	28,271	—	28,271	—
Total assets measured at fair value	\$98,474	\$ 253	\$ 98,221	\$ —
Liabilities				
Contingent consideration	\$585	\$ —	\$ —	\$ 585
Common stock warrant liability	13,129	—	—	13,129
Total liabilities measured at fair value	\$13,714	\$ —	\$ —	\$ 13,714

As of December 28, 2018 and September 28, 2018, the fair value of the common stock warrants has been estimated using a Black-Scholes option pricing model.

The quantitative information utilized in the fair value calculation of our Level 3 liabilities is as follows:

Liabilities	Valuation Technique	Unobservable Input	Inputs December 28, 2018	September 28, 2018
Contingent consideration	Discounted cash flow	Discount rate	9.2%	9.2%
		Probability of achievement	100%	90%
		Timing of cash flows	1 month	1 month
Warrant liability	Black-Scholes model	Volatility	66.7%	60.7%
		Discount rate	2.52%	2.81%
		Expected life	2.0 years	2.2 years
		Exercise price	\$14.05	\$14.05
		Stock price	\$15.00	\$20.60
		Dividend rate	—%	—%

The fair values of the contingent consideration liabilities were estimated based upon a risk-adjusted present value of the probability-weighted expected payments by us. Specifically, we considered base, upside and downside scenarios for the operating metrics upon which the contingent payments are to be based. Probabilities were assigned to each scenario and the probability weighted payments were discounted to present value using risk-adjusted discount rates. The changes in liabilities with inputs classified within Level 3 of the fair value hierarchy consist of the following (in thousands):

	September 28, 2018	Net Realized/Unrealized Losses (Gains) Included in Earnings	Purchases and Issuances	Sales and Settlements	December 28, 2018
Contingent consideration	\$ 585	\$ 65	\$ —	\$ —	\$ 650
Common stock warrant liability	\$ 13,129	\$ (5,468)	\$ —	\$ —	\$ 7,661
	September 29, 2017	Net Realized/Unrealized Gains Included in Earnings	Purchases and Issuances	Sales and Settlements	December 29, 2017
Contingent consideration	\$ 1,679	\$ (573)	\$ —	\$ —	\$ 1,106
Common stock warrant liability	\$ 40,775	\$ (14,608)	\$ —	\$ —	\$ 26,167

6. INVENTORIES

Inventories, net of reserves, consist of the following (in thousands):

	December 28, 2018	September 28, 2018
Raw materials	\$ 69,880	\$ 71,408
Work-in-process	10,555	13,466
Finished goods	40,423	37,963
Total inventory, net	\$ 120,858	\$ 122,837

7. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consists of the following (in thousands):

	December 28, 2018	September 28, 2018
Construction in process	\$ 23,724	\$ 49,661
Machinery and equipment	178,103	174,638
Leasehold improvements	14,004	14,984
Furniture and fixtures	3,496	2,306
Computer equipment and software	18,113	17,317
Capital lease assets	45,059	19,380
Total property and equipment	\$ 282,499	\$ 278,286
Less accumulated depreciation and amortization	(133,615)	(128,363)
Property and equipment, net	\$ 148,884	\$ 149,923

Depreciation and amortization expense related to property, plant and equipment for the three months ended December 28, 2018 was \$7.6 million. Depreciation and amortization expense related to property, plant and equipment for the three months ended December 29, 2017 was \$7.7 million. Accumulated depreciation on capital lease assets as of December 28, 2018 and September 28, 2018 was \$3.7 million and \$3.2 million, respectively.

8. DEBT

As of December 28, 2018, we are party to a credit agreement dated as of May 8, 2014 with a syndicate of lenders and Goldman Sachs Bank USA ("Goldman Sachs"), as administrative agent (as amended on February 13, 2015, August 31, 2016, March 10, 2017, May 19, 2017, May 2, 2018 and May 9, 2018, the "Credit Agreement").

As of December 28, 2018, the Credit Agreement consisted of term loans with an aggregate principal amount of \$700.0 million ("Term Loans") and a revolving credit facility with an aggregate borrowing capacity of \$160.0 million (the "Revolving Facility"). The Revolving Facility will mature in November 2021 and the Term Loans will mature in May 2024 and bear interest at: (i) for LIBOR loans for any interest period, a rate per annum equal to the LIBOR rate as determined by the administrative agent, plus an applicable margin of 2.25%; and (ii) for base rate loans, a rate per annum equal to the greater of (a) the prime rate quoted in the print edition of the Wall Street Journal, Money Rates Section, (b) the federal funds rate plus one-half of 1.00% and (c) the LIBOR rate applicable to a one-month interest period plus 1.00% (but, in each case, not less than 1.00%), plus an applicable margin of 1.25%.

All principal amounts outstanding and interest rate information as of December 28, 2018, for the Credit Agreement were as follows (in thousands, except rate data):

	Principal Outstanding	LIBOR Rate	Margin	Effective Interest Rate
Term loans	\$679,856	2.34%	2.25%	4.59%

As of December 28, 2018, approximately \$10.1 million of deferred financing costs remain unamortized, of which \$9.3 million is related to the Term Loans and is recorded as a direct reduction of the recognized debt liabilities in our accompanying consolidated balance sheet, and \$0.8 million is related to the Revolving Facility and is recorded in other long-term assets in our accompanying consolidated balance sheet.

The Term Loans and Revolving Facility are secured by a first priority lien on substantially all of our assets and provide that we must comply with certain financial and non-financial covenants.

The Term Loans are payable in quarterly principal installments of approximately \$1.7 million on the last business day of each calendar quarter, with the remainder due on the maturity date. In the event that we divest a business, the net cash proceeds of the divestment are generally required, subject to certain exceptions, to be applied to repayment of outstanding Term Loans except to the extent we reinvest such proceeds in assets useful for our business within 18 months of receiving the proceeds. If we enter into a binding agreement to reinvest such proceeds within 18 months of receiving them, we have until the later of 18 months following our receipt of the proceeds and 6 months following the date of such agreement to complete the reinvestment.

As of December 28, 2018, we had \$160.0 million of borrowing capacity under our Revolving Facility.

As of December 28, 2018, the following remained outstanding on the Term Loans (in thousands):

Principal balance	\$679,856
Unamortized discount	(4,321)
Unamortized deferred financing costs	(9,332)
Total term loans	\$666,203
Current portion	6,885
Long-term, less current portion	\$659,318

As of December 28, 2018, the minimum principal payments under the Term Loans in future fiscal years were as follows (in thousands):

2019 (remainder of fiscal year)	\$6,885
2020	6,885
2021	6,885
2022	6,885
2023	6,885
Thereafter	645,431
Total	\$679,856

The fair value of the Term Loans was estimated to be approximately \$689.2 million as of December 28, 2018 and September 28, 2018, and was determined using Level 2 inputs, including a quoted rate from a bank.

9. CAPITAL LEASE AND FINANCING OBLIGATIONS

Corporate Facility Financing Obligation

On December 28, 2016, we entered into three lease agreements including a 20 year leaseback of a facility located at 100 Chelmsford Street, a 20 year build-to-suit lease arrangement for the construction and subsequent lease back, commenced on October 1, 2018, of a new facility located at 144 Chelmsford Street, and a 14 year building lease renewal of an adjacent facility at 121 Hale Street, collectively the "Lowell Leases".

The Lowell Leases are accounted for by us as a single unit of accounting, and are accounted for under the financing method.

As of October 1, 2018, the construction of the facility at 144 Chelmsford Street was completed, the building was placed in service and the associated lease term commenced.

We calculated a lease obligation based on the future minimum lease payments discounted at 7.2% as of October 1, 2018. The discount rate represents the estimated incremental borrowing rate over the lease term of 20 years. The minimum lease payments are recorded as interest expense and in part as a payment of principal reducing the lease obligation. The real property assets in the transaction remain on the consolidated balance sheets and continue to be depreciated over the remaining useful lives. As of December 28, 2018 and September 28, 2018, the outstanding lease obligations associated with the Lowell Leases included in leases payable in the consolidated balance sheets, were approximately \$28.5 million and \$28.3 million, respectively.

Additionally, we have certain capital equipment lease obligations, of which approximately \$2.2 million and \$1.2 million was outstanding as of December 28, 2018 and September 28, 2018, respectively.

As of December 28, 2018, future minimum payments under capital lease obligations were as follows (in thousands):

Fiscal year ending:	Amount
2019 (remainder of fiscal year)	\$2,495
2020	3,308
2021	3,231
2022	2,638
2023	2,563
Thereafter	42,247
Total minimum capital lease payments	56,482
Less amount representing interest	(27,515)
Present value of net minimum capital lease payments	\$28,967

10. INTANGIBLE ASSETS

Amortization expense related to intangible assets is as follows (in thousands):

	Three Months Ended	
	December 28, 2018	December 29, 2017
Cost of revenue	\$ 8,052	\$ 8,147
Selling, general and administrative	12,519	10,993
Total	\$ 20,571	\$ 19,140

Intangible assets consist of the following (in thousands):

	December 28, 2018	September 28, 2018
Acquired technology	\$ 251,778	\$ 251,673
Customer relationships	518,234	518,234
Trade name	3,400	3,400
Total	\$ 773,412	\$ 773,307
Less accumulated amortization	(281,095)	(260,522)
Intangible assets — net	\$ 492,317	\$ 512,785

Our trade name is an indefinite-lived intangible asset. A summary of the activity in intangible assets and goodwill follows (in thousands):

	Intangible Assets				
	Total Intangible Assets	Acquired Technology	Customer Relationships	Trade Name	Goodwill
Balance at September 28, 2018	\$ 773,307	\$ 251,673	\$ 518,234	\$ 3,400	\$ 314,076
Currency translation adjustment	105	105	—	—	264
Balance at December 28, 2018	\$ 773,412	\$ 251,778	\$ 518,234	\$ 3,400	\$ 314,340

As of December 28, 2018, our estimated amortization of our intangible assets in future fiscal years was as follows (in thousands):

	2019 Remaining	2020	2021	2022	2023	Thereafter	Total
Amortization expense	\$ 63,209	81,698	74,084	61,847	51,470	156,609	\$ 488,917

Accumulated amortization for acquired technology and customer relationships were \$148.1 million and \$133.0 million, respectively, as of December 28, 2018, and \$140.0 million and \$120.5 million, respectively, as of September 28, 2018.

11. STOCKHOLDERS' EQUITY

We have authorized 10 million shares of \$0.001 par value preferred stock and 300 million shares of \$0.001 par value common stock as of December 28, 2018 and September 28, 2018.

Common Stock Warrants—In March 2012, we issued warrants to purchase 1,281,358 shares of common stock for \$14.05 per share. The warrants expire December 21, 2020, or earlier as per the terms of the agreement, including immediately following consummation of a sale of all or substantially all assets or capital stock or other equity securities, including by merger, consolidation, recapitalization or similar transactions. We do not currently have sufficient registered and available shares to immediately satisfy a request for registration, if such a request were made. As of December 28, 2018, no exercise of the warrants had occurred, and no request had been made to register the warrants or any underlying securities for resale by the holders.

We are recording the estimated fair values of the warrants as a long-term liability in the accompanying consolidated financial statements with changes in the estimated fair value being recorded in the accompanying statements of operations. See Note 5 - Fair Value for additional information related to the fair value of our warrant liability.

12. EARNINGS (LOSS) PER SHARE

The following table sets forth the computation for basic and diluted net loss per share of common stock (in thousands, except per share data):

	Three Months Ended	
	December 28, 2018	December 29, 2017
Numerator:		
Loss from continuing operations	\$(23,396)	\$ (16,970)
Loss from discontinued operations	—	(5,599)
Net loss	\$(23,396)	\$ (22,569)
Warrant liability gain	(5,468)	(14,608)
Net loss attributable to common stockholders	\$(28,864)	\$ (37,177)
Denominator:		
Weighted average common shares outstanding-basic	65,277	64,325
Dilutive effect of warrants	167	784
Weighted average common shares outstanding-diluted	65,444	\$ 65,109
Loss per share-basic:		
Continuing operations	\$(0.36)	\$ (0.26)
Discontinued operations	0.00	(0.09)
Net loss to common stock holders per share-basic	\$(0.36)	\$ (0.35)
Loss per share-diluted:		
Continuing operations	\$(0.44)	\$ (0.49)
Discontinued operations	0.00	(0.09)
Net loss to common stock holders per share-diluted	\$(0.44)	\$ (0.57)

As of December 28, 2018, we had warrants outstanding which were reported as a liability on the consolidated balance sheet. During the three months ended December 28, 2018 and December 29, 2017, we recorded \$5.5 million and \$14.6 million of warrant gains, respectively, associated with adjusting the fair value of the warrants in the consolidated statements of operations primarily as a result of changes in our stock price. When calculating earnings per share we are required to adjust for the dilutive effect of outstanding common stock equivalents, including adjustment to the numerator for the dilutive effect of contracts that must be settled in stock. During the three months ended December 28, 2018 and December 29, 2017 we adjusted the numerator by the warrant gains of \$5.5 million \$14.6 million, respectively, and the denominator by the incremental shares of 166,750 and 783,508, respectively, under the treasury stock method. The table above excludes the effects of 129,041 and 499,831 shares for the three months ended December 28, 2018 and December 29, 2017, respectively, of potential shares of common stock issuable upon exercise of stock options, restricted stock and restricted stock units as the inclusion would be antidilutive.

13. COMMITMENTS AND CONTINGENCIES

From time to time, we may be subject to commercial disputes, employment issues, claims by other companies in the industry that we have infringed their intellectual property rights and other similar claims and litigations. Any such claims may lead to future litigation and material damages and defense costs. Other than as set forth below, we were not involved in any material pending legal proceedings during the fiscal quarter ended December 28, 2018.

GaN Lawsuit Against Infineon. On April 26, 2016, we and our wholly-owned subsidiary Nitronex, LLC brought suit against Infineon Technologies Americas Corporation ("Infineon Americas") and Infineon Technologies AG ("Infineon AG" and collectively, with Infineon Americas, "Infineon") in the Federal District Court for the Central District of California, seeking injunctive relief, monetary damages, and specific performance of certain contractual obligations. The suit arose out of agreements relating to GaN-on-Silicon patents that were executed in 2010 by Nitronex Corporation (acquired by us in 2014) and International Rectifier Corporation (acquired by Infineon AG in 2015). We asserted claims for breach of contract, breach of the covenant of good faith and fair dealing, declaratory judgment of contractual rights, declaratory judgment of non-infringement of patents, and, against Infineon AG only, intentional interference with contract and unfair competition, and Infineon Americas asserted contract and patent infringement counterclaims. In an order dated October 31, 2016, the district court granted us a preliminary injunction against Infineon, which then issued on December 7, 2016 and was modified on March 6, 2017. The preliminary injunction declared, among other things, that a licensing agreement between us and Infineon that Infineon had purported to terminate is still in effect. On January 29, 2018, the Federal Circuit affirmed the district court's decision to enter a preliminary injunction declaring the license agreement to still be in effect, although it reversed other aspects of the district court's decision. The parties entered into a settlement agreement in October 2018 pursuant to which all claims and counterclaims in the litigation were dismissed by the district court on November 1, 2018 and the patents in dispute were assigned back to MACOM, among other terms.

14. RESTRUCTURINGS

We have periodically implemented restructuring actions in connection with broader plans to reduce staffing, reduce our internal manufacturing footprint and generally reduce operating costs. The restructuring expenses are primarily comprised of direct and incremental costs related to headcount reductions including severance and outplacement fees for the terminated employees, as well as facility closure costs.

During the fiscal quarter ended September 28, 2018, we initiated a plan to exit certain production and product lines, primarily including certain production facilities located in Ithaca, New York. We incurred restructuring charges of \$5.0 million in the three months ended December 28, 2018 for these facilities, and we expect to incur restructuring costs of approximately \$1.5 million to \$2.0 million during the remainder of fiscal year 2019 as we complete these restructuring actions.

During the fiscal quarter ended December 29, 2017, we initiated plans to restructure our facility in Long Beach, California and to close our facilities in Belfast, United Kingdom and Sydney, Australia. The operations from the Long Beach facility were consolidated into our other California locations in order to achieve operational synergies. The Belfast and Sydney facilities were closed as we discontinued certain product development activities that were performed in those locations.

The following is a summary of the restructuring charges incurred for the three months ended December 28, 2018 and December 29, 2017 under these restructuring plans (in thousands):

	Three Months Ended	
	December 28,	December 29,
	2018	2017
Employee related expenses	\$ 1,153	\$ 2,571
Facility related expenses	3,825	2,091
Total restructuring charges	\$ 4,978	\$ 4,662

The following is a summary of the costs incurred for the three months ended December 28, 2018 and the remaining balances included in accrued expenses at December 28, 2018 (in thousands):

Balance as of September 28, 2018	\$ 89
Current period expense	4,978

Charges paid/settled	(4,277)
Balance as of December 28, 2018	\$ 790

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On February 1, 2019, we committed to a plan to exit certain design facilities. There were no restructuring charges incurred as of December 28, 2018 for this plan, and we expect to incur restructuring costs of approximately \$3.7 million to \$4.2 million during the remainder of fiscal year 2019 as we complete these restructuring actions, of which approximately \$0.9 million to \$1.1 million is expected to be future cash expenditures.

15. SHARE-BASED COMPENSATION

Stock Plans

As of December 28, 2018, we had 15.7 million shares available for issuance under our 2012 Omnibus Incentive Plan (as Amended and Restated) (the “2012 Plan”) and 3.6 million shares available for issuance under our Employee Stock Purchase Plan. Under the 2012 Plan, we have the ability to issue incentive stock options (“ISOs”), non-statutory stock options (“NSOs”), performance based non-statutory stock options, stock appreciation rights, restricted stock (“RSAs”), restricted stock units (“RSUs”), performance-based restricted stock units (“PRsUs”), performance shares and other equity-based awards to employees, directors and outside consultants. The ISOs and NSOs must be granted at a price per share not less than the fair value of our common stock on the date of grant. Options granted to date primarily vest based on certain market-based and performance-based criteria. Options granted generally have a term of four to seven years. Certain of the share-based awards granted and outstanding as of December 28, 2018 are subject to accelerated vesting upon a change in control.

Share-Based Compensation

The following table shows a summary of share-based compensation expense included in the Condensed Consolidated Statements of Operations for the three months ended December 28, 2018 and December 29, 2017 (in thousands):

	Three Months Ended	
	December 28,	December 29,
	2018	2017
Cost of revenue	\$674	\$ 945
Research and development	2,822	3,662
Selling, general and administrative	5,777	5,385
Total share-based compensation expense	\$9,273	\$ 9,992

As of December 28, 2018, the total unrecognized compensation costs related to outstanding stock options, restricted stock awards and units including awards with time-based and performance-based vesting was \$89.2 million, which we expect to recognize over a weighted-average period of 2.5 years. As of December 28, 2018, total unrecognized compensation cost related to our Employee Stock Purchase Plan was \$1.1 million.

Stock Options

A summary of stock option activity for the three months ended December 28, 2018 is as follows (in thousands, except per share amounts and contractual term):

	Number of Shares	Weighted-Average Exercise Price per Share	Weighted-Average Remaining Contractual Term (in Years)	Aggregate Intrinsic Value
Options outstanding - September 28, 2018	1,408	32.05		
Granted	395	16.06		
Exercised	0	2.00		
Forfeited, canceled or expired	(1,171)	35.64		
Options outstanding - December 28, 2018	632	15.41	5.72	994
Options vested and expected to vest - December 28, 2018	632	15.41	5.72	994
Options exercisable - December 28, 2018	217	12.30	3.76	994

Aggregate intrinsic value represents the difference between our closing stock price on December 28, 2018 and the exercise price of outstanding, in-the-money options. During the three months ended December 28, 2018, there were

100 options exercised. The total intrinsic value of options exercised was not material for the three months ended December 28, 2018 and was \$0.5 million for the three months ended December 28, 2017.

Stock Options with Market-based Vesting Criteria

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We grant non-qualified stock options that are subject to vesting only upon the market price of our underlying public stock closing above a certain price target within seven years of the date of grant. Share-based compensation expense is recognized regardless of the number of awards that are earned based on the market condition and is recognized on a straight-line basis over the estimated service period. If the required service period is not met for these options, then the share-based compensation expense would be reversed. In the event that our common stock achieves the target price per share based on a 30-day trailing average prior to the end of the estimated service period, any remaining unamortized compensation cost will be recognized.

We granted 395,000 market-based stock options during the three months ended December 28, 2018, at a weighted average grant date fair value of \$7.17 per share, or \$2.8 million. These options have a weighted average strike price of \$16.06.

These non-qualified stock options with market based vesting conditions were valued using a Monte Carlo simulation model. The weighted average Monte Carlo input assumptions used for calculating the fair value of these market-based stock options are as follows:

	Three	
	Months	
	Ended	
	December	
	28, 2018	
Risk-free interest rate	3.1	%
Expected term (years)	3.8	
Expected volatility rate	51.4	%
Target price	\$61.32	

During the three months ended December 28, 2018, we canceled 1,122,500 performance-based stock options with a concurrent grant of 748,328 PRSUs for 13 employees, which was accounted for as a modification. The incremental compensation cost resulting from the modification was \$8.2 million, and will be recognized as share-based compensation expense over the requisite service period of the new PRSU awards.

Restricted Stock, Restricted Stock Units and Performance-Based Restricted Stock Units

A summary of RSAs, RSUs and PRSUs activity for the three months ended December 28, 2018, is as follows (in thousands, except per share data):

	Number of RSAs, RSUs and PRSUs	Weighted- Average Grate Date Fair Value	Aggregate Intrinsic Value (in thousands)
Balance at September 28, 2018	1,872	\$ 34.15	\$ 38,452
Granted	1,149	\$ 16.59	
Vested and released	(55)	\$ 39.02	
Forfeited, canceled or expired	(66)	\$ 36.30	
Balance at December 28, 2018	2,900	\$ 27.05	\$ 43,415

RSAs, RSUs and PRSUs that vested during the three months ended December 28, 2018 and December 29, 2017 had fair value of \$1.0 million and \$0.7 million, respectively, as of the vesting date.

16. INCOME TAXES

We are subject to income tax in the U.S. as well as other tax jurisdictions in which we conduct business. Earnings from non-U.S. activities are subject to local country income tax and may also be subject to current U.S. income tax. For interim periods, we record a tax provision or benefit based upon the estimated effective tax rate expected for the full fiscal year, adjusted for material discrete taxation matters arising during the interim periods.

Income tax expense was \$1.1 million for the three months ended December 28, 2018, compared to an expense of \$1.4 million for the three months ended December 29, 2017. The difference between the U.S. federal statutory income tax rate of 21% for the three months ended December 28, 2018 was primarily driven by the continuation of a full

valuation allowance against any benefit associated with U.S. losses and income taxed in foreign jurisdictions at generally lower tax rates. The difference between the U.S. federal statutory income tax rate of 35% for the three months ended December 29, 2017 was also primarily driven by the continuation of a full valuation allowance against any benefit associated with U.S. losses and income taxed in foreign jurisdictions at generally lower tax rates. We recognize deferred tax assets to the extent that we believe that these assets are more likely than not to be realized. In making this determination, we consider available positive and negative evidence and factors that may impact the valuation of our deferred tax asset including results of recent operations, future reversals of existing taxable temporary differences, projected future

taxable income, and tax-planning strategies. A significant piece of objective negative evidence evaluated was the cumulative U.S. loss initially incurred over the three-year period ended December 28, 2018, which we believe limited our ability to consider other subjective evidence, such as our projections for future growth. Significant negative objective evidence in the form of adjusted cumulative losses in the U.S. over the three-year period ended December 28, 2018 resulted in our continued determination that there was not sufficient objectively verifiable positive evidence to offset this negative objective evidence and we concluded that a full valuation allowance was still appropriate for our U.S. deferred tax assets.

All earnings of foreign subsidiaries are considered indefinitely reinvested for the periods presented. During the fiscal quarter ended December 28, 2018, we finalized our calculation of the one-time deemed repatriation of gross foreign earnings and profits totaling \$155.6 million, which will result in approximately \$86.3 million in U.S. taxable income for the year ended September 28, 2018. Due to the fact that we are in a full valuation allowance, the adjusted one-time deemed repatriation will continue to have no impact on our tax expense. We also continue to expect that our tax loss for the year ended September 28, 2018 along with any net operating loss ("NOL") carryforwards will fully offset this one-time deemed repatriation of taxable income resulting in no additional cash tax payments.

The balance of the unrecognized tax benefits as of December 28, 2018 and September 28, 2018 was \$1.0 million and \$0.3 million, respectively. The increase of \$0.7 million in unrecognized tax benefits during the fiscal quarter ended December 28, 2018 resulted from finalizing the transition tax impact relating to the one-time deemed repatriation of gross foreign earnings and profits for the year ended September 28, 2018. In finalizing the transition tax, we identified certain tax accounting method changes that were required to compute the correct transition tax, yet the tax law prohibited adopting these correct methods without filing for and receiving Internal Revenue Service ("IRS") permission to change our method. The increase in transition tax related to these non-automatic method changes requiring IRS approval was \$0.7 million and represents the increase in our FIN 48 reserve balance to \$1.0 million as of December 28, 2018. Out of the total reserve balance of \$1.0 million, \$0.3 million, if recognized, will reduce income tax expense.

It is also our policy to recognize any interest and penalties accrued related to unrecognized tax benefits in income tax expense. During the fiscal quarters ended December 28, 2018 and September 28, 2018, we did not make any accrual or payment of interest and penalties due to our NOL carryforward position within the U.S.

On December 22, 2017, the U.S. Congress enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"). The Tax Act enacted a wide range of changes to the U.S. corporate income tax system, many of which differ significantly from the provisions of the previous U.S. tax law. The Tax Act also transitions international taxation from a worldwide system with deferral to a modified territorial system and includes base erosion prevention measures on non-U.S. earnings, which has the effect of subjecting certain earnings of our foreign subsidiaries to U.S. taxation as global intangible low-taxed income. These changes became effective in our fiscal year beginning September 29, 2018.

Based upon our projected U.S. NOL carryforward into the tax year ending September 27, 2019, combined with our full valuation allowance, we estimate that the changes resulting from the Tax Act will have little impact upon our effective tax rate.

17. RELATED PARTY TRANSACTIONS

Cadence Design Systems, Inc. ("Cadence") provides us with certain engineering licenses on an ongoing basis. Geoffrey Ribar, who joined our board of directors on March 22, 2017, served as an officer of Cadence through September 30, 2017 and served as a Senior Advisor to Cadence until March 31, 2018. During the three months ended December 29, 2017, we made payments of \$1.8 million to Cadence subsequent to Mr. Ribar joining our board of directors.

18. SUPPLEMENTAL CASH FLOW INFORMATION

As of December 28, 2018 and December 29, 2017, we had \$3.0 million and \$1.2 million, respectively, in unpaid amounts related to purchases of property and equipment included in accounts payable and accrued liabilities during each period. These amounts have been excluded from the payments for purchases of property and equipment in the accompanying condensed consolidated statements of cash flows until paid.

During the three months ended December 28, 2018 and December 29, 2017, we capitalized \$1.1 million and \$2.1 million, respectively, of net construction costs relating to the 144 Chelmsford Street facility, of which \$0.2 million and \$2.1 million, respectively, were accounted for as a non-cash transaction as the costs were paid by the developer.

The following is supplemental cash flow information regarding non-cash investing and financing activities (in thousands):

	Three Months Ended	
	December 28, 2018	December 29, 2017
Cash paid for interest	\$5,912	\$ 6,938
Cash paid for income taxes	\$28	\$ 4,155

19. GEOGRAPHIC AND SIGNIFICANT CUSTOMER INFORMATION

We have one reportable operating segment that designs, develops, manufactures and markets semiconductors and modules. The determination of the number of reportable operating segments is based on the chief operating decision maker's use of financial information for the purposes of assessing performance and making operating decisions. In evaluating financial performance and making operating decisions, the chief operating decision maker primarily uses consolidated revenue, gross profit and operating income (loss).

For information about our revenue in different geographic regions, based upon customer locations, see Note 2 - Revenue. Information about our long-lived assets in different geographic regions is presented below (in thousands):

Long-Lived Assets by Geographic Region	As of	
	December 28, 2018	September 28, 2018
United States	\$122,740	\$ 122,888
Asia Pacific ⁽¹⁾	23,732	24,702
Other Countries ⁽²⁾	2,412	2,333
Total	\$148,884	\$ 149,923

(1) Asia Pacific represents Taiwan, India, Japan, Thailand, South Korea, Australia, Malaysia, New Zealand, the Philippines, Vietnam and China.

(2) No international country or region represented greater than 10% of the total net long-lived assets as of the dates presented, other than the Asia Pacific region as presented above.

The following is a summary of customer concentrations as a percentage of revenue and accounts receivable as of and for the periods presented:

Revenue	Three Months Ended	
	December 28, 2018	December 29, 2017
Customer A	15 %	10 %

Accounts Receivable	December 28, September 28,			
	2018		2018	
Customer A	20 %	19 %		
Customer B	8 %	26 %		

No other customer represented more than 10% of revenue or accounts receivable in the periods presented in the accompanying consolidated financial statements. For the three months ended December 28, 2018, our top ten customers represented 61% of total revenue, and for the three months ended December 29, 2017, our top ten customers represented 51% of total revenue, respectively.

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

The following discussion of our financial condition and results of operations should be read in conjunction with the condensed consolidated financial statements and the notes thereto included elsewhere in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the fiscal year ended September 28, 2018 filed with the United States Securities and Exchange Commission ("SEC") on November 16, 2018.

In this document, the words “Company,” “we,” “our,” “us,” and similar terms refer only to MACOM Technology Solutions Holdings, Inc. and its consolidated subsidiaries, and not any other person or entity.

“MACOM,” “M/A-COM,” “M/A-COM Technology Solutions,” “M/A-COM Tech,” “Partners in RF & Microwave” and related logos are trademarks of MACOM Technology Solutions Holdings, Inc. All other brands and names listed are trademarks of their respective owners.

Cautionary Note Regarding Forward-Looking Statements

This Item 2, “Management's Discussion and Analysis of Financial Condition and Results of Operations” and other sections of this Quarterly Report on Form 10-Q contain “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. In addition, we may make other written and oral communications from time to time that contain such statements. Forward-looking statements include statements as to industry trends and our future expectations and other matters that do not relate strictly to historical facts. These statements are often identified by the use of words such as “anticipates,” “believes,” “could,” “continue,” “estimates,” “expects,” “intends,” “may,” “plans,” “predicts,” “projects,” “seeks,” “should,” “targets,” “will,” “would” and similar expressions or variations. These statements are based on management's beliefs and assumptions as of the date of this Quarterly Report on Form 10-Q, based on information currently available to us. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results to differ materially from future results expressed or implied by such forward-looking statements. Important factors that could cause actual results to differ materially from the forward-looking statements include, among others, the risks described in the section entitled “Risk Factors” in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the fiscal year ended September 28, 2018 filed with the SEC on November 16, 2018. We caution the reader to carefully consider such factors. Furthermore, such forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements.

Overview

We are a leading provider of high-performance analog semiconductor solutions that enable next-generation communications infrastructure build-outs across a broad array of customers and applications, spanning radio frequency (“RF”), microwave, millimeterwave frequencies and lightwave spectrum—from “RF to light”. We help our customers, including some of the world’s leading communications infrastructure and aerospace and defense companies, solve complex challenges in areas including network capacity, signal coverage, energy efficiency and field reliability, utilizing our best-in-class team and broad portfolio of analog RF, microwave, millimeterwave and lightwave semiconductor solutions.

We design, develop and manufacture differentiated, high-value products for customers who demand high performance, quality and reliability. We offer a broad portfolio of over 5,000 standard and custom devices, which include integrated circuits (“IC”), multi-chip modules (“MCM”), power pallets and transistors, diodes, amplifiers, switches and switch limiters, passive and active components and complete subsystems, across more than 60 product lines serving over 7,000 end customers in three primary markets. Our semiconductor products are electronic components that our customers incorporate into their larger electronic systems, such as, wireless basestations, high capacity optical networks, active antenna arrays, radar, magnetic resonance imaging systems (“MRI”) and test and measurement. Our primary markets are: (1) Telecom, which includes carrier infrastructure like long-haul/metro, 5G and FTTx/PON; (2) Data Centers, enabled by our broad portfolio of photonic solutions and fiber optic applications; and (3) Industrial and Defense (“I&D”), which includes military and commercial radar, RF jammers, electronic countermeasures, communication data links and multi-market applications, which include industrial, medical, test and measurement and scientific applications.

Description of Our Revenue

Revenue. Substantially all of our revenue is derived from sales of high-performance RF, microwave, millimeterwave and lightwave semiconductor solutions. We design, integrate, manufacture and package differentiated product solutions that we sell to customers through our direct sales organization, our network of independent sales representatives and our distributors.

We believe the primary drivers of our future revenue growth will include:

- engaging early with our lead customers to develop products and solutions that can be driven across multiple growth markets;

leveraging our core strength and leadership position in standard, catalog products that service all of our end applications;

- increasing content of our semiconductor solutions in our customers' systems through cross-selling of our more than 60 product lines;
- introducing new products through internal development and acquisitions with market reception that command higher prices based on the application of advanced technologies, added features, higher levels of integration and improved performance; and

continued growth in the market for high-performance analog and optical semiconductors in our three primary markets in particular.

Our core strategy is to develop and innovate high-performance products that address our customers' most difficult technical challenges in our primary markets: Telecom, Data Center and I&D. While sales in any or all of our primary markets may slow or decline from period to period, over the long-term we generally expect to benefit from our strength in these markets.

We expect our revenue in the Telecom market to be primarily driven by continued upgrades and expansion of communications equipment to support the proliferation of mobile computing devices such as smartphones and tablets, increasing adoption of bandwidth rich services such as video on demand and cloud computing.

We expect our Data Center market to be driven by the rapid adoption of cloud-based services and the migration to an application centric architecture, which we expect will drive adoption of higher speed, 100G and higher speed optical and photonic wireless links.

We expect our revenue in the I&D market to be driven by the upgrading of radar systems and modern battlefield communications equipment and networks designed to improve situational awareness. Growth in this market is subject to changes in governmental programs and budget funding, which is difficult to predict. We expect revenue in this market to be further supported by growth in applications for our multi-purpose catalog products.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements. The preparation of financial statements, in conformity with U.S GAAP, requires management to make estimates and judgments 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 revenue and expenses during the reporting period. By their nature, these estimates and judgments are subject to an inherent degree of uncertainty and could be material if our actual or expected experience were to change unexpectedly. On an ongoing basis, we re-evaluate our estimates and judgments.

We base our estimates and judgments on our historical experience and on other assumptions that we believe are reasonable under the circumstances, the results of which form the basis for making the judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results could differ from those estimates and material effects on our operating results and financial position may result. The accounting policies which our management believes involve the most significant application of judgment or involve complex estimation, are inventories and associated reserves; goodwill and intangibles asset valuations and associated impairment assessments; revenue reserves; warranty reserves; and share-based compensation valuations.

For additional information related to these and other accounting policies refer to Note 2 - Summary of Significant Accounting Policies to our Consolidated Financial Statements included in Item 8 of Part II, "Financial Statements and Supplementary Data," of our 2018 Annual Report on Form 10-K for the fiscal year ended September 28, 2018 and Note 1 - Summary of Significant Accounting Policies to our Consolidated Financial Statements in this Quarterly Report on Form 10-Q.

Results of Operations

The following table sets forth, for the periods indicated, our statements of operations data (in thousands):

	Three Months Ended	
	December 28, 2018	December 29, 2017
Revenue	\$150,689	\$ 130,925
Cost of revenue ⁽¹⁾	74,064	69,971
Gross profit	\$76,625	\$ 60,954
Operating expenses:		
Research and development ⁽¹⁾	43,525	41,651
Selling, general and administrative ^{(1) (2)}	42,519	37,634
Restructuring charges	4,978	4,662
Total operating expenses	\$91,022	\$ 83,947
Loss from operations	\$(14,397)	\$ (22,993)
Other (expense) income		
Warrant liability gain ⁽³⁾	5,468	14,608
Interest expense	(8,773)	(7,239)
Other (expense) income ⁽⁴⁾	(4,569)	7
Total other (expense) income, net	\$(7,874)	\$ 7,376
Loss before income taxes	(22,271)	(15,617)
Income tax expense	1,125	1,353
Loss from continuing operations	\$(23,396)	\$ (16,970)
Loss from discontinued operations ⁽⁵⁾	—	(5,599)
Net loss	\$(23,396)	\$ (22,569)

(1) Includes (a) Amortization expense related to intangible assets arising from acquisitions and (b) Share-based compensation expense included in our consolidated statements of operations as set forth below (in thousands):

	Three Months Ended	
	December 28, 2018	December 29, 2017
(a) Intangible amortization expense:		
Cost of revenue	\$8,052	\$ 8,147
Selling, general and administrative	12,519	10,993
(b) Share-based compensation expense:		
Cost of revenue	\$674	\$ 945
Research and development	2,822	3,662
Selling, general and administrative	5,777	5,385

(2) Includes specific litigation costs of \$0.2 million incurred in the three months ended December 28, 2018, respectively, and \$0.8 million incurred in the three months ended December 29, 2017, primarily related to the GaN lawsuit. See Note 13 - Commitments and Contingencies to our Consolidated Financial Statements in this Quarterly Report on Form 10-Q for additional information.

(3) Represents changes in the fair value of common stock warrants recorded as liabilities and adjusted each reporting period to fair value.

(4) Includes \$4.6 million of losses for the three months ended December 28, 2018, associated with our equity method investment in Compute based on our proportionate share of the losses of Compute.

(5) See Note 3 - Divested Business and Discontinued Operations to our Consolidated Financial Statements in this Quarterly Report on Form 10-Q for additional information.

The following table sets forth, for the periods indicated, our statements of operations data expressed as a percentage of our revenue:

	Three Months Ended		
	December 28, 2018	December 29, 2017	
Revenue	100.0 %	100.0 %	
Cost of revenue	49.2	53.4	
Gross profit	50.8	46.6	
Operating expenses:			
Research and development	28.9	31.8	
Selling, general and administrative	28.2	28.7	
Restructuring charges	3.3	3.6	
Total operating expenses	60.4	64.1	
Loss from operations	(9.6)	(17.6)	
Other (expense) income			
Warrant liability gain	3.6	11.2	
Interest expense	(5.8)	(5.5)	
Other (expense) income	(3.0)	—	
Total other (expense) income, net	(5.2)	5.6	
Loss before income taxes	(14.8)	(11.9)	
Income tax expense	0.7	1.0	
Loss from continuing operations	(15.5)	(13.0)	
Loss from discontinued operations	—	(4.3)	
Net loss	(15.5)%	(17.2)%	

Comparison of the Three Months Ended December 28, 2018 to the Three Months Ended December 29, 2017

Revenue. Our revenue increased by \$19.8 million, or 15.1%, to \$150.7 million for the three months ended December 28, 2018, from \$130.9 million for the three months ended December 29, 2017. The increase in revenue in the three months ended December 28, 2018 is further described by end market in the following paragraphs.

Revenue from our primary markets, the percentage of change between the periods presented, and revenue by primary markets expressed as a percentage of total revenue in the periods presented were (in thousands, except percentages):

	Three Months Ended		Change
	December 28, 2018	December 29, 2017	
Telecom	\$50,159	\$55,450	(9.5)%
Data Center	43,247	34,761	24.4 %
Industrial & Defense	57,283	40,714	40.7 %
Total	\$150,689	\$130,925	15.1 %

Telecom	33.3 %	42.4 %	
Data Center	28.7 %	26.6 %	
Industrial & Defense	38.0 %	31.1 %	
Total	100.0 %	100.0 %	

In the three months ended December 28, 2018, our Telecom revenues decreased by \$5.3 million, or 9.5%, compared to the three months ended December 29, 2017. The decrease was primarily due to the May 2018 sale of certain assets associated with our Japan-based long-range optical subassembly business (the "LR4 Business"), lower sales of carrier-based optical semiconductor products to our Asia customer base and lower sales of products targeting fiber to the home applications.

In the three months ended December 28, 2018, our Data Center market revenue increased by \$8.5 million, or 24.4%, compared to the three months ended December 29, 2017. The increase in the three months ended December 28, 2018 was primarily due to increased revenue from sales of legacy optical products and lasers.

In the three months ended December 28, 2018, our I&D market revenue increased by \$16.6 million, or 40.7%, compared to the three months ended December 29, 2017. The increase in the three months ended December 28, 2018 was primarily related to higher revenue from sales across the product portfolio.

Gross profit. Gross margin was 50.8% for the three months ended December 28, 2018, and 46.6% for the three months ended December 29, 2017. Gross profit was \$76.6 million for the three months ended December 28, 2018, and \$61.0 million for the three months ended December 29, 2017. Gross profit during the three months ended December 28, 2018 was primarily impacted by higher revenue, partially offset by lower gross profit as a result of the May 2018 sale of our LR4 Business.

Research and development. Research and development expense increased by \$1.9 million, or 4.5%, to \$43.5 million, or 28.9% of our revenue, for the three months ended December 28, 2018, compared with \$41.7 million, or 31.8% of our revenue, for the three months ended December 29, 2017. Research and development expense has increased in the fiscal 2019 period primarily as a result of higher compensation-related costs and depreciation, as well as increased Data Center-related initiatives.

Selling, general and administrative. Selling, general and administrative expense increased by \$4.9 million, or 13.0%, to \$42.5 million, or 28.2% of our revenue, for the three months ended December 28, 2018, compared with \$37.6 million, or 28.7% of our revenue, for the three months ended December 29, 2017. Selling, general and administrative expenses increased in the fiscal 2019 period primarily due to higher compensation-related costs, acquisition-related amortization and depreciation, partially offset by the sale of the LR4 Business.

Restructuring charges. Restructuring charges totaled \$5.0 million and \$4.7 million for the three months ended December 28, 2018 and December 29, 2017, respectively. The restructuring charges during the first three months of fiscal year 2019 are primarily related to employee-related and facility-related costs for the restructuring of our facility in Ithaca, New York. We expect to incur additional restructuring costs of approximately \$1.5 million to \$2.0 million during the remainder of fiscal year 2019 as we complete these restructuring actions.

Warrant liability. Our warrant liability resulted in a gain of \$5.5 million for the three months ended December 28, 2018, compared to a gain of \$14.6 million for the three months ended December 29, 2017. The differences between periods were primarily driven by changes in the estimated fair value of common stock warrants we issued in December 2010, driven by the change in the underlying price of our common stock, which is recorded as a liability at fair value.

Provision for income taxes. Income tax expense was \$1.1 million for the three months ended December 28, 2018, compared to an expense of \$1.4 million for the three months ended December 29, 2017. The income tax expense for the three months ended December 28, 2018 resulted primarily from income subject to tax in foreign jurisdictions. The income tax expense for the three months ended December 29, 2017 resulted primarily from income subject to tax in foreign jurisdictions and discrete adjustments to our U.S. deferred tax liability.

The difference between the U.S. federal statutory income tax rate of 21% and our effective income tax rate for the three months ended December 28, 2018, was primarily impacted by the continuation of a full valuation allowance against our U.S. deferred tax assets and income taxed in foreign jurisdictions at generally lower tax rates. The difference between the U.S. federal statutory tax rate of 35% and our effective tax rate for the three months ended December 29, 2017 was also primarily impacted by the continuation of a full valuation allowance against our U.S. deferred tax assets and income taxed in foreign jurisdictions at generally lower tax rates. For additional information refer to Note 16 - Income Taxes in this Quarterly Report on Form 10-Q.

Liquidity and Capital Resources

The following table summarizes our cash flow activities for the three months ended December 28, 2018 and December 29, 2017, respectively (in thousands):

	December 28, December 29, 2018 2017	
Cash and cash equivalents, beginning of period	\$ 94,676	\$ 130,104

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Net cash provided by operating activities	2,909	534
Net cash (used in) provided by investing activities	(12,346) 20,309
Net cash provided by financing activities	1,866	1,045
Foreign currency effect on cash	(16) 93
Cash and cash equivalents, end of period	\$ 87,089	\$ 152,085

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Cash Flow from Operating Activities

Our cash flow from operating activities for the three months ended December 28, 2018 of \$2.9 million consisted of a net loss of \$23.4 million, plus cash used by operating assets and liabilities of \$14.2 million, plus adjustments to reconcile our net loss to cash provided by operating activities of \$40.5 million. Adjustments to reconcile our net loss to cash provided by operating activities primarily included depreciation and intangible amortization expense of \$28.2 million, share-based compensation expense of \$9.3 million, loss on minority equity investments of \$4.6 million and impairment-related charges of \$2.7 million, partially offset by a warrant liability gain of \$5.5 million. In addition, cash used by operating assets and liabilities was \$14.2 million for the three months ended December 28, 2018, primarily driven by an increase in accounts receivable of \$12.3 million and decreases in accounts payable of \$6.9 million, partially offset by decreases in inventory of \$2.0 million, and decreases in prepaid expenses and other assets of \$2.6 million.

Our cash flow from operating activities for the three months ended December 29, 2017 of \$0.5 million consisted of a net loss of \$22.6 million, plus adjustments to reconcile our net loss to cash provided by operating activities of \$18.7 million and changes in operating assets and liabilities of \$4.4 million. Adjustments to reconcile our net loss to cash provided by operating activities of \$18.7 million primarily included depreciation and intangible amortization expense of \$26.9 million and share-based compensation expense of \$10.0 million, partially offset by a warrant liability gain of \$14.6 million and a change in the net value of assets and liabilities held for sale of \$6.2 million. In addition, cash provided by operating assets and liabilities was \$4.4 million for the three months ended December 29, 2017, primarily driven by a decrease in accounts receivable of \$38.9 million, partially offset by decreases in accounts payable of \$14.4 million, increases in inventory of \$8.0 million, increases in prepaid expenses and other assets of \$6.6 million and decreases in accrued and other liabilities of \$2.2 million.

Cash Flow from Investing Activities

Our cash flow used in investing activities for the three months ended December 28, 2018 consisted primarily of purchases of \$68.5 million of short-term investments and capital expenditures of \$11.5 million, partially offset by proceeds of \$68.0 million related to the sale of short-term investments.

Our cash flow from investing activities for the three months ended December 29, 2017 consisted primarily of proceeds of \$57.4 million related to the sale of short term investments, partially offset by capital expenditures of \$13.8 million, purchases of \$18.0 million of short term investments and a \$5.0 million investment in a privately held company.

Cash Flow from Financing Activities

During the three months ended December 28, 2018, our cash provided by financing activities of \$1.9 million was primarily related to \$2.4 million of proceeds from stock option exercises and employee stock purchases, partially offset by \$0.3 million in purchases of stock associated with employee tax withholdings.

During the three months ended December 29, 2017, our cash provided by financing activities of \$1.0 million was primarily related to \$3.2 million of proceeds from stock option exercises and employee stock purchases, partially offset by \$1.7 million of payments on notes payable.

Liquidity

As of December 28, 2018, we held \$87.1 million of cash and cash equivalents, primarily deposited with financial institutions. The undistributed earnings of our foreign subsidiaries are indefinitely reinvested and we do not intend to repatriate such earnings. We believe the decision to reinvest these earnings will not have a significant impact on our liquidity. As of December 28, 2018, cash held by our foreign subsidiaries was \$39.3 million, which, along with cash generated from foreign operations, is expected to be used in the support of international growth and working capital requirements as well as the repayment of certain intercompany loans. As of December 28, 2018, we also held \$98.7 million of liquid short-term investments, and had \$160.0 million in borrowing capacity under our revolving credit facility (the "Revolving Facility").

We plan to use our remaining available cash and cash equivalents, short-term investments, and as deemed appropriate our borrowing capacity under our Revolving Facility for general corporate purposes, including working capital, or for the acquisition of or investment in complementary technologies, design teams, products and businesses. We believe that our cash and cash equivalents, short-term investments, cash generated from operations and borrowing availability

under the Revolving Facility will be sufficient to meet our working capital requirements for at least the next 12 months. We may need to raise additional capital from time to time through the issuance and sale of equity or debt securities, and there is no assurance that we will be able to do so on favorable terms or at all.

For additional information related to our Liquidity and Capital Resources, see Note 8 - Debt to our Consolidated Financial Statements included in this Quarterly Report on Form 10-Q.

Recent Accounting Pronouncements

See Note 1 - Summary of Significant Accounting Policies to our Consolidated Financial Statements in this Quarterly Report on Form 10-Q for information about recent accounting pronouncements.

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements as of December 28, 2018.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risk in the ordinary course of business, which consists primarily of interest rate risk associated with our cash and cash equivalents, short-term investments and our variable rate debt, as well as foreign exchange rate risk. In addition, the value of our warrant liability is based on the underlying price of our common stock and changes in its value could significantly impact our warrant liability expense.

Interest rate risk. The primary objectives of our investment activity are to preserve principal, provide liquidity and invest excess cash for an average rate of return. To minimize market risk, we maintain our portfolio in cash and diversified investments, which may consist of corporate and agency bonds, bank deposits, money market funds and commercial paper. Certain interest rates are variable and fluctuate with current market conditions. The risk associated with fluctuating interest rates is limited to this investment portfolio. We believe that a 10% change in interest rates would not have a material impact on our financial position or results of operations. We do not enter into financial instruments for trading or speculative purposes.

Our exposure to interest rate risk also relates to the increase or decrease in the amount of interest expense we must pay on the outstanding debt under the Credit Agreement. The interest rates on our term loans and revolving credit facility are variable interest rates based on our lender's prime rate or a LIBOR rate, in each case plus an applicable margin, which exposes us to market interest rate risk when we have outstanding borrowings under the Credit Agreement. As of December 28, 2018, we had \$679.9 million of outstanding borrowings under the Credit Agreement. Assuming our outstanding debt remains constant under the Credit Agreement for an entire year and the applicable annual interest rate increases or decreases by 1%, our annual interest expense would increase or decrease by \$6.8 million.

Foreign currency risk. To date, our international customer agreements have been denominated primarily in U.S. dollars. Accordingly, we have limited exposure to foreign currency exchange rates. The foreign operations of one of our subsidiaries located in Japan have transactions which are predominately denominated in Japanese Yen. The functional currency of a majority of our foreign operations continues to be in U.S. dollars with the remaining operations being local currency. Increases in the value of the U.S. dollar relative to other currencies could make our products more expensive, which could negatively impact demand in certain regions. Conversely, decreases in the value of the U.S. dollar relative to other currencies could result in our products being more expensive to certain customers and could reduce or delay orders, or otherwise negatively affect how they do business with us. The effects of exchange rate fluctuations on the net assets of the majority of our operations are accounted for as transaction gains or losses. We believe that a change of 10% in such foreign currency exchange rates would not have a material impact on our financial position or results of operations. In the future, we may enter into foreign currency exchange hedging contracts to reduce our exposure to changes in exchange rates.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this Quarterly Report on Form 10-Q, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) were effective as of December 28, 2018.

Changes in Internal Control over Financial Reporting

There were no changes to our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) that occurred during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Controls

Our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving the desired control objectives. Our management recognizes that any control system, no matter how well designed and operated, is based upon certain judgments and assumptions and cannot provide absolute assurance that its objectives will be met. Similarly, an evaluation of controls cannot provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected.

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PART II—OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

See Note 13 - Commitments and Contingencies to our Consolidated Financial Statements in this Quarterly Report on Form 10-Q for information about our legal proceedings.

ITEM 1A. RISK FACTORS

Our business involves a high degree of risk. In addition to the other information set forth in this Quarterly Report on Form 10-Q, you should carefully consider the factors discussed in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended September 28, 2018, which could materially affect our business, financial condition or future results. As of the date of this Quarterly Report on Form 10-Q, there have been no material changes in any of the risk factors described in our Annual Report on Form 10-K for the fiscal year ended September 28, 2018, except as noted below.

We are subject to risks from our international sales and operations.

We have operations in Europe and Asia, and customers around the world. As a result, we are subject to regulatory, geopolitical and other risks associated with doing business outside the U.S. Global operations involve inherent risks, including currency controls, currency exchange rate fluctuations, new or potential international trade agreements, tariffs, required import and export licenses, associated delays and other related international trade restrictions and regulations. Further, there is a risk that language barriers, cultural differences and other factors associated with our international operations may make them more difficult to manage effectively.

The legal system in many of the regions where we conduct business can lack transparency in certain respects relative to that of the U.S. and can accord local government authorities a higher degree of control and discretion over business than is customary in the U.S. This makes the process of obtaining necessary regulatory approvals and maintaining compliance inherently more difficult and unpredictable. In addition, the protection accorded to proprietary technology and know-how under these legal systems may not be as strong as in the U.S., and, as a result, we may lose valuable trade secrets and competitive advantages. The cost of doing business in European jurisdictions can also be higher than in the U.S. due to exchange rates, local collective bargaining regimes and local legal requirements and norms regarding employee benefits and employer-employee relations, in particular. We are also subject to U.S. legal requirements related to our foreign operations, including the Foreign Corrupt Practices Act. Sales to customers located outside the U.S. accounted for 52.1% of our revenue for the fiscal year ended September 28, 2018.

Sales to customers located in the Asia Pacific region typically account for a substantial majority of our overall sales to customers located outside the U.S. We expect that revenue from international sales generally, and sales to the Asia Pacific region specifically, will continue to be a material part of our total revenue. Therefore, any financial crisis, trade war or dispute or other major event causing business disruption in international jurisdictions generally, and China and the Asia Pacific region in particular, could negatively affect our future revenues and results of operations. For example, in 2016 the U.S. Department of Commerce, Bureau of Industry and Security (BIS) temporarily blocked exports of U.S. products to Chinese telecommunications original equipment manufacturer (OEM) Zhongxing Telecommunications Equipment Corporation (ZTE), and issued an administrative subpoena to the largest such manufacturer, Huawei, which accounted for 15% of our revenue for fiscal year 2016, and which could possibly lead to similar restrictions in the future. In April 2018, the BIS again blocked exports of U.S. products to ZTE, which were lifted in July 2018, but the U.S. government continues to closely monitor ZTE's actions to ensure compliance. Also, in August 2018, the BIS blocked exports of U.S. products to certain Chinese aerospace customers. Most recently, in January 2019, the U.S. Department of Justice announced criminal charges against Huawei including, but not limited to, attempted theft of trade secrets, wire fraud and violations of U.S. sanctions related to Iran. A U.S. ban on exports to one or more large OEM customers could materially reduce our revenue and reduce the value of an investment in our common stock.

Because the majority of our foreign sales are denominated in U.S. dollars, our products become less price-competitive in countries with currencies that are low or are declining in value against the U.S. dollar. Also, we cannot be sure that our international customers will continue to accept orders denominated in U.S. dollars. If they do not, our reported revenue and earnings will become more directly subject to foreign exchange fluctuations. Some of our customer purchase orders and agreements are governed by foreign laws, which may differ significantly from U.S. laws. As a

result, we may be limited in our ability to enforce our rights under such agreements and to collect amounts owed to us. The majority of our assembly, packaging and test vendors are located in Asia. We generally do business with our foreign assemblers in U.S. dollars. Our manufacturing costs could increase in countries with currencies that are increasing in value against the U.S. dollar. Also, our international manufacturing suppliers may not continue to accept orders denominated in U.S. dollars. If they do not, our costs will become more directly subject to foreign exchange fluctuations. From time to time, we may attempt to hedge our exposure to foreign currency risk by buying currency contracts or otherwise, and any such efforts involve expense and associated risk that the currencies involved may not behave as we expect and we may lose money on such hedging strategies or not properly hedge our risk.

In addition, if terrorist activity, armed conflict, civil, economic or military unrest, natural disasters, embargoes or other economic sanctions, enforcement actions against governments, governmental entities or private entities or political instability occurs in the U.S. or other locations, such events may disrupt our manufacturing, assembly, logistics, security and communications, and could also result in reduced demand for our products. We have in the past and, may again in the future, experience difficulties relating to employees traveling in and out of countries facing civil unrest or political instability and with obtaining travel visas for our employees. Major health pandemics could also adversely affect our business and our customer order patterns. We could also be affected if labor issues disrupt our transportation arrangements or those of our customers or suppliers. There can be no assurance that we can mitigate all identified risks with reasonable effort. The occurrence of any of these events could have a material adverse effect on our operating results.

Changes in U.S. and international laws, accounting standards and trade policies or the enforcement of, or attempt to enforce, such laws, standards and policies, particularly with regard to China, may adversely impact our business and operating results.

Our future results could be adversely affected by changes in interpretations of existing laws and regulations, or changes in laws and regulations, including, among others, changes in accounting standards, taxation requirements, competition laws, trade laws, import and export restrictions, privacy laws and environmental laws in the U.S. and other countries.

The U.S. government has recently made statements and taken certain actions that have led to, and may lead to further, changes to U.S. and international trade policies, including recently-imposed tariffs affecting certain products exported by a number of U.S. trading partners, including China. In response, many of those trading partners, including China, have imposed or proposed new or higher tariffs on American products. It is unknown whether and to what extent new tariffs (or other new laws or regulations) will be adopted, or the effect that any such actions would have on us or our industry and customers. Any unfavorable government policies on international trade, such as capital controls or tariffs, may affect the demand for our products and services, increase the cost of components, delay production, impact the competitive position of our products or prevent us from being able to sell products in certain countries. If any new tariffs, legislation and/or regulations are implemented or if existing trade agreements are renegotiated such changes could have an adverse effect on our business, financial condition and results of operations. In addition, proceedings to enforce, or the enforcement of, any laws, regulations and policies by the U.S. or other countries, and the resulting response to such actions, may have an adverse effect on our business, financial condition and results of operations.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Issuer Purchases of Equity Securities

The following table presents information with respect to purchases of common stock we made during the fiscal quarter ended December 28, 2018.

Period	Total Number of Shares (or Units) Purchased (1)	Average Price Paid per Share (or Unit)	Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
September 29, 2018 - October 26, 2018	6,916	\$ 20.01	—	—
October 27, 2018 - November 23, 2018	11,495	17.72	—	—
November 24, 2018 - December 28, 2018	—	—	—	—
Total	18,411	\$ 18.58	—	—

(1) We employ “withhold to cover” as a tax payment method for vesting of restricted stock awards for our employees, pursuant to which, we withheld from employees the shares noted in the table above to cover tax withholding

related to the vesting of their awards. The average prices listed in the above table are averages of the fair market prices at which we valued shares withheld for purposes of calculating the number of shares to be withheld.

ITEM 6. EXHIBITS

Exhibit Number	Description
3.1	<u>Fifth Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed on June 2, 2016).</u>
3.2	<u>Third Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 to our Current Report on Form 8-K filed on June 2, 2016).</u>
31.1	<u>Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.</u>
31.2	<u>Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.</u>
32.1	<u>Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.</u>
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Schema Document
101.CAL	XBRL Taxonomy Calculation Linkbase Document
101.DEF	XBRL Taxonomy Definition Linkbase Document
101.LAB	XBRL Taxonomy Label Linkbase Document
101.PRE	XBRL Taxonomy Presentation Linkbase Document

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Quarterly Report on Form 10-Q to be signed on its behalf by the undersigned thereunto duly authorized.

MACOM TECHNOLOGY SOLUTIONS
HOLDINGS, INC.

Dated: February 6, 2019 By: /s/ John Croteau

John Croteau
President and Chief Executive Officer
(Principal Executive Officer)

Dated: February 6, 2019 By: /s/ Robert J. McMullan

Robert J. McMullan
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)