

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 June 29, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from ___ to ___

Commission file number 0-20388
LITTELFUSE, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)
8755 West Higgins Road
Suite 500
Chicago

36-3795742
(I.R.S. Employer Identification No.)

Illinois
60631
(ZIP Code)

(Address of principal executive offices)

Registrant's telephone number, including area code: 773-628-1000

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

<u>Title of Each Class</u>	<u>Name of Each Exchange On Which Registered</u>
Common Stock, \$0.01 par value	NASDAQ Global Select Markets SM

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 [X] No []

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (Section 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes [X] No []

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act (Check one): Large accelerated filer [X] 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. Yes [] No []

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

As of July 26, 2019, the registrant had outstanding 24,587,591 shares of Common Stock, net of Treasury Shares.

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LITTELFUSE, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS

(in thousands)	(Unaudited)	
	June 29, 2019	December 29, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 474,781	\$ 489,733
Short-term investments	34	34
Trade receivables, less allowances of \$34,468 and \$36,038 at June 29, 2019 and December 29, 2018, respectively	245,723	232,892
Inventories	254,305	258,228
Prepaid income taxes and income taxes receivable	1,374	2,339
Prepaid expenses and other current assets	63,332	49,291
Total current assets	1,039,549	1,032,517
Net property, plant, and equipment	338,500	339,894
Intangible assets, net of amortization	341,174	361,474
Goodwill	826,408	826,715
Investments	25,456	25,405
Deferred income taxes	9,200	7,330
Right of use lease assets, net	23,280	—
Other assets	18,018	20,971
Total assets	<u>\$ 2,621,585</u>	<u>\$ 2,614,306</u>
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	\$ 123,058	\$ 126,323
Accrued liabilities	111,696	138,405
Accrued income taxes	21,657	20,547
Current portion of long-term debt	10,000	10,000
Total current liabilities	266,411	295,275
Long-term debt, less current portion	676,940	684,730
Deferred income taxes	53,039	51,853
Accrued post-retirement benefits	30,666	31,874
Non-current operating lease liabilities	18,643	—
Other long-term liabilities	65,944	72,232
Shareholders' equity:		
Common stock, par value \$0.01 per share: 34,000,000 shares authorized; shares issued, June 29, 2019–25,786,662; December 29, 2018–25,641,959	255	254
Treasury stock, at cost: 1,157,213 and 868,045 shares, respectively	(166,068)	(116,454)
Additional paid-in capital	855,192	835,828
Accumulated other comprehensive loss	(95,582)	(97,924)
Retained earnings	916,014	856,507
Littelfuse, Inc. shareholders' equity	<u>1,509,811</u>	<u>1,478,211</u>
Non-controlling interest	131	131
Total equity	<u>1,509,942</u>	<u>1,478,342</u>
Total liabilities and equity	<u>\$ 2,621,585</u>	<u>\$ 2,614,306</u>

See accompanying Notes to Condensed Consolidated Financial Statements.

LITTELFUSE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF NET INCOME
(Unaudited)

(in thousands, except per share data)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales	\$ 397,879	\$ 459,183	\$ 803,379	\$ 876,996
Cost of sales	256,071	290,196	506,343	558,386
Gross profit	141,808	168,987	297,036	318,610
Selling, general, and administrative expenses	57,666	73,244	120,621	150,758
Research and development expenses	21,458	22,748	42,867	45,288
Amortization of intangibles	10,050	13,373	20,241	25,371
Total operating expenses	89,174	109,365	183,729	221,417
Operating income	52,634	59,622	113,307	97,193
Interest expense	5,589	5,782	11,275	11,205
Foreign exchange (gain) loss	(3,575)	3,200	668	(7,354)
Other (income) expense, net	(2,947)	(1,678)	1,358	(3,621)
Income before income taxes	53,567	52,318	100,006	96,963
Income taxes	9,775	9,992	19,225	18,609
Net income	<u>\$ 43,792</u>	<u>\$ 42,326</u>	<u>\$ 80,781</u>	<u>\$ 78,354</u>
Income per share:				
Basic	<u>\$ 1.77</u>	<u>\$ 1.69</u>	<u>\$ 3.27</u>	<u>\$ 3.18</u>
Diluted	<u>\$ 1.75</u>	<u>\$ 1.67</u>	<u>\$ 3.23</u>	<u>\$ 3.12</u>
Weighted-average shares and equivalent shares outstanding:				
Basic	24,740	25,004	24,729	24,671
Diluted	24,983	25,401	24,998	25,086

See accompanying Notes to Condensed Consolidated Financial Statements.

LITTELFUSE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

(in thousands)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net income	\$ 43,792	\$ 42,326	\$ 80,781	\$ 78,354
Other comprehensive income (loss):				
Pension and postemployment adjustment, net of tax	161	766	112	763
Foreign currency translation adjustments	(5,892)	(16,708)	2,230	(16,984)
Comprehensive income	\$ 38,061	\$ 26,384	\$ 83,123	\$ 62,133

See accompanying Notes to Condensed Consolidated Financial Statements.

LITTELFUSE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

(in thousands)	Six Months Ended	
	June 29, 2019	June 30, 2018
OPERATING ACTIVITIES		
Net income	\$ 80,781	\$ 78,354
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	25,727	24,431
Amortization of intangibles	20,241	25,371
Deferred revenue	—	1,921
Non-cash inventory charges	—	36,927
Impairment charges	—	1,125
Stock-based compensation	12,250	15,883
Loss (gain) on investments and other assets	2,458	(3,311)
Deferred income taxes	(632)	2,434
Other	2,009	778
Changes in operating assets and liabilities:		
Trade receivables	(13,242)	(33,481)
Inventories	6,230	(1,502)
Accounts payable	(17,927)	13,684
Accrued liabilities and income taxes	(36,713)	(16,383)
Prepaid expenses and other assets	(1,090)	(5,316)
Net cash provided by operating activities	80,092	140,915
INVESTING ACTIVITIES		
Acquisitions of businesses, net of cash acquired	(775)	(310,487)
Purchases of property, plant, and equipment	(25,249)	(40,315)
Net proceeds from sale of property, plant and equipment, and other	6,212	68
Net cash used in investing activities	(19,812)	(350,734)
FINANCING ACTIVITIES		
Proceeds of revolving credit facility	—	60,000
Proceeds of term loan	—	75,000
Net proceeds from senior notes payable	—	175,000
Payments of term loan	(7,500)	(40,025)
Payments of revolving credit facility	—	(60,000)
Net proceeds related to stock-based award activities	3,011	5,568
Purchases of common stock	(49,861)	—
Debt issuance costs	—	(878)
Cash dividends paid	(21,274)	(18,458)
Net cash (used in) provided by financing activities	(75,624)	196,207
Effect of exchange rate changes on cash and cash equivalents	392	(7,917)
Decrease in cash and cash equivalents	(14,952)	(21,529)
Cash and cash equivalents at beginning of period	489,733	429,676
Cash and cash equivalents at end of period	\$ 474,781	\$ 408,147

See accompanying Notes to Condensed Consolidated Financial Statements.

LITTELFUSE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)

Littelfuse, Inc. Shareholders' Equity							
(in thousands, except share and per share data)	Common Stock	Addl. Paid in Capital	Treasury Stock	Accum. Other Comp. Inc. (Loss)	Retained Earnings	Non-controlling Interest	Total
Balance at December 29, 2018	\$ 254	\$ 835,828	\$ (116,454)	\$ (97,924)	\$ 856,507	\$ 131	\$ 1,478,342
Net income	—	—	—	—	36,989	—	36,989
Other comprehensive income, net of tax	—	—	—	8,073	—	—	8,073
Stock-based compensation	—	3,966	—	—	—	—	3,966
Withheld shares on restricted share units for withholding taxes	—	—	(94)	—	—	—	(94)
Stock options exercised	—	2,292	—	—	—	—	2,292
Repurchases of common stock	—	—	(13,555)	—	—	—	(13,555)
Cash dividends paid (\$0.43 per share)	—	—	—	—	(10,625)	—	(10,625)
Balance at March 30, 2019	\$ 254	\$ 842,086	\$ (130,103)	\$ (89,851)	\$ 882,871	\$ 131	\$ 1,505,388
Net income	—	—	—	—	43,792	—	43,792
Other comprehensive income, net of tax	—	—	—	(5,731)	—	—	(5,731)
Stock-based compensation	—	8,284	—	—	—	—	8,284
Withheld shares on restricted share units for withholding taxes	—	—	(4,010)	—	—	—	(4,010)
Stock options exercised	1	4,822	—	—	—	—	4,823
Repurchases of common stock	—	—	(31,955)	—	—	—	(31,955)
Cash dividends paid (\$0.43 per share)	—	—	—	—	(10,649)	—	(10,649)
Balance at June 29, 2019	\$ 255	\$ 855,192	\$ (166,068)	\$ (95,582)	\$ 916,014	\$ 131	\$ 1,509,942

Littelfuse, Inc. Shareholders' Equity							
(in thousands, except share and per share data)	Common Stock	Addl. Paid in Capital	Treasury Stock	Accum. Other Comp. Inc. (Loss)	Retained Earnings	Non-controlling Interest	Total
Balance at December 30, 2017	\$ 229	\$ 310,012	\$ (41,294)	\$ (63,668)	\$ 722,140	\$ 137	\$ 927,556
Net income	—	—	—	—	36,029	—	36,029
Cumulative effect adjustment	—	—	—	(9,795)	9,795	—	—
Other comprehensive income, net of tax	—	—	—	(279)	—	—	(279)
Stock-based compensation	—	8,714	—	—	—	—	8,714
Withheld shares on restricted share units for withholding taxes	—	—	(2,758)	—	—	—	(2,758)
Stock options exercised	—	9,609	—	—	—	—	9,609
Issuance of common stock	22	472,279	—	—	—	—	472,301
Cash dividends paid (\$0.37 per share)	—	—	—	—	(9,198)	—	(9,198)
Balance at March 31, 2018	\$ 251	\$ 800,614	\$ (44,052)	\$ (73,742)	\$ 758,766	\$ 137	\$ 1,441,974
Net income	—	—	—	—	42,326	—	42,326
Other comprehensive income, net of tax	—	—	—	(15,942)	—	—	(15,942)
Stock-based compensation	—	7,169	—	—	—	—	7,169
Non-controlling interest	—	—	—	—	—	(7)	(7)
Withheld shares on restricted share units for withholding taxes	—	—	(4,284)	—	—	—	(4,284)
Stock options exercised	2	8,043	—	—	—	—	8,045
Cash dividends paid (\$0.37 per share)	—	—	—	—	(9,261)	—	(9,261)
Balance at June 30, 2018	\$ 253	\$ 815,826	\$ (48,336)	\$ (89,684)	\$ 791,831	\$ 130	\$ 1,470,020

See accompanying Notes to Condensed Consolidated Financial Statements.

1. Summary of Significant Accounting Policies and Other Information

Nature of Operations

Littelfuse, Inc. and subsidiaries (the “Company”) is a global manufacturer of leading technologies in circuit protection, power control and sensing. The Company's products are found in automotive and commercial vehicles, industrial applications, data and telecommunications, medical devices, consumer electronics and appliances. With its broad product portfolio of fuses, semiconductors, polymers, ceramics, relays and sensors, and extensive global infrastructure, the Company’s worldwide associates partner with its customers to design, manufacture and deliver innovative, high-quality solutions for a safer, greener and increasingly connected world.

Basis of Presentation

The Company’s accompanying unaudited Condensed Consolidated Financial Statements have been prepared in accordance with U.S. Generally Accepted Accounting Principles (“GAAP”) for interim financial information, the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, certain information and disclosures normally included in the consolidated balance sheets, statements of net income and comprehensive income, statements of cash flows, and statement of stockholders' equity prepared in conformity with U.S. GAAP have been condensed or omitted as permitted by such rules and regulations, although the Company believes that the disclosures made are adequate to make the information not misleading. They have been prepared in accordance with accounting policies described in the Company’s Annual Report on Form 10-K for the fiscal year ended December 29, 2018 which should be read in conjunction with the disclosures therein. In the opinion of management, all adjustments considered necessary for a fair presentation have been included and are of a normal, recurring nature. Operating results for interim periods are not necessarily indicative of annual operating results.

Revenue Recognition

On December 31, 2017, the Company adopted new guidance on revenue from contracts with customers using the modified retrospective method. The adoption did not have a significant impact on the Company’s consolidated financial statements.

Revenue Disaggregation

The following tables disaggregate the Company’s revenue by primary business units for the three and six months ended June 29, 2019 and June 30, 2018 :

(in thousands)	Three Months Ended June 29, 2019				Six Months Ended June 29, 2019			
	Electronics Segment	Automotive Segment	Industrial Segment	Total	Electronics Segment	Automotive Segment	Industrial Segment	Total
Electronics – Passive Products and Sensors	\$ 108,481	\$ —	\$ —	\$ 108,481	\$ 216,858	\$ —	\$ —	\$ 216,858
Electronics – Semiconductor	151,072	—	—	151,072	308,089	—	—	308,089
Passenger Car Products	—	53,916	—	53,916	—	110,459	—	110,459
Automotive Sensors	—	24,682	—	24,682	—	50,739	—	50,739
Commercial Vehicle Products	—	30,052	—	30,052	—	60,935	—	60,935
Industrial Products	—	—	29,676	29,676	—	—	56,299	56,299
Total	\$ 259,553	\$ 108,650	\$ 29,676	\$ 397,879	\$ 524,947	\$ 222,133	\$ 56,299	\$ 803,379

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(in thousands)	Three Months Ended June 30, 2018				Six Months Ended June 30, 2018			
	Electronics Segment	Automotive Segment	Industrial Segment	Total	Electronics Segment	Automotive Segment	Industrial Segment	Total
Electronics – Passive Products and Sensors	\$ 128,321	\$ —	\$ —	\$ 128,321	\$ 242,816	\$ —	\$ —	\$ 242,816
Electronics – Semiconductor	171,036	—	—	171,036	320,952	—	—	320,952
Passenger Car Products	—	63,581	—	63,581	—	127,160	—	127,160
Automotive Sensors	—	30,729	—	30,729	—	62,052	—	62,052
Commercial Vehicle Products	—	32,862	—	32,862	—	64,090	—	64,090
Industrial Products	—	—	32,654	32,654	—	—	59,926	59,926
Total	\$ 299,357	\$ 127,172	\$ 32,654	\$ 459,183	\$ 563,768	\$ 253,302	\$ 59,926	\$ 876,996

See Note 16, *Segment Information* for net sales by segment and countries.

Revenue Recognition

The Company recognizes revenue on product sales in the period in which the Company satisfies its performance obligation and control of the product is transferred to the customer. The Company's sales arrangements with customers are predominately short term in nature and generally provide for transfer of control at the time of shipment as this is the point at which title and risk of loss of the product transfers to the customer. At the end of each period, for those shipments where title to the products and the risk of loss and rewards of ownership do not transfer until the product has been received by the customer, the Company adjusts revenues and cost of sales for the delay between the time that the products are shipped and when they are received by the customer. The amount of revenue recorded reflects the consideration to which the Company expects to be entitled in exchange for goods and may include adjustments for customer allowance, rebates and price adjustments. The Company's distribution channels are primarily through direct sales and independent third-party distributors.

The Company elected the practical expedient under Accounting Standards Codification ("ASC") 340-40-25-4 to expense commissions when incurred as the amortization period of the commission asset the Company would have otherwise recognized is less than one year.

Revenue and Billing

The Company generally accepts orders from customers through receipt of purchase orders or electronic data interchange based on written sales agreements and purchasing contracts. Contract pricing and selling agreement terms are based on market factors, costs, and competition. Pricing is often negotiated as an adjustment (premium or discount) from the Company's published price lists. The customer is invoiced when the Company's products are shipped to them in accordance with the terms of the sales agreement. As the Company's standard payment terms are less than one year, the Company elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component. The Company also elected the practical expedient provided in ASC 606-10-25-18B to treat all product shipping and handling activities as fulfillment activities, and therefore recognize the gross revenue associated with the contract, inclusive of any shipping and handling revenue. This is similar to the Company's prior practice and therefore the effect of the new guidance is immaterial.

Ship and Debit Program

Some of the terms of the Company's sales agreements and normal business conditions provide customers (distributors) the ability to receive price adjustments on products previously shipped and invoiced. This practice is common in the industry and is referred to as a "ship and debit" program. This program allows the distributor to debit the Company for the difference between the distributors' contracted price and a lower price for specific transactions. Under certain circumstances (usually in a competitive situation or large volume opportunity), a distributor will request authorization for pricing allowances to reduce its price. When the Company approves such a reduction, the distributor is authorized to "debit" its account for the difference between the contracted price and the lower approved price. The Company establishes reserves for this program based on historic activity and actual authorizations for the debit and recognizes these debits as a reduction of revenue.

Return to Stock

The Company has a return to stock policy whereby certain customers, with prior authorization from Littelfuse management, can return previously purchased goods for full or partial credit. The Company establishes an estimated allowance for these returns based on historic activity. Sales revenue and cost of sales are reduced to anticipate estimated returns.

Volume Rebates

The Company offers volume based sales incentives to certain customers to encourage greater product sales. If customers achieve their specific quarterly or annual sales targets, they are entitled to rebates. The Company estimates the projected amount of rebates that will be achieved by the customer and recognizes this estimated cost as a reduction to revenue as products are sold.

Recently Adopted Accounting Standards

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-02, "Leases" (Topic 842), ("ASC 842"). This ASU requires lessees to recognize, on the balance sheet, assets and liabilities for the rights and obligations created by leases of greater than twelve months. The accounting by lessors will remain largely unchanged. The ASU is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018, with early adoption permitted. Adoption requires using a modified retrospective transition with either 1) periods prior to the adoption date being recast or 2) a cumulative-effect adjustment recognized to the opening balance of retained earnings on the adoption date with prior periods not recast.

The Company adopted the standard on December 30, 2018 using alternative modified retrospective transition method provided in ASU No. 2018-11, "Leases (Topic 842): Target Improvements." Under this method, the Company recorded a cumulative-effect adjustment as of December 30, 2018 and did not record any retrospective adjustments to comparative periods to reflect the adoption of ASC 842. The new standard provides a number of optional practical expedients in transition. The Company has elected the 'package of practical expedients' which permits us not to reassess under the new standard our prior conclusions about lease identification, lease classification and initial direct costs. The Company has not elected the use-of-hindsight. Adoption of ASC 842 resulted in the recognition of operating lease right-of-use assets ("ROU") net of deferred rent of \$26.1 million and lease liabilities of \$29.4 million, as of December 30, 2018 for operating leases on its Condensed Consolidated Balance Sheets, with no impact to its Condensed Consolidated Statements of Net Income and no impact on Condensed Consolidated Statements of Cash Flow. See Note 6, *Lease Commitments*, for further discussion.

In February 2018, the FASB issued ASU No. 2018-02 "Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income," which permits the reclassification of tax effects stranded in accumulated other comprehensive income to retained earnings as a result of the Tax Act. The standard also requires entities to disclose whether or not they elected to reclassify the tax effects related to the Tax Act as well as their policy for releasing income tax effects from accumulated other comprehensive income. The standard allows the option of applying either a retrospective adoption, meaning the standard is applied to all periods in which the effect of the Tax Act is recognized, or applying the amendments in the period of adoption, meaning an adjustment is made to shareholder's equity as of the beginning of the reporting period. The Company adopted the new standard on December 30, 2018. The adoption of this guidance did not have a material effect on our Condensed Consolidated Financial Statements.

2. Acquisitions

The Company accounts for acquisitions using the acquisition method in accordance with ASC 805, "Business Combinations," in which assets acquired and liabilities assumed are recorded at fair value as of the date of acquisition. The operating results of the acquired business are included in the Company's Consolidated Financial Statements from the date of the acquisition.

IXYS Corporation

On January 17, 2018, the Company acquired IXYS Corporation ("IXYS"), a global pioneer in the power semiconductor and integrated circuit markets with a focus on medium to high voltage power control semiconductors across the industrial, communications, consumer and medical markets. IXYS has a broad customer base, serving more than 3,500 customers through its direct sales force and global distribution partners. The acquisition of IXYS is expected to accelerate the Company's growth

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across the power control market driven by IXYS's extensive power semiconductor portfolio and technology expertise. With IXYS, the Company will be able to diversify and expand its presence within industrial electronics markets, leveraging the strong IXYS industrial OEM customer base. The Company also expects to increase long-term penetration of its power semiconductor portfolio in automotive markets, expanding its global content per vehicle.

Upon completion of the acquisition, at IXYS stockholders' election and subject to proration, each share of IXYS common stock, par value \$0.01 per share, owned immediately prior to the effective time was canceled and extinguished and automatically converted into the right to receive: (i) \$23.00 in cash (subject to applicable withholding tax), without interest (referred to as the cash consideration), or (ii) 0.1265 of a share of common stock, par value \$0.01 per share, of Littelfuse (referred to as the stock consideration). IXYS stockholders received cash in lieu of any fractional shares of Littelfuse common stock that the IXYS stockholders would otherwise have been entitled to receive. Additionally, each outstanding option to purchase shares of IXYS common stock granted under an IXYS equity plan were assumed by Littelfuse and converted into an option to acquire (i) a number of shares of Littelfuse common stock equal to the number of shares of IXYS common stock subject to such option immediately prior to the effective time multiplied by 0.1265, rounded down to the nearest whole share, with (ii) an exercise price per share of Littelfuse common stock equal to the exercise price of such IXYS stock option immediately prior to the effective time divided by 0.1265, rounded up to the nearest whole cent.

Based on the \$207.5 per share opening price of Littelfuse common stock on January 17, 2018, the consideration IXYS stockholders received in exchange of their IXYS common stock in the acquisition had a value of \$814.8 million comprised of \$380.6 million of cash and \$434.2 million of Littelfuse stock. In addition to the consideration transferred related to IXYS common stock, the value of consideration transferred, and included in the purchase price, related to IXYS stock options that were converted to Littelfuse stock options, or cash settled, had a value of \$41.7 million. As a result, total consideration was valued at \$856.5 million.

The total purchase price of \$856.5 million has been allocated to assets acquired and liabilities assumed, as of the completion of the acquisition, based on estimated fair values. The following table summarizes the purchase price allocation of the fair value of assets acquired and liabilities assumed in the IXYS acquisition:

(in thousands)	Purchase Price Allocation
Total purchase consideration:	
Cash, net of cash acquired	\$ 302,865
Cash settled stock options	3,622
Littelfuse stock	434,192
Converted stock options	38,109
Total purchase consideration	<u>\$ 778,788</u>
Allocation of consideration to assets acquired and liabilities assumed:	
Current assets, net	\$ 155,930
Property, plant, and equipment	77,442
Intangible assets	212,720
Goodwill	382,360
Other non-current assets	28,706
Other non-current liabilities	(78,370)
	<u>\$ 778,788</u>

Approximately \$49.1 million of net receivables was included in IXYS's current assets. All IXYS goodwill, other assets and liabilities were recorded in the Electronics segment and primarily reflected in the Americas and European geographic areas. The goodwill resulting from this acquisition consists largely of the Company's expected future product sales and synergies from combining IXYS's products and technology with the Company's existing electronics product portfolio. Goodwill resulting from the IXYS acquisition is not expected to be deductible for tax purposes.

Included in the Company's Condensed Consolidated Statements of Net Income for the three and six months ended June 30, 2018 are net sales of approximately \$100.2 million and \$186.5 million, respectively, and a loss before income taxes of \$13.9 million and \$31.7 million, respectively, since the January 17, 2018 acquisition of IXYS. During the three and six months ended June 30,

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2018, the Company recognized a charge of \$19.0 million and \$36.9 million, respectively, for the amortization of the fair value inventory step-up. The step-up was a non-cash charge to cost of goods and reflected as other non-segment costs. The Company recognized approximately \$1.6 million and \$7.5 million of stock compensation expense related to IXYS stock options converted to Littelfuse stock options during the three and six months ended June 30, 2018, of which \$4.5 million was recognized immediately as it related to prior services periods.

During the three and six months ended June 30, 2018, the Company incurred approximately \$0.8 million and \$11.0 million, respectively, of legal and professional fees related to this acquisition which were primarily recognized as *selling, general, and administrative expenses*. These costs were reflected as other non-segment costs.

Pro Forma Results

The following table summarizes, on a pro forma basis, the combined results of operations of the Company and IXYS as though the acquisition had occurred as of January 1, 2017. The pro forma amounts presented are not necessarily indicative of either the actual consolidated results had the IXYS acquisition occurred as of January 1, 2017 or of future consolidated operating results.

(in thousands, except per share amounts)	Three Months Ended		Six Months Ended	
	June 30, 2018		June 30, 2018	
Net sales	\$	459,183	\$	893,709
Income before income taxes		74,857		134,227
Net income		59,283		106,247
Net income per share — basic		2.37		4.26
Net income per share — diluted		2.33		4.22

Pro forma results presented above primarily reflect the following adjustments:

(in thousands)	Three Months Ended		Six Months Ended	
	June 30, 2018		June 30, 2018	
Amortization(a)	\$	3,298	\$	5,185
Transaction costs(b)		—		9,976
Amortization of inventory step-up(c)		19,031		36,927
Stock compensation(d)		210		4,689
Income tax impact of above items		(5,582)		(13,329)

- The amortization adjustment for the three and six months ended June 30, 2018 primarily reflects the reduction of amortization expense in the period related to the Order backlog intangible asset. The Order backlog has a useful life of twelve months and was fully amortized in the fiscal 2017 pro forma results.
- The transaction cost adjustments reflect the reversal of certain bank and attorney fees from the six months ended June 30, 2018 and recognition of those fees during the six months ended July 1, 2017.
- The amortization of inventory step-up adjustment reflects the reversal of the amount recognized during the three and six months ended June 30, 2018 and recognition of those costs during the three and six months ended July 1, 2017. The inventory step-up was amortized over five months as the inventory was sold.
- The stock compensation adjustment reflects the reversal of the portion of stock compensation for IXYS stock options that were converted to Littelfuse stock options and expensed immediately during the six months ended June 30, 2018.

3. Inventories

The components of inventories at June 29, 2019 and December 29, 2018 are as follows:

(in thousands)	June 29, 2019	December 29, 2018
Raw materials	\$ 75,908	\$ 69,883
Work in process	93,523	88,505
Finished goods	84,874	99,840
Total	<u>\$ 254,305</u>	<u>\$ 258,228</u>

4. Property, Plant, and Equipment

The components of net property, plant, and equipment at June 29, 2019 and December 29, 2018 are as follows:

(in thousands)	June 29, 2019	December 29, 2018
Land	\$ 24,962	\$ 25,630
Building	106,962	114,636
Equipment	612,580	583,043
Accumulated depreciation and amortization	(406,004)	(383,415)
Total	<u>\$ 338,500</u>	<u>\$ 339,894</u>

The Company recorded depreciation expense of \$12.6 million and \$12.8 million for the three months ended June 29, 2019 and June 30, 2018, respectively, and \$25.7 million and \$24.4 million for the six months ended June 29, 2019 and June 30, 2018, respectively.

5. Goodwill and Other Intangible Assets

The amounts for goodwill and changes in the carrying value by segment for the six months ended June 29, 2019 are as follows:

(in thousands)	Electronics	Automotive	Industrial	Total
As of December 29, 2018	\$ 656,039	\$ 132,332	\$ 38,344	\$ 826,715
Currency translation	(529)	89	133	(307)
As of June 29, 2019	<u>\$ 655,510</u>	<u>\$ 132,421</u>	<u>\$ 38,477</u>	<u>\$ 826,408</u>

The components of other intangible assets at June 29, 2019 are as follows:

(in thousands)	Gross Carrying Value	Accumulated Amortization	Net Book Value
Patents, licenses and software	\$ 139,415	\$ 75,175	\$ 64,240
Distribution network	43,900	35,702	8,198
Customer relationships, trademarks, and tradenames	374,658	105,922	268,736
Total	<u>\$ 557,973</u>	<u>\$ 216,799</u>	<u>\$ 341,174</u>

During the three months ended June 29, 2019 and June 30, 2018, the Company recorded amortization expense of \$10.1 million and \$13.4 million, respectively. During the six months ended June 29, 2019 and June 30, 2018, the Company recorded amortization expense of \$20.2 million and \$25.4 million, respectively.

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Estimated annual amortization expense related to intangible assets with definite lives as of June 29, 2019 is as follows:

(in thousands)	Amount
2019	\$ 40,119
2020	39,458
2021	36,833
2022	36,743
2023	31,524
2024 and thereafter	176,738
Total	\$ 361,415

6. Lease Commitments

The Company leases office and production space under various non-cancelable operating leases that expire no later than 2025. Certain real estate leases include one or more options to renew. The exercise of lease renewal options is at the Company's sole discretion. Options to extend the lease are included in the lease term when it is reasonably certain the Company will exercise the option. The Company also has production equipment, office equipment and vehicles under operating leases. The depreciable life of assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option that is reasonably certain of exercise. Certain leases include rental payments adjusted periodically for inflation. The lease agreements do not contain any material residual value guarantee or material restrictive covenants.

The Company does not have a published credit rating because it has no publicly traded debt; therefore, the Company is generating its incremental borrowing rate (IBR), using a synthetic credit rating model that compares its credit quality to other rated companies based on certain financial metrics and ratios. The reference rate will be based on the yield curve of companies with similar credit quality based on the metrics and adjusted for currency in regions where we have significant operations.

All leases with an initial term of 12 months or less that do not include an option to extend or purchase the underlying asset that the Company is reasonably certain to exercise ("short-term leases") are not recorded on the Condensed Consolidated Balance Sheet. Short-term lease expenses are recognized on a straight-line basis over the lease term.

The following table presents the classification of ROU assets and lease liabilities as of June 29, 2019:

Leases (in thousands)	Condensed Consolidated Balance Sheet Classification	June 29, 2019	
Assets			
Operating ROU assets	Right of use lease assets, net	\$	23,280
Liabilities			
Current operating lease liabilities	Accrued liabilities	\$	7,349
Non-current operating lease liabilities	Non-current operating lease liabilities		18,643
Total lease liabilities		\$	25,992

The following table represents the lease costs for the three and six months ended June 29, 2019:

Leases cost (in thousands)	Condensed Consolidated Statements of Net Income Classification	Three Months Ended June 29, 2019	Six Months Ended June 29, 2019
Short-term lease expenses	Cost of sales, SG&A expenses	\$ 148	\$ 301
Variable lease expenses	Cost of sales, SG&A expenses	187	381
Operating lease rent expenses	Cost of sales, SG&A expenses	2,215	4,408
Total operating lease costs	Cost of sales, SG&A expenses	\$ 2,550	\$ 5,090

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Maturity of Lease Liabilities as of June 29, 2019 (in thousands)	Operating leases	
2019 (excluding the six months ended June 29, 2019)	\$	4,476
2020		7,594
2021		5,861
2022		4,829
2023		3,190
2024 and thereafter		3,147
Total lease payments	\$	29,097
Present value of lease liabilities	\$	25,992

Operating Lease Term and Discount Rate	June 29, 2019
Weighted-average remaining lease term (years)	4.26
Weighted-average discount rate	5.17%

Other Information (in thousands)	Six Months Ended June 29, 2019	
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash flow payments for operating leases	\$	(4,463)
Leased assets obtained in exchange for operating lease liabilities		1,510

7. Accrued Liabilities

The components of accrued liabilities at June 29, 2019 and December 29, 2018 are as follows:

(in thousands)	June 29, 2019	December 29, 2018
Employee-related liabilities	\$ 36,048	\$ 60,640
Other non-income taxes	30,467	21,523
Operating lease liability	7,349	—
Professional services	4,595	6,169
Interest	4,366	5,137
Accrued share repurchases	—	4,349
Restructuring liability	4,753	3,887
Other	24,118	36,700
Total	\$ 111,696	\$ 138,405

Employee-related liabilities consist primarily of payroll, sales commission, bonus, employee benefit accruals and workers' compensation. Bonus accruals include amounts earned pursuant to the Company's primary employee incentive compensation plans. Other accrued liabilities include miscellaneous operating accruals and other client-related liabilities.

8. Restructuring, Impairment and Other Charges

The Company recorded restructuring, impairment and other charges for the three and six months ended June 29, 2019 and June 30, 2018 as follows:

(in thousands)	Three months ended June 29, 2019				Six months ended June 29, 2019			
	Electronics	Automotive	Industrial	Total	Electronics	Automotive	Industrial	Total
Employee terminations	\$ 1,698	\$ 3,241	\$ 674	\$ 5,613	\$ 3,498	\$ 3,846	\$ 721	\$ 8,065
Other restructuring charges	—	70	—	70	13	90	250	353
Total restructuring charges	1,698	3,311	674	5,683	3,511	3,936	971	8,418
Total	\$ 1,698	\$ 3,311	\$ 674	\$ 5,683	\$ 3,511	\$ 3,936	\$ 971	\$ 8,418

(in thousands)	Three months ended June 30, 2018				Six months ended June 30, 2018			
	Electronics	Automotive	Industrial	Total	Electronics	Automotive	Industrial	Total
Employee terminations	\$ 2,402	\$ —	\$ 62	\$ 2,464	\$ 3,079	\$ 99	\$ 65	\$ 3,243
Other restructuring charges	670	—	—	670	670	—	—	670
Total restructuring charges	3,072	—	62	3,134	3,749	99	65	3,913
Impairment	—	88	1,037	1,125	—	88	1,037	1,125
Total	\$ 3,072	\$ 88	\$ 1,099	\$ 4,259	\$ 3,749	\$ 187	\$ 1,102	\$ 5,038

2019

For the three and six months ended June 29, 2019, the Company recorded total restructuring charges of \$5.7 million and \$8.4 million, respectively, for employee termination costs and other restructuring charges. These charges primarily related to the reorganization of operations and selling, general and administrative functions as well as the integration of IXYS within the Electronics segment and the reorganization of operations in the automotive sensors and commercial vehicle products businesses within the Automotive segment.

In April 2019, we announced the closure of a European manufacturing facility in the automotive sensors business within the Automotive segment. The Company recorded \$1.7 million of employee termination costs associated with this plant closure.

2018

For the three and six months ended June 30, 2018, the Company recorded total restructuring charges of \$3.1 million and \$3.9 million, respectively, for employee termination costs and other restructuring charges related to lease termination and facility closure. These charges primarily related to the integration of IXYS and the reorganization of the IXYS Radio Pulse business within the Electronics segment. For the three and six months ended June 30, 2018, the Company recorded impairment charges of \$1.1 million primarily related to the impairment of a building and a trade name associated with the exit of the Custom business within the Industrial segment.

The restructuring reserves as of June 29, 2019 and December 29, 2018 are \$4.8 million and \$3.9 million, respectively. The restructuring reserves are included within accrued liabilities in the Condensed Consolidated Balance Sheets. The Company anticipates the remaining payments associated with employee terminations will primarily be completed by December 2019.

9. Debt

The carrying amounts of debt at June 29, 2019 and December 29, 2018 are as follows:

(in thousands)	June 29, 2019	December 29, 2018
Term Loan	\$ 147,500	\$ 155,000
Euro Senior Notes, Series A due 2023	132,992	133,417
Euro Senior Notes, Series B due 2028	107,984	108,330
U.S. Senior Notes, Series A due 2022	25,000	25,000
U.S. Senior Notes, Series B due 2027	100,000	100,000
U.S. Senior Notes, Series A due 2025	50,000	50,000
U.S. Senior Notes, Series B due 2030	125,000	125,000
Other	2,619	2,619
Unamortized debt issuance costs	(4,155)	(4,636)
Total debt	686,940	694,730
Less: Current maturities	(10,000)	(10,000)
Total long-term debt	\$ 676,940	\$ 684,730

Revolving Credit Facility / Term Loan

On March 4, 2016, the Company entered into a five-year credit agreement (“Credit Agreement”) with a group of lenders for up to \$700.0 million. The Credit Agreement consisted of an unsecured revolving credit facility (“Revolving Credit Facility”) of \$575.0 million and an unsecured term loan credit facility (“Term Loan”) of up to \$125.0 million. In addition, the Company had the ability, from time to time, to increase the size of the Revolving Credit Facility and the Term Loan by up to an additional \$150.0 million, in the aggregate, in each case in minimum increments of \$25.0 million, subject to certain conditions and the agreement of participating lenders.

On October 13, 2017, the Company amended the Credit Agreement to increase the Revolving Credit Facility from \$575.0 million to \$700.0 million and increase the Term Loan from \$125.0 million to \$200.0 million and to extend the expiration date from March 4, 2021 to October 13, 2022. The Credit Agreement also includes the option for the Company to increase the size of the Revolving Credit Facility and the Term Loan by up to an additional \$300.0 million, in the aggregate, subject to the satisfaction of certain conditions set forth in the Credit Agreement. Term Loans may be made in up to two advances. The first advance of \$125.0 million occurred on October 13, 2017 and the second advance of \$75.0 million occurred on January 16, 2018. For the Term Loan, the Company is required to make quarterly principal payments of 1.25% of the original term loan (\$2.5 million quarterly) through maturity, with the remaining balance due on October 13, 2022. The Company paid quarterly principal payments of \$2.5 million and \$7.5 million on the term loan during the three and six months ended June 29, 2019.

Outstanding borrowings under the Credit Agreement bear interest, at the Company’s option, at either LIBOR, fixed for interest periods of one, two, three or six-month periods, plus 1.00% to 2.00%, or at the bank’s Base Rate, as defined, plus 0.00% to 1.00%, based upon the Company’s Consolidated Leverage Ratio, as defined. The Company is also required to pay commitment fees on unused portions of the credit agreement ranging from 0.15% to 0.25%, based on the Consolidated Leverage Ratio, as defined in the agreement. The credit agreement includes representations, covenants and events of default that are customary for financing transactions of this nature. The effective interest rate on outstanding borrowings under the credit facility was 3.65% at June 29, 2019.

As of June 29, 2019, the Company had \$0.1 million outstanding in letters of credit and had available \$531.1 million of borrowing capacity under the Revolving Credit Facility based on financial covenants. At June 29, 2019, the Company was in compliance with all covenants under the Credit Agreement.

Senior Notes

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold €212 million aggregate principal amount of senior notes in two series. The funding date for the Euro denominated senior notes occurred on December 8, 2016 for €117 million in aggregate amount of 1.14% Senior Notes, Series A, due December 8, 2023

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(“Euro Senior Notes, Series A due 2023”), and €95 million in aggregate amount of 1.83% Senior Notes, Series B due December 8, 2028 (“Euro Senior Notes, Series B due 2028”) (together, the “Euro Senior Notes”). Interest on the Euro Senior Notes is payable semiannually on June 8 and December 8, commencing June 8, 2017.

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold \$125 million aggregate principal amount of senior notes in two series. On February 15, 2017, \$25 million in aggregate principal amount of 3.03% Senior Notes, Series A, due February 15, 2022 (“U.S. Senior Notes, Series A due 2022”), and \$100 million in aggregate principal amount of 3.74% Senior Notes, Series B, due February 15, 2027 (“U.S. Senior Notes, Series B due 2027”) (together, the “U.S. Senior Notes due 2022 and 2027”) were funded. Interest on the U.S. Senior Notes due 2022 and 2027 is payable semiannually on February 15 and August 15, commencing August 15, 2017.

On November 15, 2017, the Company entered into a Note Purchase Agreement pursuant to which the Company issued and sold \$175 million in aggregate principal amount of senior notes in two series. On January 16, 2018, \$50 million aggregate principal amount of 3.48% Senior Notes, Series A, due February 15, 2025 (“U.S. Senior Notes, Series A due 2025”) and \$125 million in aggregate principal amount of 3.78% Senior Notes, Series B, due February 15, 2030 (“U.S. Senior Notes, Series B due 2030”) (together the “U.S. Senior Notes due 2025 and 2030” and with the Euro Senior Notes and the U.S. Senior Notes due 2022 and 2027, the “Senior Notes”) were funded. Interest on the U.S. Senior Notes due 2025 and 2030 is payable semiannually on February 15 and August 15, commencing on August 15, 2018.

The Senior Notes have not been registered under the Securities Act, or applicable state securities laws. The Senior Notes are general unsecured senior obligations and rank equal in right of payment with all existing and future unsecured unsubordinated indebtedness of the Company.

The Senior Notes are subject to certain customary covenants, including limitations on the Company’s ability, with certain exceptions, to engage in mergers, consolidations, asset sales and transactions with affiliates, to engage in any business that would substantially change the general business of the Company, and to incur liens. In addition, the Company is required to satisfy certain financial covenants and tests relating to, among other matters, interest coverage and leverage. At June 29, 2019, the Company was in compliance with all covenants under the Senior Notes.

The Company may redeem the Senior Notes upon the satisfaction of certain conditions and the payment of a make-whole amount to noteholders, and are required to offer to repurchase the Senior Notes at par following certain events, including a change of control.

Interest paid on all Company debt was \$3.5 million and \$3.7 million for the three months ended June 29, 2019 and June 30, 2018, respectively, and \$11.5 million and \$7.7 million for the six months ended June 29, 2019 and June 30, 2018, respectively.

10. Fair Value of Assets and Liabilities

For assets and liabilities measured at fair value on a recurring and nonrecurring basis, a three-level hierarchy of measurements based upon observable and unobservable inputs is used to arrive at fair value. Observable inputs are developed based on market data obtained from independent sources, while unobservable inputs reflect the Company's assumptions about valuation based on the best information available in the circumstances. Depending on the inputs, the Company classifies each fair value measurement as follows:

Level 1—Valuations based on unadjusted quoted prices for identical assets or liabilities in active markets;

Level 2—Valuations based upon quoted prices for similar instruments, prices for identical or similar instruments in markets that are not active, or model-derived valuations, all of whose significant inputs are observable, and

Level 3—Valuations based upon one or more significant unobservable inputs.

Following is a description of the valuation methodologies used for instruments measured at fair value and their classification in the valuation hierarchy.

Investments in Equity Securities

Investments in equity securities listed on a national market or exchange are valued at the last sales price and classified within Level 1 of the valuation hierarchy and recorded in investments and other assets.

The Company has certain convertible debt and convertible preferred stock investments that are accounted for under the cost method reflected in other assets in the Condensed Consolidated Balance Sheets. During the six months ended June 29, 2019, the Company recorded impairment charges of \$2.8 million in *Other expense (income), net* in the Condensed Consolidated Statements of Net Income to adjust these certain investments to their estimated fair value of \$1.2 million. The fair value of these investments are measured on a nonrecurring basis and determined to be Level 3 under the fair value hierarchy. The Company's accounting and finance management determines the valuation policies and procedures for Level 3 fair value measurements and is responsible for the development and determination of unobservable inputs.

Mutual Funds

The Company has a non-qualified Supplemental Retirement and Savings Plan which provides additional retirement benefits for certain management employees and named executive officers by allowing participants to defer a portion of their annual compensation. The Company maintains accounts for participants through which participants make investment elections. The marketable securities are classified as Level 1 under the fair value hierarchy as they are maintained in mutual funds with readily determinable fair value and recorded in other assets.

There were no changes during the quarter ended June 29, 2019 to the Company's valuation techniques used to measure asset and liability fair values on a recurring basis. As of June 29, 2019 and December 29, 2018, the Company did not hold any non-financial assets or liabilities that are required to be measured at fair value on a recurring basis.

The following table presents assets measured at fair value by classification within the fair value hierarchy as of June 29, 2019:

(in thousands)	Fair Value Measurements Using			Total
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
Investments in equity securities	\$ 11,161	\$ —	\$ —	\$ 11,161
Mutual funds	9,619	—	—	9,619

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The following table presents assets measured at fair value by classification within the fair value hierarchy as of December 29, 2018:

(in thousands)	Fair Value Measurements Using			Total
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
Investments in equity securities	\$ 10,312	\$ —	\$ —	\$ 10,312
Mutual funds	9,112	—	—	9,112

In addition to the methods and assumptions used for the financial instruments recorded at fair value as discussed above, the following methods and assumptions are used to estimate the fair value of other financial instruments that are not marked to market on a recurring basis. The Company's other financial instruments include cash and cash equivalents, short-term investments, accounts receivable and its long-term debt. Due to their short-term maturity, the carrying amounts of cash and cash equivalents, short-term investments and accounts receivable approximate their fair values. The Company's revolving and term loan debt facilities' fair values approximate book value at June 29, 2019 and December 29, 2018, as the rates on these borrowings are variable in nature.

The carrying value and estimated fair values of the Company's Euro Senior Notes, Series A and Series B and USD Senior Notes, Series A and Series B, as of June 29, 2019 and December 29, 2018 were as follows:

(in thousands)	June 29, 2019		December 29, 2018	
	Carrying Value	Estimated Fair Value	Carrying Value	Estimated Fair Value
Euro Senior Notes, Series A due 2023	\$ 132,992	\$ 136,568	\$ 133,417	\$ 130,888
Euro Senior Notes, Series B due 2028	107,984	116,210	108,330	103,774
USD Senior Notes, Series A due 2022	25,000	24,781	25,000	24,115
USD Senior Notes, Series B due 2027	100,000	100,440	100,000	94,458
USD Senior Notes, Series A due 2025	50,000	49,884	50,000	47,434
USD Senior Notes, Series B due 2030	125,000	123,756	125,000	114,731

11. Benefit Plans

The Company has company-sponsored defined benefit pension plans covering employees in the U.K., Germany, the Philippines, China, Japan, Mexico, Italy and France. The amount of the retirement benefits provided under the plans is based on years of service and final average pay.

The Company recognizes interest cost, expected return on plan assets, and amortization of prior service, net within *Other expense (income), net* in the Condensed Consolidated Statements of Net Income. The components of net periodic benefit cost for the three and six months ended June 29, 2019 and June 30, 2018 were as follows:

(in thousands)	For the Three Months Ended		For the Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Components of net periodic benefit cost:				
Service cost	\$ 514	\$ 533	\$ 1,014	\$ 1,066
Interest cost	813	501	1,597	1,002
Expected return on plan assets	(821)	(540)	(1,611)	(1,080)
Amortization of prior service	62	74	124	148
Net periodic benefit cost	\$ 568	\$ 568	\$ 1,124	\$ 1,136

The Company expects to make approximately \$2.3 million of cash contributions to its pension plans in 2019.

12. Other Comprehensive Income (Loss)

Changes in other comprehensive (loss) income by component were as follows:

(in thousands)	Three Months Ended June 29, 2019			Three Months Ended June 30, 2018		
	Pre-tax	Tax	Net of Tax	Pre-tax	Tax	Net of Tax
Defined benefit pension plan adjustments	\$ 201	\$ 40	\$ 161	\$ 803	\$ 37	\$ 766
Foreign currency translation adjustments	(5,892)	—	(5,892)	(16,708)	—	(16,708)
Total change in other comprehensive income (loss)	\$ (5,691)	\$ 40	\$ (5,731)	\$ (15,905)	\$ 37	\$ (15,942)

(in thousands)	Six Months Ended June 29, 2019			Six Months Ended June 30, 2018		
	Pre-tax	Tax	Net of Tax	Pre-tax	Tax	Net of Tax
Defined benefit pension plan adjustments	\$ 123	\$ 11	\$ 112	\$ 734	\$ (29)	\$ 763
Foreign currency translation adjustments	2,230	—	2,230	(16,984)	—	(16,984)
Total change in other comprehensive income (loss)	\$ 2,353	\$ 11	\$ 2,342	\$ (16,250)	\$ (29)	\$ (16,221)

The following tables set forth the changes in accumulated other comprehensive (loss) income by component for the six months ended June 29, 2019 and June 30, 2018:

(in thousands)	Pension and postretirement liability and reclassification adjustments	Foreign currency translation adjustment	Accumulated other comprehensive income (loss)
Balance at December 29, 2018	\$ (9,959)	\$ (87,965)	\$ (97,924)
Activity in the period	112	2,230	2,342
Balance at June 29, 2019	\$ (9,847)	\$ (85,735)	\$ (95,582)

(in thousands)	Pension and postretirement liability and reclassification adjustments	Unrealized gain (loss) on investments	Foreign currency translation adjustment	Accumulated other comprehensive income (loss)
Balance at December 30, 2017	\$ (10,836)	\$ 9,795	\$ (62,627)	\$ (63,668)
Cumulative effect adjustment (a)	—	(9,795)	—	(9,795)
Activity in the period	763	—	(16,984)	(16,221)
Balance at June 30, 2018	\$ (10,073)	\$ —	\$ (79,611)	\$ (89,684)

(a)The Company adopted ASU 2016-01 on December 31, 2017 on a modified retrospective basis, recognizing the cumulative effect as a \$9.8 million increase to retained earnings.

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Amounts reclassified from accumulated other comprehensive (loss) income to earnings for the three and six months ended June 29, 2019 and June 30, 2018 were as follows:

(in thousands)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Pension and Postemployment plans:				
Amortization of prior service	\$ 62	\$ 74	\$ 124	\$ 148

The Company recognizes the amortization of prior service costs in *Other (expense) income, net* within the Condensed Consolidated Statements of Net Income.

13. Income Taxes

The effective tax rate for the three and six months ended June 29, 2019 was 18.2% and 19.2% respectively, compared to the effective tax rate for the three and six months ended June 30, 2018 of 19.1% and 19.2% respectively. The effective tax rates for both periods were lower than the applicable U.S. statutory tax rate primarily due to income earned in lower tax jurisdictions.

14. Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

(in thousands, except per share amounts)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Numerator:				
Net income as reported	\$ 43,792	\$ 42,326	\$ 80,781	\$ 78,354
Denominator:				
Weighted average shares outstanding				
Basic	24,740	25,004	24,729	24,671
Effect of dilutive securities	243	397	269	415
Diluted	24,983	25,401	24,998	25,086
Earnings Per Share:				
Basic earnings per share	\$ 1.77	\$ 1.69	\$ 3.27	\$ 3.18
Diluted earnings per share	\$ 1.75	\$ 1.67	\$ 3.23	\$ 3.12

Potential shares of common stock relating to stock options excluded from the earnings per share calculation because their effect would be anti-dilutive were 167,599 and 47,849 for the three months ended June 29, 2019 and June 30, 2018, respectively, and 121,326 and 23,659 for the six months ended June 29, 2019 and June 30, 2018, respectively.

Share Repurchase Program

The Company's Board of Directors authorized the repurchase of up to 1,000,000 shares of the Company's common stock under a program for the period May 1, 2018 to April 30, 2019 ("2018 program"). On April 26, 2019, the Company's Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020 ("2019 program"). During the three and six months ended June 29, 2019, the Company repurchased 188,214 and 268,130 shares of its common stock totaling \$32.0 million and \$45.5 million, respectively.

As of July 26, 2019, the Company repurchased 49,816 shares of its common stock since the quarter ended June 29, 2019.

15. Related Party Transactions

As a result of the Company's acquisition of IXYS, the Company has equity ownership in various investments that are accounted for under the equity method and recorded in investments in the Condensed Consolidated Balance Sheets. The following is a description of the investments and related party transactions.

Powersem GmbH: The Company owns 45% of the outstanding equity of Powersem GmbH ("Powersem"), a module manufacturer based in Germany. For the three months ended June 29, 2019 and June 30, 2018, the Company recorded revenues of \$0.1 million and \$0.3 million from sales of products to Powersem for use as components in their products, respectively. For the six months ended June 29, 2019 and June 30, 2018, the Company recorded revenues of \$0.2 million and \$0.4 million from sales of products to Powersem for use as components in their products, respectively. During the three months ended June 29, 2019 and June 30, 2018, the Company purchased \$0.9 million and \$1.0 million of products from Powersem, respectively. During the six months ended June 29, 2019 and June 30, 2018, the Company purchased \$1.7 million and \$2.1 million of products from Powersem, respectively. As of June 29, 2019, the accounts receivable balance from Powersem was \$0.1 million and the accounts payable balance to Powersem was \$0.1 million. As of December 29, 2018, the trade receivable balance from Powersem was \$0.1 million and the accounts payable balance to Powersem was \$0.2 million.

EB-Tech Co., Ltd.: The Company owns approximately 19% of the outstanding equity of EB Tech Co., Ltd. ("EB Tech"), a company with expertise in radiation technology based in South Korea. During both the three months ended June 29, 2019 and June 30, 2018, EB Tech rendered processing services for the Company totaling approximately \$0.1 million. During both the six months ended June 29, 2019 and June 30, 2018, EB Tech rendered processing services for the Company totaling approximately \$0.2 million. As of June 29, 2019 and December 29, 2018, the Company's accounts payable balance to EB Tech was \$0.1 million.

Automated Technology (Phil), Inc.: The Company owns approximately 24% of the outstanding common shares of Automated Technology (Phil), Inc. ("ATEC"), a supplier located in the Philippines that provides assembly and test services. During the three months ended June 29, 2019 and June 30, 2018, ATEC rendered assembly and test services to the Company totaling approximately \$2.3 million and \$2.8 million, respectively. During the six months ended June 29, 2019 and June 30, 2018, ATEC rendered assembly and test services to the Company totaling approximately \$3.8 million and \$5.2 million, respectively. As of June 29, 2019 and December 29, 2018, the Company's accounts payable balance to ATEC was \$0.5 million.

On March 25, 2019, the Company entered into a definitive agreement to sell the assets and liabilities of Microwave Technology, Inc. ("MWT") resulting in a loss on disposal of \$2.6 million reflected in *Other income (expense), net* in the Condensed Consolidated Statements of Net Income. The operations of Microwave Technology, Inc. were included in the Electronics segment. One member of the Company's Board of Directors is the co-owner of a company that agreed to purchase MWT. This transaction closed on April 26, 2019.

16. Segment Information

The Company and its subsidiaries design, manufacture and sell components and modules for circuit protection, power control and sensing throughout the world. The Company reports its operations by the following segments: Electronics, Automotive, and Industrial. An operating segment is defined as a component of an enterprise that engages in business activities from which it may earn revenues and incur expenses, and about which separate financial information is regularly evaluated by the Chief Operating Decision Maker (“CODM”) in deciding how to allocate resources. The CODM is the Company’s President and Chief Executive Officer (“CEO”). The CODM allocates resources to and assesses the performance of each operating segment using information about its revenue and operating income (loss) before interest and taxes, but does not evaluate the operating segments using discrete balance sheet information.

Sales, marketing, and research and development expenses are charged directly into each operating segment. Manufacturing, purchasing, logistics, customer service, finance, information technology, and human resources are shared functions that are allocated back to the three operating segments. The Company does not report inter-segment revenue because the operating segments do not record it. Certain expenses, determined by the CODM to be strategic in nature and not directly related to segments current results, are not allocated but identified as “Other”. Additionally, the Company does not allocate interest and other income, interest expense, or taxes to operating segments. These costs are not allocated to the segments, as management excludes such costs when assessing the performance of the segments. Although the CODM uses operating income (loss) to evaluate the segments, operating costs included in one segment may benefit other segments. Except as discussed above, the accounting policies for segment reporting are the same as for the Company as a whole.

- *Electronics Segment:* Consists of one of the broadest product offerings in the industry, including fuses and fuse accessories, positive temperature coefficient (“PTC”) resettable fuses, polymer electrostatic discharge (“ESD”) suppressors, varistors, reed switch based magnetic sensing, gas discharge tubes; semiconductor and power semiconductor products such as discrete transient voltage suppressor (“TVS”) diodes, TVS diode arrays, protection and switching thyristors, silicon carbide, metal-oxide-semiconductor field-effect transistors (“MOSFETs”) and silicon carbide diodes; and insulated gate bipolar transistors (“IGBT”) technologies. The segment covers a broad range of end markets, including industrial and automotive electronics, electric vehicle infrastructure, data and telecommunications, medical devices, LED lighting, consumer electronics and appliances
- *Automotive Segment:* Consists of a wide range of circuit protection, power control and sensing technologies for global original equipment manufacturers (“OEMs”), Tier-I suppliers and parts distributors in passenger car, heavy duty truck, off-road vehicles, material handling, agricultural, construction and other commercial vehicle industries. Passenger car fuse products include fuses and fuse accessories for internal combustion engine vehicles and hybrid and electric vehicles including blade fuses, battery cable protectors, resettable fuses, high-current fuses, and high-voltage fuses. Commercial vehicle products include fuses, switches, relays, and power distribution modules for the commercial vehicle industry. Automotive sensor products include a wide range of automotive and commercial vehicle products designed to monitor the passenger compartment occupants, safety and environment as well as the vehicle’s powertrain, emissions, speed and suspension.
- *Industrial Segment:* Consists of power fuses, protection relays and controls and other circuit protection products for use in various industrial applications such as oil, gas, mining, alternative energy - solar and wind, electric vehicle infrastructure, construction, HVAC systems, elevator and other industrial equipment.

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Segment information is summarized as follows:

(in thousands)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales				
Electronics	\$ 259,553	\$ 299,357	\$ 524,947	\$ 563,768
Automotive	108,650	127,172	222,133	253,302
Industrial	29,676	32,654	56,299	59,926
Total net sales	\$ 397,879	\$ 459,183	\$ 803,379	\$ 876,996
Depreciation and amortization				
Electronics	\$ 14,729	\$ 15,651	\$ 30,071	\$ 29,329
Automotive	6,904	5,969	13,781	11,939
Industrial	1,056	1,467	2,116	2,927
Other	—	3,103	—	5,607
Total depreciation and amortization	\$ 22,689	\$ 26,190	\$ 45,968	\$ 49,802
Operating income (loss)				
Electronics	\$ 43,630	\$ 67,311	\$ 92,666	\$ 121,275
Automotive	10,349	15,711	23,550	34,102
Industrial	5,831	5,279	9,336	9,988
Other(a)	(7,176)	(28,679)	(12,245)	(68,172)
Total operating income	52,634	59,622	113,307	97,193
Interest expense	5,589	5,782	11,275	11,205
Foreign exchange (gain) loss	(3,575)	3,200	668	(7,354)
Other (income) expense, net	(2,947)	(1,678)	1,358	(3,621)
Income before income taxes	\$ 53,567	\$ 52,318	\$ 100,006	\$ 96,963

(a) Included in "Other" Operating income (loss) for the 2019 second quarter is \$1.5 million (\$3.8 million year-to-date) of acquisition related and integration charges primarily related to the IXYS acquisition. In addition, there were \$5.7 million (\$8.4 million year-to-date) of restructuring charges primarily related to employee termination costs. See Note 8, *Restructuring, Impairment and Other Charges*, for further discussion.

Included in "Other" Operating income (loss) for the second quarter of 2018 is includes approximately \$26.8 million (\$65.4 million year-to-date) of charges primarily related to the IXYS acquisition, which include \$19.0 million (\$36.9 million year-to-date) of purchase accounting inventory step-up charges, \$2.0 million (\$13.6 million year-to-date) in acquisition-related and integration costs primarily related to legal, accounting and other expenses, \$3.1 million (\$5.6 million year-to-date) in backlog amortization costs, \$2.7 million of employee termination costs and other restructuring charges, and \$4.5 million year-to-date stock compensation expense recognized immediately upon close for converted IXYS options related to prior service periods and \$2.1 million year-to-date change in control expense related to IXYS. In addition, there were \$0.5 million (\$1.2 million year-to-date) of employee termination costs, other restructuring, impairment charges of \$1.1 million associated with the exit of the Custom business in the second quarter, and \$0.3 million (\$0.5 million year-to-date) of acquisition-related expenses for other contemplated acquisitions.

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The Company's net sales by country were as follows:

(in thousands)	Three Months Ended		Six Months Ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales				
United States	\$ 115,991	\$ 137,236	\$ 235,519	\$ 261,112
China	107,728	127,776	214,593	234,284
Other countries(a)	174,160	194,171	353,267	381,600
Total net sales	\$ 397,879	\$ 459,183	\$ 803,379	\$ 876,996

The Company's long-lived assets by country were as follows:

(in thousands)	June 29, 2019	December 29, 2018
Long-lived assets		
United States	\$ 58,015	\$ 58,691
China	92,621	95,806
Mexico	74,147	70,495
Germany	37,976	36,548
Philippines	37,275	32,459
Other countries(a)	38,466	45,895
Total long-lived assets	\$ 338,500	\$ 339,894

The Company's additions to long-lived assets by country were as follows:

(in thousands)	Six Months Ended	
	June 29, 2019	June 30, 2018
Additions to long-lived assets		
United States	\$ 3,454	\$ 4,234
China	4,958	14,711
Mexico	8,727	8,874
Germany	3,712	5,182
Philippines	6,629	4,241
Other countries(a)	2,378	3,073
Total additions to long-lived assets	\$ 29,858	\$ 40,315

(a) Each country included in other countries are less than 10% of net sales.

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

Cautionary Statement Regarding Forward-Looking Statements Under the Private Securities Litigation Reform Act of 1995 ("PSLRA").

Certain statements in this section and other parts of this Quarterly Report on Form 10-Q may constitute "forward-looking statements" within the meaning of the federal securities laws and are entitled to the safe-harbor provisions of the PSLRA. These statements include statements regarding the Company's future performance, as well as management's expectations, beliefs, intentions, plans, estimates or projections relating to the future. Such statements can be identified by the use of forward-looking terminology such as "believes," "expects," "may," "estimates," "will," "should," "plans" or "anticipates" or the negative thereof or other variations thereon or comparable terminology, or by discussions of strategy, although not all forward-looking statements contain such terms. The Company cautions that forward-looking statements, which speak only as of the date they are made, are subject to risks, uncertainties and other factors, and actual results and outcomes may differ materially from those indicated or implied by the forward-looking statements. These risks, uncertainties and other factors include, but are not limited to, risks relating to product demand and market acceptance; economic conditions; the impact of competitive products and pricing; product quality problems or product recalls; capacity and supply difficulties or constraints; coal mining exposures reserves; failure of an indemnification for environmental liability; exchange rate fluctuations; commodity price fluctuations; the effect of the Company's accounting policies; labor disputes; restructuring costs in excess of expectations; pension plan asset returns less than assumed; uncertainties related to political or regulatory changes; the risk that expected benefits, synergies and growth prospects of the Company's completed acquisition of IXYS Corporation ("IXYS") may not be achieved in a timely manner, or at all; the risk that IXYS's business may not be successfully integrated with the Company's; the risk that the Company and IXYS will be unable to retain and hire key personnel; and the risk that disruption from the acquisition may adversely affect the Company's or IXYS' business and their respective relationships with customers, suppliers or employees; and other risks which may be detailed in the Company's other Securities and Exchange Commission filings, including those set forth under Item 1A. "Risk Factors" of the Company's Annual Report on Form 10-K for the year ended December 29, 2018. The Company does not undertake any obligation to update or revise any forward-looking statements to reflect future events or circumstances, new information or otherwise.

This report, including the Management's Discussion and Analysis of Financial Condition and Results of Operations, should be read in conjunction with information provided in the consolidated financial statements and the related Notes thereto appearing in the Company's Annual Report on Form 10-K for the year ended December 29, 2018.

Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is designed to provide information that is supplemental to, and should be read together with, the consolidated financial statements and the accompanying notes. Information in MD&A is intended to assist the reader in obtaining an understanding of (i) the consolidated financial statements, (ii) the changes in certain key items within those financial statements from year-to-year, (iii) the primary factors that contributed to those changes, and (iv) any changes in known trends or uncertainties that we are aware of and that may have a material effect on future performance. In addition, MD&A provides information about the Company's segments and how the results of those segments impact the results of operations and financial condition as a whole.

Executive Overview

Founded in 1927, Littelfuse is a global manufacturer of leading technologies in circuit protection, power control and sensing. Sold in over 150 countries, the Company's products are found in automotive and commercial vehicles, industrial applications, data and telecommunications, medical devices, consumer electronics and appliances. With its broad product portfolio of fuses, semiconductors, polymers, ceramics, relays and sensors, and extensive global infrastructure, the Company's worldwide associates partner with its customers to design, manufacture and deliver innovative, high-quality solutions for a safer, greener and increasingly connected world.

The Company maintains a network of global laboratories and engineering centers that develop new products and product enhancements, provide customer application support and test products for safety, reliability, and regulatory compliance. The Company conducts its business through three reportable segments: Electronics, Automotive, and Industrial. Within these segments, the Company designs, manufactures and sells components and modules for circuit protection, power control and sensing products throughout the world. The circuit protection products protect against electrostatic discharge, power surges, short circuits, voltage spikes and other harmful occurrences; our power control products safely and efficiently control power to mitigate equipment damage, minimize electrical hazards and improve productivity and our sensor products are used to identify and detect temperature, proximity, flow speed and fluid level in various applications.

Executive Summary

For the second quarter of 2019, the Company recognized net sales of \$397.9 million compared to \$459.2 million in the second quarter of 2018 representing a decrease of \$61.3 million, or 13.4%. The decrease was primarily driven by lower volume in Electronics and Automotive segments and \$7.9 million or 1.7% of unfavorable changes in foreign exchange rates. The Company recognized net income of \$43.8 million, or \$1.75 per diluted share, in the second quarter of 2019 compared to net income of \$42.3 million, or \$1.67 per diluted share in the second quarter of 2018. The increase in net income reflects lower non-segment charges compared to prior year primarily due to the IXYS acquisition, partially offset by lower operating income across all segments and foreign exchange losses.

The Company continues to take actions to improve its cost structure and drive the synergies from the integration of IXYS. The Company expects to realize cost savings from the restructuring activities taken during 2019 including the reorganization of certain manufacturing, selling and administrative functions across all segments. For the three and six months ended June 29, 2019, the Company recorded total restructuring charges of \$5.7 million and \$8.4 million respectively, for employee termination costs and other restructuring charges, which included \$1.7 million of restructuring costs associated with the closure of a European manufacturing facility in the automotive sensors business within the Automotive segment.

Net cash provided by operating activities was \$80.1 million for the six months ended June 29, 2019 as compared to \$140.9 million for the six months ended June 30, 2018. The decrease in net cash provided by operating activities reflected lower earnings and higher working capital levels primarily due to the timing of supplier payments.

During the three and six months ended June 29, 2019, the Company repurchased 188,214 and 268,130 shares of its common stock totaling \$32.0 million and \$45.5 million. Since September 30, 2018, the Company has repurchased 660,102 shares of its common stock at an average price of \$171.81 totaling \$113.4 million.

Results of Operations

The following table summarizes the Company's condensed consolidated results of operations for the periods presented. The second quarter of 2019 includes \$7.2 million (\$12.2 million year-to-date) of non-segment charges, of which \$5.7 million (\$8.4 million year-to-date) of restructuring charges are primarily related to employee termination costs and \$1.5 million (\$3.8 million year-to-date) of acquisition related and integration charges are primarily related to the IXYS acquisition.

The second quarter of 2018 includes approximately \$26.8 million (\$65.4 million year-to-date) of charges primarily related to the IXYS acquisition, which include \$19.0 million (\$36.9 million year-to-date) of purchase accounting inventory step-up charges, \$2.0 million (\$13.6 million year-to-date) in acquisition-related and integration costs primarily related to legal, accounting and other expenses, \$3.1 million (\$5.6 million year-to-date) in backlog amortization costs, \$2.7 million of employee termination costs and other restructuring charges, and \$4.5 million year-to-date stock compensation expense recognized immediately upon close for converted IXYS options related to prior service periods and \$2.1 million year-to-date change in control expense related to IXYS. In addition, there were \$0.5 million (\$1.2 million year-to-date) of employee termination costs, other restructuring, impairment charges of \$1.1 million associated with the exit of the Custom business in the second quarter, and \$0.3 million (\$0.5 million year-to-date) of acquisition-related expenses for other contemplated acquisitions.

(in thousands)	Second Quarter				First Six Months			
	2019	2018	Change	% Change	2019	2018	Change	% Change
Net sales	\$ 397,879	\$ 459,183	\$ (61,304)	(13.4)%	\$ 803,379	\$ 876,996	\$ (73,617)	(8.4)%
Gross profit	141,808	168,987	(27,179)	(16.1)%	297,036	318,610	(21,574)	(6.8)%
Operating expenses	89,174	109,365	(20,191)	(18.5)%	183,729	221,417	(37,688)	(17.0)%
Operating income	52,634	59,622	(6,988)	(11.7)%	113,307	97,193	16,114	16.6 %
Income before income taxes	53,567	52,318	1,249	2.4 %	100,006	96,963	3,043	3.1 %
Income taxes	9,775	9,992	(217)	(2.2)%	19,225	18,609	616	3.3 %
Net income	\$ 43,792	\$ 42,326	\$ 1,466	3.5 %	\$ 80,781	\$ 78,354	\$ 2,427	3.1 %

Net Sales

Net sales decreased \$61.3 million or 13.4% for the second quarter of 2019 compared to the second quarter of 2018 primarily due to lower volume across the Electronics and Automotive segments from distribution partners reducing excess electronics channel inventories and a decline in global auto production and \$7.9 million or 1.7% of unfavorable changes in foreign exchange rates.

Net sales decreased \$73.6 million or 8.4% for the first six months of 2019 compared to the first six months of 2018 primarily due to lower volume across the Electronics and Automotive segments and \$17.9 million or 2.0% of unfavorable changes in foreign exchange rates.

Gross Profit

Gross profit was \$141.8 million, or 35.6% of net sales, in the second quarter of 2019 compared to \$169.0 million, or 36.8% of net sales, in the second quarter of 2018. The decrease in gross profit is primarily due to lower volumes, unfavorable price impacts and product mix, and costs related to restructuring activities taken during 2019. In addition, the second quarter 2018 gross profit was negatively impacted by the IXYS purchase accounting inventory step-up charge of \$19.0 million, which negatively impacted the 2018 gross margin by 4.1%.

Gross profit was \$297.0 million, or 37.0% of net sales, in the first six months of 2019 compared to \$318.6 million, or 36.3% of net sales, in the first six months of 2018. The decrease in gross profit reflected lower volume across all segments. The increase in gross margin is primarily due to the 2018 IXYS purchase accounting inventory step-up charge of \$36.9 million, which negatively impacted the 2018 gross margin by 4.2%, partially offset by unfavorable price impacts and product mix within the Electronics and Automotive segments.

Operating Expenses

Total operating expenses were \$89.2 million, or 22.4% of net sales, for the second quarter of 2019 compared to \$109.4 million, or 23.8% of net sales, for the second quarter of 2018. The decrease in operating expenses of \$20.2 million is primarily due to lower annual incentive compensation expenses, global cost saving initiatives, and reduced backlog amortization expense of \$3.1 million related to the IXYS acquisition in 2018.

Total operating expenses were \$183.7 million, or 22.9% of net sales, for the first six months of 2019 compared to \$221.4 million, or 25.2% of net sales, for the first six months of 2018. The decrease in operating expenses of \$37.7 million is primarily due to lower annual incentive compensation expenses, lower acquisition and integration related costs of \$10.3 million, global cost saving initiatives, reduced backlog amortization expense of \$5.6 million, \$4.5 million stock compensation expense and \$2.1 million of change in control expense related to the IXYS acquisition in 2018.

Operating Income

Operating income was \$52.6 million, a decrease of \$7.0 million, or 11.7%, for the second quarter of 2019 compared to \$59.6 million for the second quarter of 2018. The decrease in operating income is due to lower gross margin across all segments, partially offset by the lower operating expenses noted above. Operating margins increased from 13.0% in the second quarter of 2018 to 13.2% in the second quarter of 2019 driven by the factors mentioned above.

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Operating income was \$113.3 million, an increase of \$16.1 million, or 16.6%, for the first six months of 2019 compared to \$97.2 million for the first six months of 2018. The increase in operating income is primarily due to the \$36.9 million purchase accounting inventory step-up charges in 2018 and the lower operating expenses noted above partially offset by lower gross profit across all segments. Operating margins increased from 11.1% in the first six months of 2018 to 14.1% in the first six months of 2019 driven by the factors mentioned above.

Income Before Income Taxes

Income before income taxes was \$53.6 million, or 13.5% of net sales, for the second quarter of 2019 compared to \$52.3 million, or 11.4% of net sales, for the second quarter of 2018. In addition to the factors impacting comparative results for operating income discussed above, income before taxes was impacted by foreign exchange gains of \$3.6 million during the three months ended June 29, 2019 compared to foreign exchange losses of \$3.2 million during the three months ended June 30, 2018, and interest income of \$1.3 million during three months ended June 29, 2019 compared to \$0.3 million during the three months ended June 30, 2018.

Income before income taxes was \$100.0 million, or 12.4% of net sales, for the first six months of 2019 compared to \$97.0 million, or 11.1% of net sales, for the first six months of 2018. In addition to the factors impacting comparative results for operating income discussed above, income before taxes was impacted by foreign exchange losses of \$0.7 million during the six months ended June 29, 2019 compared to foreign exchange gains of \$7.4 million during the six months ended June 30, 2018, impairment charges of \$3.1 million for certain other investments and a \$2.6 million loss on the disposal of a business within the Electronics segment during the six months ended June 29, 2019, partially offset by \$1.0 million increases in interest income during during the first six months of 2019 compared to the first six months of 2018.

Income Taxes

Income tax expense was \$9.8 million, or an effective tax rate of 18.2%, for the second quarter of 2019 compared to \$10.0 million, or an effective tax rate of 19.1%, for the second quarter of 2018. The effective tax rates for both periods were lower than the applicable U.S. statutory tax rate primarily due to income earned in lower tax jurisdictions.

Income tax expense for the first six months of 2019 was \$19.2 million, or an effective tax rate of 19.2%, compared to income tax expense of \$18.6 million, or an effective tax rate of 19.2%, for the first six months of 2018. The effective tax rates for both periods were lower than the applicable U.S. statutory tax rate primarily due to income earned in lower tax jurisdictions.

Segment Results of Operations

The Company reports its operations by the following segments: Electronics, Automotive and Industrial. Segment information is described more fully in Note 16, *Segment Information*, of the Notes to Condensed Consolidated Financial Statements included in this Quarterly Report.

The following table is a summary of the Company's net sales by segment:

(in thousands)	Second Quarter				First Six Months			
	2019	2018	Change	% Change	2019	2018	Change	% Change
Electronics	\$ 259,553	\$ 299,357	\$ (39,804)	(13.3)%	\$ 524,947	\$ 563,768	\$ (38,821)	(6.9)%
Automotive	108,650	127,172	(18,522)	(14.6)%	222,133	253,302	(31,169)	(12.3)%
Industrial	29,676	32,654	(2,978)	(9.1)%	56,299	59,926	(3,627)	(6.1)%
Total	\$ 397,879	\$ 459,183	\$ (61,304)	(13.4)%	\$ 803,379	\$ 876,996	\$ (73,617)	(8.4)%

Electronics Segment

Net sales decreased \$39.8 million, or 13.3%, in the second quarter of 2019 compared to the second quarter of 2018 primarily due to lower volume in the semiconductor and electronics products businesses due to softer market demands and unfavorable changes in foreign exchange rates of \$4.4 million.

Net sales decreased \$38.8 million, or 6.9%, in the first six months of 2019 compared to the first six months of 2018 primarily due to lower volume in the electronics products and semiconductor businesses due to softer market demands and unfavorable changes in foreign exchange rates of \$9.7 million.

Automotive Segment

Net sales decreased \$18.5 million, or 14.6%, in the second quarter of 2019 compared to the second quarter of 2018 due to decreased volume primarily in the passenger car and automotive sensor businesses and unfavorable changes in foreign exchange rates of \$3.3 million.

Net sales decreased \$31.2 million, or 12.3%, in the first six months of 2019 compared to the first six months of 2018 due to decreased volume primarily in the passenger car and automotive sensor businesses and unfavorable changes in foreign exchange rates of \$7.7 million.

Industrial Segment

Net sales decreased slightly by \$3.0 million, or 9.1%, in the second quarter of 2019 compared to the second quarter of 2018 primarily due to the exit of the Custom business during the second quarter of 2018 and unfavorable changes in foreign exchange rates of \$0.2 million, partially offset by higher volume in the power fuse business.

Net sales decreased slightly by \$3.6 million, or 6.1%, in the first six months of 2019 compared to the first six months of 2018 primarily due to the exit of the Custom business during the second quarter of 2018 and unfavorable changes in foreign exchange rates of \$0.5 million, partially offset by higher volume in the power fuse business.

Geographic Net Sales Information

Net sales by geography represent net sales to customer or distributor locations. The following table is a summary of the Company's net sales by geography:

(in thousands)	Second Quarter				First Six Months			
	2019	2018	Change	% Change	2019	2018	Change	% Change
Asia-Pacific	\$ 172,895	\$ 203,581	\$ (30,686)	(15.1)%	\$ 345,676	\$ 382,853	\$ (37,177)	(9.7)%
Americas	135,894	146,619	(10,725)	(7.3)%	273,928	285,348	(11,420)	(4.0)%
Europe	89,090	108,983	(19,893)	(18.3)%	183,775	208,795	(25,020)	(12.0)%
Total	\$ 397,879	\$ 459,183	\$ (61,304)	(13.4)%	\$ 803,379	\$ 876,996	\$ (73,617)	(8.4)%

Asia-Pacific

Net sales decreased \$30.7 million, or 15.1%, in the second quarter of 2019 compared to the second quarter of 2018. The decrease in net sales was primarily due to lower volume in semiconductor business and electronics products within the Electronics segment and lower volume in the passenger car and automotive sensors businesses within the Automotive segment and unfavorable changes in foreign exchange rates of \$2.6 million.

Net sales decreased \$37.2 million, or 9.7%, in the first six months of 2019 compared to the first six months of 2018. The decrease in net sales was primarily due to lower volume in semiconductor business and electronics products within the Electronics segment and lower volume across all businesses within the Automotive segment and unfavorable changes in foreign exchange rates of \$5.2 million.

Americas

Net sales decreased \$10.7 million, or 7.3%, in the second quarter of 2019 compared to the second quarter of 2018 primarily due to lower volume in semiconductor business within the Electronics segment, lower volume across all businesses in the Automotive segment, the exit of the Custom business within Industrial segment during the second quarter of 2018 and unfavorable changes in foreign exchange rates of \$0.2 million, partially offset by higher volume in electronics products within the Electronics segment.

Net sales decreased \$11.4 million, or 4.0%, in the first six months of 2019 compared to the first six months of 2018 primarily due to lower volume in semiconductor business within the Electronics segment, lower volume across all businesses in the Automotive segment, the exit of the Custom business within Industrial segment during the second quarter of 2018 and unfavorable changes in foreign exchange rates of \$0.6 million, partially offset by higher volume in the electronics products within the Electronics segment.

Europe

Net sales decreased \$19.9 million, or 18.3%, in the second quarter of 2019 compared to the second quarter of 2018. The decrease in net sales was primarily due to lower volume in electronics products within the Electronics segment, lower volume in passenger car products and automotive sensors businesses within the Automotive segment and unfavorable changes in foreign exchange rates of \$5.1 million.

Net sales decreased \$25.0 million, or 12.0%, in the first six months of 2019 compared to the first six months of 2018. The decrease in net sales was primarily due to lower volume in electronics products within the Electronics segment and unfavorable changes in foreign exchange rates of \$12.1 million.

Liquidity and Capital Resources

The Company has historically supported its liquidity needs through cash flows from operations. Management expects that the Company's (i) current level of cash, cash equivalents, and marketable securities, (ii) current and forecasted cash flows from operations, (iii) availability under existing funding arrangements, and (iv) access to capital in the capital markets will provide sufficient funds to support the Company's operations, capital expenditures, investments, and debt obligations on both a short-term and long-term basis.

Revolving Credit Facility/Term Loan

On March 4, 2016, the Company entered into a five-year credit agreement (“Credit Agreement”) with a group of lenders for up to \$700.0 million. The Credit Agreement consisted of an unsecured revolving credit facility (“Revolving Credit Facility”) of \$575.0 million and an unsecured term loan credit facility (“Term Loan”) of up to \$125.0 million. In addition, the Company had the ability, from time to time, to increase the size of the Revolving Credit Facility and the Term Loan by up to an additional \$150.0 million, in the aggregate, in each case in minimum increments of \$25.0 million, subject to certain conditions and the agreement of participating lenders.

On October 13, 2017, the Company amended the Credit Agreement to increase the Revolving Credit Facility from \$575.0 million to \$700.0 million and increase the Term Loan from \$125.0 million to \$200.0 million and to extend the expiration date from March 4, 2021 to October 13, 2022. The Credit Agreement also includes the option for the Company to increase the size of the Revolving Credit Facility and the Term Loan by up to an additional \$300.0 million, in the aggregate, subject to the satisfaction of certain conditions set forth in the Credit Agreement. Term Loans may be made in up to two advances. The first advance of \$125.0 million occurred on October 13, 2017 and the second advance of \$75.0 million occurred on January 16, 2018. For the Term Loan, the Company is required to make quarterly principal payments of 1.25% of the original term loan (\$2.5 million quarterly) through maturity, with the remaining balance due on October 13, 2022. The Company paid quarterly principle payments of \$2.5 million and \$7.5 million on the term loan during the three and six months ended June 29, 2019.

Outstanding borrowings under the Credit Agreement bear interest, at the Company’s option, at either LIBOR, fixed for interest periods of one, two, three or six-month periods, plus 1.00% to 2.00%, or at the bank’s Base Rate, as defined, plus 0.00% to 1.00%, based upon the Company’s Consolidated Leverage Ratio, as defined. The Company is also required to pay commitment fees on unused portions of the credit agreement ranging from 0.15% to 0.25%, based on the Consolidated Leverage Ratio, as defined in the agreement. The credit agreement includes representations, covenants and events of default that are customary for financing transactions of this nature. The effective interest rate on outstanding borrowings under the credit facility was 3.65% at June 29, 2019.

As of June 29, 2019, the Company had \$0.1 million outstanding in letters of credit and had available \$531.1 million of borrowing capacity under the Revolving Credit Facility based on financial covenants. At June 29, 2019, the Company was in compliance with all covenants under the Credit Agreement. Further information regarding the Company’s credit agreement is provided in Note 9, *Debt*, of the Notes to the Condensed Consolidated Financial Statements included in this Quarterly Report.

Senior Notes

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold €212 million aggregate principal amount of senior notes in two series. The funding date for the Euro denominated senior notes occurred on December 8, 2016 for €117 million in aggregate amount of 1.14% Senior Notes, Series A, due December 8, 2023 (“Euro Senior Notes, Series A due 2023”), and €95 million in aggregate amount of 1.83% Senior Notes, Series B due December 8, 2028 (“Euro Senior Notes, Series B due 2028”) (together, the “Euro Senior Notes”). Interest on the Euro Senior Notes is payable semiannually on June 8 and December 8, commencing June 8, 2017.

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold \$125 million aggregate principal amount of senior notes in two series. On February 15, 2017, \$25 million in aggregate principal amount of 3.03% Senior Notes, Series A, due February 15, 2022 (“U.S. Senior Notes, Series A due 2022”), and \$100 million in aggregate principal amount of 3.74% Senior Notes, Series B, due February 15, 2027 (“U.S. Senior Notes, Series B due 2027”) (together, the “U.S. Senior Notes due 2022 and 2027”) were funded. Interest on the U.S. Senior Notes due 2022 and 2027 is payable semiannually on February 15 and August 15, commencing August 15, 2017.

On November 15, 2017, the Company entered into a Note Purchase Agreement pursuant to which the Company issued and sold \$175 million in aggregate principal amount of senior notes in two series. On January 16, 2018, \$50 million aggregate principal amount of 3.48% Senior Notes, Series A, due February 15, 2025 (“U.S. Senior Notes, Series A due 2025”) and \$125 million in aggregate principal amount of 3.78% Senior Notes, Series B, due February 15, 2030 (“U.S. Senior Notes, Series B due 2030”) (together the “U.S. Senior Notes due 2025 and 2030” and with the Euro Senior Notes and the U.S. Senior Notes due 2022 and 2027, the “Senior Notes”) were funded. Interest on the U.S. Senior Notes due 2025 and 2030 is payable semiannually on February 15 and August 15, commencing on August 15, 2018. Further information regarding the Company’s Senior Notes is provided in Note 9, *Debt*, of the Notes to the Condensed Consolidated Financial Statements included in this Quarterly Report.

Dividends

During the second quarter of 2019, the Company paid quarterly dividends of \$10.6 million to the shareholders totaling \$21.3 million year to date as of June 29, 2019. On July 24, 2019, the Board of Directors approved a 12% increase in the quarterly cash dividend from \$0.43 to \$0.48. The dividend will be paid on September 5, 2019 to shareholders of record as of August 22, 2019.

Cash Flow Overview

(in thousands)	First Six Months	
	2019	2018
Net cash provided by operating activities	\$ 80,092	\$ 140,915
Net cash used in investing activities	(19,812)	(350,734)
Net cash (used in) provided by financing activities	(75,624)	196,207
Effect of exchange rate changes on cash and cash equivalents	392	(7,917)
Decrease in cash and cash equivalents	(14,952)	(21,529)
Cash and cash equivalents at beginning of period	489,733	429,676
Cash and cash equivalents at end of period	\$ 474,781	\$ 408,147

Cash Flow from Operating Activities

Operating cash inflows are largely attributable to sales of the Company's products. Operating cash outflows are largely attributable to recurring expenditures for raw materials, labor, rent, interest, taxes and other operating activities.

Net cash provided by operating activities was \$80.1 million for the six months ended June 29, 2019, compared to \$140.9 million during the six months ended June 30, 2018. The decrease in net cash provided by operating activities reflected lower earnings and higher working capital levels primarily due to the timing of supplier payments.

Cash Flow from Investing Activities

Net cash used in investing activities was \$19.8 million for the six months ended June 29, 2019 compared to \$350.7 million during the six months ended June 30, 2018. Net cash used for the acquisition of IXYS was \$306.5 million for the six months ended June 30, 2018. Capital expenditures were \$25.2 million, representing a decrease of \$15.1 million compared to 2018. Additionally, the Company received proceeds of \$6.4 million from the sale of a property within the Industrial segment.

Cash Flow from Financing Activities

Net cash used in financing activities was \$75.6 million for the six months ended June 29, 2019 compared to net cash provided by financing activities of \$196.2 million for the six months ended June 30, 2018. The Company repurchased 268,130 shares of its common stock during the six months ended June 29, 2019 totaling \$45.5 million, but made payments of \$49.9 million related to settled share repurchases. The Company made payments of \$7.5 million on the term loan during the six months ended June 29, 2019 as compared to \$310.0 million of proceeds from the credit facility and senior notes payable and \$100.0 million of payments on the credit facility and term loan during the six months ended June 30, 2018. Additionally, dividends paid increased \$2.8 million from \$18.5 million in 2018 to \$21.3 million for the six months ended June 29, 2019.

Share Repurchase Program

The Company's Board of Directors authorized the repurchase of up to 1,000,000 shares of the Company's common stock under a program for the period May 1, 2018 to April 30, 2019 ("2018 Program"). The Share Repurchase Program expired on April 30, 2019 with 471,888 shares repurchased. On April 26, 2019, the Company's Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020. During the three and six months ended June 29, 2019, the Company repurchased 188,214 and 268,130 shares of its common stock totaling \$32.0 million and \$45.5 million, respectively.

Off-Balance Sheet Arrangements

As of June 29, 2019, the Company did not have any off-balance sheet arrangements, as defined under SEC rules. Specifically, the Company was not liable for guarantees of indebtedness owed by third parties, the Company was not directly liable for the debt of any unconsolidated entity and the Company did not have any retained or contingent interest in assets. The Company does not participate in transactions that generate relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities.

Critical Accounting Policies and Estimates

The Company's Condensed Consolidated Financial Statements are prepared in accordance with U.S. GAAP. In connection with the preparation of the Condensed Consolidated Financial Statements, the Company uses estimates and makes judgments and assumptions about future events that affect the reported amounts of assets, liabilities, revenue, expenses, and the related disclosures. The assumptions, estimates, and judgments are based on historical experience, current trends, and other factors the Company believes are relevant at the time it prepares the Condensed Consolidated Financial Statements.

The significant accounting policies and critical accounting estimates are consistent with those discussed in Note 1, Summary of Significant Accounting Policies and Other Information, to the consolidated financial statements and the MD&A section of the Company's Annual Report on Form 10-K for the year ended December 29, 2018. During the six months ended June 29, 2019, there were no significant changes in the application of critical accounting policies.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

See Item 7A, Quantitative and Qualitative Disclosures about Market Risk, of our Annual Report on Form 10-K for the year ended December 29, 2018. During the six months ended June 29, 2019, there have been no material changes in our exposure to market risk.

ITEM 4. CONTROLS AND PROCEDURES

(a) Evaluation of Disclosure Controls and Procedures

Disclosure controls and procedures (as defined in Rules 13a-15(b) and 15d-15(e) under the Exchange Act) are designed to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC rules and forms, and that such information is accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosures.

In connection with the preparation of this report, management, under the supervision and with the participation of the Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of June 29, 2019. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of the quarter ended June 29, 2019, our disclosure controls and procedures were effective.

(b) Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(f) and 15d-15(f) under the Exchange Act that occurred during the quarter ended June 29, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION**ITEM 1. LEGAL PROCEEDINGS**

None.

ITEM 1A. RISK FACTORS

During the six months ended June 29, 2019, there have been no material changes from the risk factors disclosed in our Annual Report on Form 10-K for our year ended December 29, 2018.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS*Recent Sales of Unregistered Securities*

None.

Purchases of Equity Securities

The Company's Board of Directors authorized the repurchase of up to 1,000,000 shares of the Company's common stock under a program for the period May 1, 2018 to April 30, 2019 (the "2018 program"). On April 26, 2019, the Company's Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020 (the "2019 program"). As of April 30, 2019, there were 528,112 of authorized repurchases remaining under the 2018 program. During the three and six months ended June 29, 2019, the Company repurchased 188,214 and 268,130 shares of its common stock totaling \$32.0 million and \$45.5 million. There are 811,786 shares yet to be purchased under the program as of June 29, 2019.

The table below presents shares of the Company's common stock which were acquired by the Company during six months ended June 29, 2019:

Period	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Maximum number (or approximate dollar value) of shares that may yet be purchased under the plans or programs
2018 Program				
December 30 through January 26	66,796	\$ 169.11	66,796	541,232
January 27 through February 23	13,120	172.16	13,120	528,112
February 24 through March 30	—	—	—	528,112
March 31 through April 30	—	—	—	528,112
2019 Program				
May 1 through May 25	90,301	170.53	90,301	909,699
May 26 through June 29	97,913	169.09	97,913	811,786
Total	268,130	\$ 169.73	268,130	811,786

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

None.

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ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

<u>Exhibit</u>	<u>Description</u>
31.1*	Certification of David W. Heinzmann, Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Meenal A. Sethna, Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document
+	Certain schedules and exhibits omitted pursuant to Item 601(b)(2) of Regulation S-K promulgated by the SEC. The registrant agrees to furnish supplementary a copy of any omitted schedule or exhibit to the SEC upon request.
*	Filed herewith.
**	Furnished herewith.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Quarterly Report on Form 10-Q for the quarter ended June 29, 2019, to be signed on its behalf by the undersigned thereunto duly authorized.

Littelfuse, Inc.

Date: July 31, 2019

By: /s/ Meenal A. Sethna
Meenal A. Sethna

Executive Vice President and Chief Financial Officer

Date: July 31, 2019

By: /s/ Jeffrey G. Gorski
Jeffrey G. Gorski

Vice President and Chief Accounting Officer

SECTION 302 CERTIFICATION

I, David W. Heinzmann, certify that:

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

Dated: July 31, 2019

/s/ David W. Heinzmann

David W. Heinzmann
President and Chief Executive Officer

SECTION 302 CERTIFICATION

I, Meenal A. Sethna, certify that:

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

Dated: July 31, 2019

/s/ Meenal A. Sethna

Meenal A. Sethna
Executive Vice President and Chief Financial Officer

LITTELFUSE, INC.

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of title 18, United States Code), each of the undersigned officers of Littelfuse, Inc. ("the Company") does hereby certify that to his knowledge:

The Quarterly Report of the Company on Form 10-Q for the fiscal quarter ended June 29, 2019 ("the Report") fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ David W. Heinzmann

David W. Heinzmann

President and Chief Executive Officer

/s/ Meenal A. Sethna

Meenal A. Sethna

Executive Vice President and Chief Financial Officer

Dated: July 31, 2019

Dated: July 31, 2019