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

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 23, 2022

or

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

For the transition period from ____________ to ____________

Commission File Number: 001-39675

ALLEGRO MICROSYSTEMS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**46-2405937**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

955 Perimeter Road
Manchester, New Hampshire 03103
(Address of principal executive offices) (Zip Code)

(603) 626-2300
(Registrant's telephone number, including area code)
N/A
(Former name, former address and former fiscal year, if changed since last report)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.01 per share	ALGM	The Nasdaq Global Select Market

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

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

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

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

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

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

As of October 24, 2022, the registrant had 191,308,141 shares of common stock, $0.01 par value per share, outstanding.

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q (the "Quarterly Report") contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. We intend such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements other than statements of historical facts contained in this Quarterly Report, including statements regarding our future results of operations and financial position, business strategy, the impact of the ongoing and global COVID-19 pandemic on our business, prospective products and the plans and objectives of management for future operations, may be forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

Statements regarding our future results of operations and financial position, business strategy and plans and objectives of management for future operations, including, among others, statements regarding the liquidity, growth and profitability strategies and factors and trends affecting our business are forward-looking statements. Without limiting the foregoing, in some cases, you can identify forward-looking statements by terms such as "aim," "may," "will," "should," "expect," "exploring," "plan," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential," "seek," or "continue" or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. No forward-looking statement is a guarantee of future results, performance, or achievements, and one should avoid placing undue reliance on such statements.

Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to us. Such beliefs and assumptions may or may not prove to be correct. Additionally, such forward-looking statements are subject to a number of known and unknown risks, uncertainties and assumptions, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various factors, including, but not limited to, those identified in Part I, Item 2. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Part II. Item 1A. "Risk Factors" in this Quarterly Report and Part I, Item 1A. "Risk Factors" in our Annual Report on Form 10-K for the year ended March 25, 2022, as amended by Amendment No. 1 on Form 10-K/A filed with the SEC on August 29, 2022 (as amended, the "2022 Annual Report") as any such factors may be updated from time to time in our Quarterly Reports on Form 10-Q, and our other filings with the SEC. These risks and uncertainties include, but are not limited to:

- downturns or volatility in general economic conditions, including as a result of the COVID-19 pandemic, particularly in the automotive market;
- our ability to compete effectively, expand our market share and increase our net sales and profitability;
- our reliance on a limited number of third-party wafer fabrication facilities and suppliers of other materials;
- our failure to adjust purchase commitments, supply chain volume and inventory management based on changing market conditions or customer demand;
- shifts in our product mix or customer mix, which could negatively impact our gross margin;
- the cyclical nature of the analog semiconductor industry;
- our ability to compensate for decreases in average selling prices of our products and increases in input costs;
- increases in inflation rates or sustained periods of inflation in the markets in which we operate;
- any disruptions at our primary third-party wafer fabrication facilities;
- our ability to manage any sustained yield problems or other delays at our third-party wafer fabrication facilities or in the final assembly and test of our products;
- our ability to fully realize the benefits of past and potential future initiatives designed to improve our competitiveness, growth and profitability;
- our ability to accurately predict our quarterly net sales and operating results;
- our dependence on manufacturing operations in the Philippines;
- our reliance on distributors to generate sales;
- COVID-19 induced lock-downs and suppression on our supply chain and customer demand;
- our ability to develop new product features or new products in a timely and cost-effective manner;
- our ability to manage growth;
- any slowdown in the growth of our end markets;
- the loss of one or more significant customers;
- our ability to meet customers' quality requirements;
- uncertainties related to the design win process and our ability to recover design and development expenses and to generate timely or sufficient net sales or margins;

- changes in government trade policies, including the imposition of tariffs and export restrictions;
- our exposures to warranty claims, product liability claims and product recalls;
- our dependence on international customers and operations;
- the availability of rebates, tax credits and other financial incentives on end-user demands for certain products;
- risks related to governmental regulation and other legal obligations, including privacy, data protection, information security, consumer protection, environmental and occupational health and safety, anti-corruption and anti-bribery, and trade controls;
- the volatility of currency exchange rates;
- our indebtedness may limit our flexibility to operate our business;
- our ability to retain key and highly skilled personnel;
- our ability to protect our proprietary technology and inventions through patents or trade secrets;
- our ability to commercialize our products without infringing third-party intellectual property rights;
- disruptions or breaches of our information technology systems or those of our third-party service providers;
- our principal stockholders have substantial control over us;
- the inapplicability of the “corporate opportunity” doctrine to any director or stockholder who is not employed by us;
- the dilutive impact on the price of our shares upon future issuance by us or future sales by our stockholders;
- our lack of intent to declare or pay dividends for the foreseeable future;
- anti-takeover provisions in our organizational documents and under the General Corporation Law of the State of Delaware;
- the exclusive forum provision in our Certificate of Incorporation for disputes with stockholders;
- our inability to design, implement or maintain effective internal control over financial reporting;
- changes in tax rates or the adoption of new tax legislation; and
- other events beyond our control.

Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties.

You should read this Quarterly Report and the documents that we reference in this Quarterly Report completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained in this Quarterly Report, whether as a result of any new information, future events or otherwise.

Unless the context otherwise requires, references to “we,” “us,” “our,” the “Company” and “Allegro” refer to the operations of Allegro MicroSystems, Inc. and its consolidated subsidiaries.

PART I – FINANCIAL INFORMATION
Item 1. Condensed Consolidated Financial Statements

ALLEGRO MICROSYSTEMS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except par value and share amounts)
(Unaudited)

	September 23, 2022	March 25, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 293,588	$ 282,383
Restricted cash	9,694	7,416
Trade accounts receivable, net of provision for expected credit losses of $189 and $105 at September 23, 2022 and March 25, 2022, respectively	86,669	87,359
Trade and other accounts receivable due from related party	32,528	27,360
Accounts receivable – other	1,598	4,144
Inventories	98,426	86,160
Prepaid expenses and other current assets	19,232	14,995
Current portion of related party note receivable	3,750	1,875
Total current assets	545,485	511,692
Property, plant and equipment, net	219,240	210,028
Operating lease right-of-use assets	14,002	16,049
Deferred income tax assets	33,786	17,967
Goodwill	28,037	20,009
Intangible assets, net	52,268	35,970
Related party note receivable, less current portion	10,313	5,625
Equity investment in related party	25,778	27,671
Other assets	50,893	47,609
Total assets	$ 979,802	$ 892,620
Liabilities, Non-Controlling Interest and Stockholders' Equity		
Current liabilities:		
Trade accounts payable	$ 40,620	$ 29,836
Amounts due to related party	4,709	5,222
Accrued expenses and other current liabilities	63,941	65,459
Current portion of operating lease liabilities	3,484	3,706
Total current liabilities	112,754	104,223
Obligations due under Senior Secured Credit Facilities	25,000	25,000
Operating lease liabilities, less current portion	10,870	12,748
Deferred income tax liabilities	4,140	—
Other long-term liabilities	11,163	15,286
Total liabilities	163,927	157,257
Commitments and contingencies (Note 14)		
Stockholders' Equity:		
Preferred Stock, $0.01 par value; 20,000,000 shares authorized, no shares issued or outstanding at September 23, 2022 and March 25, 2022	—	—
Common stock, $0.01 par value; 1,000,000,000 shares authorized, 191,308,141 shares issued and outstanding at September 23, 2022; 1,000,000,000 shares authorized, 190,473,595 issued and outstanding at March 25, 2022	1,913	1,905
Additional paid-in capital	662,082	627,792
Retained earnings	183,819	122,958
Accumulated other comprehensive loss	(33,028)	(18,448)
Equity attributable to Allegro MicroSystems, Inc.	814,786	734,207
Non-controlling interests	1,089	1,156
Total stockholders' equity	815,875	735,363
Total liabilities, non-controlling interest and stockholders' equity	$ 979,802	$ 892,620

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

ALLEGRO MICROSYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except share and per share amounts)
(Unaudited)

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Net sales	$ 192,640	$ 156,445	$ 368,684	$ 309,134
Net sales to related party	45,026	37,165	86,735	72,618
Total net sales	237,666	193,610	455,419	381,752
Cost of goods sold	83,962	72,254	163,029	148,136
Cost of goods sold to related party	21,682	18,824	41,994	36,924
Gross profit	132,022	102,532	250,396	196,692
Operating expenses:				
Research and development	35,567	29,590	69,424	59,144
Selling, general and administrative	39,117	34,088	109,097	66,152
Change in fair value of contingent consideration	(2,500)	300	(2,700)	600
Total operating expenses	72,184	63,978	175,821	125,896
Operating income	59,838	38,554	74,575	70,796
Other income (expense):				
Interest expense	(531)	(1,228)	(968)	(1,654)
Interest income	467	78	784	159
Foreign currency transaction gain (loss)	266	202	2,190	(52)
(Loss) income in earnings of equity investment	(1,029)	226	(1,893)	505
Other, net	75	1,534	(3,354)	1,582
Income before income taxes	59,086	39,366	71,334	71,336
Income tax provision	8,438	6,143	10,403	10,406
Net income	50,648	33,223	60,931	60,930
Net income attributable to non-controlling interests	34	37	70	75
Net income attributable to Allegro MicroSystems, Inc.	$ 50,614	$ 33,186	$ 60,861	$ 60,855
Net income attributable to Allegro MicroSystems, Inc. per share:				
Basic	$ 0.26	$ 0.17	$ 0.32	$ 0.32
Diluted	$ 0.26	$ 0.17	$ 0.32	$ 0.32
Weighted average shares outstanding:				
Basic	191,284,631	189,673,788	190,959,616	189,629,535
Diluted	192,639,576	191,676,422	192,654,097	191,416,250

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

ALLEGRO MICROSYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)
(Unaudited)

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Net income	$ 50,648	$ 33,223	$ 60,931	$ 60,930
Net income attributable to non-controlling interest	34	37	70	75
Net income attributable to Allegro MicroSystems, Inc.	50,614	33,186	60,861	60,855
Other comprehensive loss:				
Foreign currency translation adjustment	(7,899)	(3,537)	(14,717)	(3,567)
Comprehensive income	42,715	29,649	$ 46,144	$ 57,288
Other comprehensive loss attributable to non-controlling interest	69	34	137	64
Comprehensive income attributable to Allegro MicroSystems, Inc.	$ 42,784	$ 29,683	$ 46,281	$ 57,352

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

ALLEGRO MICROSYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
(in thousands, except share amounts)
(Unaudited)

	Preferred Stock		Common Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Non-Controlling Interests	Total Equity
	Shares	Amount	Shares	Amount					
Balance at June 25, 2021	—	$ —	189,581,621	$ 1,896	$ 597,001	$ 31,220	$ (11,865)	$ 1,127	$ 619,379
Net income	—	—	—	—	—	33,186	—	37	33,223
Employee stock purchase plan issuances	—	—	59,563	—	1,291	—	—	—	1,291
Stock-based compensation, net of forfeitures	—	—	61,366	1	6,196	—	—	—	6,197
Foreign currency translation adjustment	—	—	—	—	—	—	(3,503)	(34)	(3,537)
Balance at September 24, 2021	—	$ —	189,702,550	$ 1,897	$ 604,488	$ 64,406	$ (15,368)	$ 1,130	$ 656,553

	Preferred Stock		Common Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Non-Controlling Interests	Total Equity
	Shares	Amount	Shares	Amount					
Balance at June 24, 2022	—	$ —	191,180,179	$ 1,912	$ 652,317	$ 133,205	$ (25,198)	$ 1,124	$ 763,360
Net income	—	—	—	—	—	50,614	—	34	50,648
Employee stock purchase plan issuances	—	—	89,454	1	1,572	—	—	—	1,573
Stock-based compensation, net of forfeitures	—	—	38,508	—	8,193	—	—	—	8,193
Foreign currency translation adjustment	—	—	—	—	—	—	(7,830)	(69)	(7,899)
Balance at September 23, 2022	—	$ —	191,308,141	$ 1,913	$ 662,082	$ 183,819	$ (33,028)	$ 1,089	$ 815,875

ALLEGRO MICROSYSTEMS, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY - continued
(in thousands, except share amounts)
(Unaudited)

	Preferred Stock		Common Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Non-Controlling Interests	Total Equity
	Shares	Amount	Shares	Amount					
Balance at March 26, 2021	—	$ —	189,588,161	$ 1,896	$ 592,170	$ 3,551	$ (11,865)	$ 1,119	$ 586,871
Net income	—	—	—	—	—	60,855	—	75	60,930
Employee stock purchase plan issuances	—	—	59,563	—	1,291	—	—	—	1,291
Stock-based compensation, net of forfeitures	—	—	54,826	1	11,027	—	—	—	11,028
Foreign currency translation adjustment	—	—	—	—	—	—	(3,503)	(64)	(3,567)
Balance at September 24, 2021	—	$ —	189,702,550	$ 1,897	$ 604,488	$ 64,406	$ (15,368)	$ 1,130	$ 656,553

	Preferred Stock		Common Stock		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Non-Controlling Interests	Total Equity
	Shares	Amount	Shares	Amount					
Balance at March 25, 2022	—	$ —	190,473,595	$ 1,905	$ 627,792	$ 122,958	$ (18,448)	$ 1,156	$ 735,363
Net income	—	—	—	—	—	60,861	—	70	60,931
Employee stock purchase plan issuances	—	—	89,454	1	1,572	—	—	—	1,573
Stock-based compensation, net of forfeitures	—	—	745,092	7	42,324	—	—	—	42,331
Payments of taxes withheld on net settlement of equity awards	—	—	—	—	(9,606)	—	—	—	(9,606)
Foreign currency translation adjustment	—	—	—	—	—	—	(14,580)	(137)	(14,717)
Balance at September 23, 2022	—	$ —	191,308,141	$ 1,913	$ 662,082	$ 183,819	$ (33,028)	$ 1,089	$ 815,875

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

ALLEGRO MICROSYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)
(Unaudited)

	Six-Month Period Ended	
	September 23, 2022	September 24, 2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 60,931	$ 60,930
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	24,125	24,511
Amortization of deferred financing costs	49	25
Deferred income taxes	(16,431)	(2,246)
Stock-based compensation	42,340	11,027
Loss (gain) on disposal of assets	250	(330)
Change in fair value of contingent consideration	(2,700)	600
Provisions for inventory and receivables reserves	232	2,869
Unrealized loss (gain) on marketable securities	3,458	(978)
Changes in operating assets and liabilities:		
Trade accounts receivable	5,520	(2,299)
Accounts receivable - other	2,546	181
Inventories	(17,328)	4,415
Prepaid expenses and other assets	(9,470)	(6,761)
Trade accounts payable	8,928	(6,188)
Due to/from related parties	(5,681)	1,312
Accrued expenses and other current and long-term liabilities	(4,965)	(17,192)
Net cash provided by operating activities	91,804	69,876
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property, plant and equipment	(35,220)	(33,821)
Acquisition of business, net of cash acquired	(19,728)	(12,549)
Proceeds from sales of property, plant and equipment	—	27,407
Investments in marketable securities	—	(4,334)
Net cash used in investing activities	(54,948)	(23,297)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Loans made to related party	(7,500)	—
Receipts on related party notes receivable	937	—
Payments for taxes related to net share settlement of equity awards	(9,606)	—
Proceeds from issuance of common stock under employee stock purchase plan	1,573	1,291
Net cash (used in) provided by financing activities	(14,596)	1,291
Effect of exchange rate changes on Cash and cash equivalents and Restricted cash	(8,777)	3,939
Net increase in Cash and cash equivalents and Restricted cash	13,483	51,809
Cash and cash equivalents and Restricted cash at beginning of period	289,799	203,875
CASH AND CASH EQUIVALENTS AND RESTRICTED CASH AT END OF PERIOD:	$ 303,282	$ 255,684
RECONCILIATION OF CASH AND CASH EQUIVALENTS AND RESTRICTED CASH:		
Cash and cash equivalents at beginning of period	$ 282,383	$ 197,214
Restricted cash at beginning of period	7,416	6,661
Cash and cash equivalents and Restricted cash at beginning of period	$ 289,799	$ 203,875
Cash and cash equivalents at end of period	293,588	248,579
Restricted cash at end of period	9,694	7,105
Cash and cash equivalents and Restricted cash at end of period	$ 303,282	$ 255,684
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:		
Noncash transactions:		
Property, plant and equipment purchases included in trade accounts payable	$ (3,877)	$ (3,183)
Noncash lease liabilities arising from obtaining right-of-use assets	374	699

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

1. Nature of the Business and Basis of Presentation

Allegro MicroSystems, Inc., together with its consolidated subsidiaries (the "Company"), is a global leader in designing, developing and manufacturing sensing and power solutions for motion control and energy-efficient systems in automotive and industrial markets. The Company is headquartered in Manchester, New Hampshire and has a global footprint across multiple continents.

The accompanying unaudited condensed consolidated financial statements have been prepared by the Company. Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP") have been condensed or omitted pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). The unaudited condensed consolidated financial statements include the Company's accounts and those of its subsidiaries. All intercompany balances have been eliminated in consolidation. These unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the year ended March 25, 2022 filed with the SEC on May 18, 2022, as amended by Amendment No. 1 on Form 10-K/A filed with the SEC on August 29, 2022 (as amended, the "2022 Annual Report"). In the opinion of the Company's management, the financial information for the interim periods presented reflects all adjustments necessary for a fair statement of the Company's financial position, results of operations and cash flows. The results reported in these unaudited condensed consolidated financial statements are not necessarily indicative of results that may be expected for the entire year.

Financial Periods

The Company's second quarter three-month period is a 13-week period ending on the Friday closest to the last day in September. The Company's second quarter of fiscal 2023 ended September 23, 2022, and the Company's second quarter of fiscal 2022 ended September 24, 2021.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, and disclosures of contingencies at the date of the unaudited condensed consolidated financial statements and the reported amounts of net sales and expenses during the reporting period. Such estimates relate to useful lives of fixed and intangible assets, allowances for expected credit losses and customer returns and sales allowances. Such estimates could also relate to the fair value of acquired assets and liabilities, including goodwill and intangible assets, net realizable value of inventory, accrued liabilities, the valuation of stock-based awards, deferred tax valuation allowances, and other reserves. On an ongoing basis, management evaluates its estimates. Actual results could differ from those estimates, and such differences may be material to the unaudited condensed consolidated financial statements.

Reclassifications

Certain reclassifications have been made to prior-period amounts to conform to current-period reporting classifications.

Concentrations of Credit Risk and Significant Customers

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash, cash equivalents and accounts receivable. The Company maintains its cash and cash equivalents with financial institutions, which management believes to be of a high credit quality. To manage credit risk related to accounts receivables, the Company evaluates the creditworthiness of its customers and maintains allowances, to the extent necessary, for potential credit losses based upon the aging of its accounts receivable balances and known collection issues. The Company has not experienced any significant credit losses during the prior two years.

As of September 23, 2022 and March 25, 2022, Sanken Electric Co., Ltd. ("Sanken") accounted for 27.2% and 23.8% of the Company's outstanding trade accounts receivable, net, respectively, including related party trade accounts receivable. No other customers accounted for 10% or more of outstanding trade accounts receivable, net during those periods.

For the three- and six-month periods ended September 23, 2022, Sanken accounted for 18.9% and 19.0% of total net sales, respectively. For the three- and six-month periods ended September 24, 2021, Sanken accounted for 19.2% and 19.0%

of total net sales, respectively. No other customers accounted for 10% or more of total net sales for the three- and six-month periods ended September 23, 2022 and September 24, 2021. See Note 18, "Related Party Transactions" for a discussion of the transition agreement between Sanken and the Company to transition the marketing and sale of the Company's products in Japan from Sanken to the Company during the twelve-month transition period beginning on September 29, 2022.

During the three-month period ended September 23, 2022, sales to customers located outside of the United States accounted for, in the aggregate, 89.4% of the Company's total net sales, with Greater China accounting for 26.6% and Japan accounting for 18.9%. During the six-month period ended September 23, 2022, sales to customers located outside of the United States accounted for, in the aggregate, 88.2% of the Company's total net sales, with Greater China accounting for 26.0% and Japan accounting for 19.0%. No other countries accounted for greater than 10% of total net sales for the three- and six-month periods ended September 23, 2022.

During the three-month period ended September 24, 2021, sales to customers located outside of the United States, in the aggregate, accounted for 85.6% of the Company's total net sales, with Greater China accounting for 26.2%, Japan accounting for 19.2% and South Korea accounting for 10.2%. During the six-month period ended September 24, 2021, sales to customers located outside of the United States, in the aggregate, accounted for 85.7% of the Company's total net sales, with Greater China accounting for 24.5%, Japan accounting for 19.0% and South Korea accounting for 10.9%. No other countries accounted for greater than 10% of total net sales for the three- and six-month periods ended September 24, 2021.

Recently Adopted Accounting Standards

In October 2021, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2021-08, *Business Combinations (Topic 805), Accounting for Contract Assets and Contract Liabilities from Contracts with Customers* ("ASU 2021-08"), which eliminates the diversity in practice and inconsistency related to the accounting for acquired revenue contracts with customers in a business combination. The amendments in ASU 2021-08 require an acquiring entity to apply ASC Topic 606, *Contracts with Customers* ("ASC 606"), to recognize and measure contract assets and contract liabilities in a business combination as if the acquired contracts with customers were originated by the acquiring entity at the acquisition date. An acquirer may assess how the acquiree applied ASC 606 and generally should recognize and measure the acquired contract assets and contract liabilities consistent with the recognition and measurement in the acquiree's financial statements, as prepared in accordance with U.S. GAAP. If unable to rely on the acquiree's accounting due to errors, noncompliance with U.S. GAAP, or differences in accounting policies, the acquirer should consider the terms of the acquired contracts, such as timing of payment, identify each performance obligation in the contracts, and allocate the total transaction price to each identified performance obligation on a relative standalone selling price basis as of contract inception (that is, the date the acquiree entered into the contracts) or contract modification to determine what should be recorded at the acquisition date. The Company early adopted ASU 2021-08, effective March 26, 2022 and concluded that adoption of this ASU did not have a material impact on its financial position, results of operations, cash flows, or related disclosures.

In May 2021, the FASB issued ASU No. 2021-04, *Earnings Per Share (Topic 260), Debt—Modifications and Extinguishments (Subtopic 470-50), Compensation—Stock Compensation (Topic 718), and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40)* ("ASU 2021-04"). ASU 2021-04 outlines how an entity should account for modifications made to equity-classified written call options, including stock options and warrants to purchase the entity's own common stock. The guidance in the ASU requires an entity to treat a modification of an equity-classified written call option that does not cause the option to become liability-classified as an exchange of the original option for a new option. This guidance applies whether the modification is structured as an amendment to the terms and conditions of the equity-classified written call option or as termination of the original option and issuance of a new option. The Company adopted ASU 2021-04, effective March 26, 2022, and concluded that it did not have a material impact on its financial position, results of operations, cash flows, or related disclosures.

Recently Issued Accounting Standards Not Yet Adopted

None applicable.

3. Heyday Acquisition

On September 1, 2022, the Company completed its purchase of all of the equity interests in Heyday Integrated Circuits ("Heyday"), a privately held company specializing in compact, fully integrated isolated gate drivers that enable energy conversion in high-voltage gallium nitride and silicon carbide wide-bandgap semiconductor designs (the "Heyday Acquisition"). The Heyday Acquisition brings together Heyday's isolated gate drivers and the Company's isolated current sensors to enable potential development of some of the smallest high-voltage and high-efficiency power systems available on the market today. Additionally, this acquisition is expected to increase the Company's addressable market for electric vehicles ("xEV"), solar inverters, data center and 5G power supplies, and broad-market industrial applications. The total preliminary purchase price was $20,754, consisting of cash consideration paid directly to the owners of Heyday and paid on their behalf for the settlement of certain outstanding debts and other obligations.

(Amounts in thousands, except share and per share amounts)

The Heyday Acquisition was accounted for as a business combination, and the Company recorded the assets acquired and liabilities assumed at their respective fair values as of the date of acquisition. The allocation of purchase consideration to assets and liabilities is not yet finalized. The preliminary allocation of the purchase price was based upon a preliminary valuation, and the Company's estimates and assumptions are subject to change within the measurement period (up to one year from the acquisition date). The primary areas of the preliminary purchase price allocation that are not yet finalized are the working capital settlement, finalization of our review of the estimates and assumptions included in the valuation reports, determination of the tax basis of certain assets and liabilities and certain tax carry forwards, and residual goodwill. The following table summarizes the preliminary estimated fair values of the assets acquired and liabilities assumed at the acquisition date:

Cash	$	325
Property and equipment		22
Completed technology		15,100
In-process research and development		1,600
Assets acquired	$	17,047
Current liabilities assumed		(347)
Deferred tax liability		(4,175)
Net assets acquired	$	12,525
Total estimated fair value of consideration		(20,754)
Goodwill	$	8,229

The significant intangible assets identified in the preliminary purchase price allocation consisted of completed technology and in-process research and development. Completed technology assets will be amortized over an estimated useful life of 12 years. An estimated fair value of $1,600 was assigned to acquired in-process research and development costs with an indefinite life.

Amortization of completed technology is included within cost of goods sold and consists of unique PowerThru technology that accomplishes gate driver power and signal transmission through an integrated transformer, reducing the size and complexity of the gate drive solution. The in-process research and development assets represent efforts to expand the power capability of these gate drivers for wide-bandgap semiconductor technology. To value the completed technology and the in-process research and development assets, the Company utilized the income approach, specifically a discounted cash-flow method known as the multi-period excess earnings method.

Goodwill was recognized for the excess purchase price over the fair value of the net assets acquired. The goodwill reflects the value of the synergies the Company expects to realize and the assembled workforce. Goodwill from the Heyday Acquisition is included within the Company's one reporting unit and will be included in the Company's enterprise-level annual review for impairment. Goodwill resulting from the Heyday Acquisition is not deductible for tax purposes.

The purchase price has been allocated to the tangible and intangible assets acquired and liabilities assumed based upon the respective estimates of fair value as of the date of the acquisition and using assumptions that the Company's management believes are reasonable given the information available as of the date of the Heyday Acquisition. The final allocation of the purchase price may differ materially from the information presented in these condensed consolidated financial statements. Any changes to the preliminary estimates of the fair value of the assets acquired and liabilities assumed will be recorded as adjustments to those assets and liabilities and residual amounts will be allocated to goodwill.

The revenues and income before income taxes from the Heyday Acquisition were immaterial to the Company's consolidated results for the three- and six-month periods ended September 23, 2022. The Company has not presented pro forma results of operations for the Heyday Acquisition, because it is not material to the Company's consolidated results of operations, financial position, or cash flows.

(Amounts in thousands, except share and per share amounts)

4. Revenue from Contracts with Customers

The Company generates revenue from the sale of magnetic sensor integrated circuits (“ICs”) and application-specific analog power semiconductors. The following tables summarize net sales disaggregated by application, by product and by geography for the three- and six-month periods ended September 23, 2022 and September 24, 2021. The categorization of net sales by application is determined using various characteristics of the product and the application into which the Company’s product will be incorporated. The categorization of net sales by geography is determined based on the location to which the products are shipped.

Net sales by application:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Automotive	$ 157,398	$ 126,031	$ 307,047	$ 259,554
Industrial	48,176	36,321	88,316	66,630
Other	32,092	31,258	60,056	55,568
Total net sales	$ 237,666	$ 193,610	$ 455,419	$ 381,752

Net sales by product:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Power integrated circuits	$ 97,327	$ 65,523	$ 177,987	$ 132,195
Magnetic sensors and other	140,339	128,087	277,432	249,557
Total net sales	$ 237,666	$ 193,610	$ 455,419	$ 381,752

Net sales by geography:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Americas:				
United States	$ 25,131	$ 27,785	$ 53,522	$ 54,626
Other Americas	7,244	5,427	13,731	11,776
EMEA:				
Europe	40,710	32,466	76,043	67,217
Asia:				
Japan	45,026	37,165	86,735	72,618
Greater China	63,203	50,683	118,319	93,462
South Korea	20,931	19,746	41,910	41,679
Other Asia	35,421	20,338	65,159	40,374
Total net sales	$ 237,666	$ 193,610	$ 455,419	$ 381,752

The Company recognizes sales net of returns, credits issued, price protection adjustments and stock rotation rights. At September 23, 2022 and March 25, 2022, these adjustments were $19,754 and $14,924, respectively, and were netted against trade accounts receivable in the unaudited condensed consolidated balance sheets. These amounts represent charges of $4,830 and $2,171 for the six-month periods ended September 23, 2022 and September 24, 2021, respectively.

Unsatisfied performance obligations primarily represent contracts for products with future delivery dates. The Company elected not to disclose the amount of unsatisfied performance obligations as these contracts have original expected durations of less than one year.

(Amounts in thousands, except share and per share amounts)

5. Fair Value Measurements

The following tables present information about the Company's financial assets and liabilities as of September 23, 2022 and March 25, 2022 measured at fair value on a recurring basis and indicate the level of the fair value hierarchy utilized to determine such fair values:

	Fair Value Measurement at September 23, 2022 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market fund deposits	$ 171,705	$ —	$ —	$ 171,705
Restricted cash:				
Money market fund deposits	9,694	—	—	9,694
Other assets, net (long-term):				
Investments in marketable securities	$ 8,066	$ —	$ —	$ 8,066
Total assets	$ 189,465	$ —	$ —	$ 189,465
Liabilities:				
Other long-term liabilities:				
Contingent consideration	$ —	$ —	$ 100	$ 100
Total liabilities	$ —	$ —	$ 100	$ 100

	Fair Value Measurement at March 25, 2022 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market fund deposits	$ 16,927	$ —	$ —	$ 16,927
Restricted cash:				
Money market fund deposits	7,416	—	—	7,416
Other assets, net (long-term):				
Investments in marketable securities	12,346	—	—	12,346
Total assets	$ 36,689	$ —	$ —	$ 36,689
Liabilities:				
Other long-term liabilities:				
Contingent consideration	—	—	2,800	2,800
Total liabilities	$ —	$ —	$ 2,800	$ 2,800

The following table represents the unrealized gains and losses on investments in marketable securities held with a readily determinable fair value for the six-month periods ended September 23, 2022 and September 24, 2021:

	Six-Month Period Ended	
	September 23, 2022	September 24, 2021
Net gains and losses recognized during the period on equity securities	$ (3,458)	$ 978
Less: Net gains and losses recognized during the period on equity securities sold during the period	—	—
Unrealized gains and losses recognized during the reporting period on equity securities still held at the reporting date	$ (3,458)	$ 978

In addition to the unrealized gains in the table above, the change in fair value of the equity securities was impacted by unrealized foreign currency exchange losses of $822 and $25 for the six-month periods ended September 23, 2022 and September 24, 2021, respectively.

The following table shows the change in fair value of Level 3 contingent consideration in connection with the fiscal year 2021 purchase of Voxtel, Inc. ("Voxtel"), a privately-held technology company located in Beaverton, Oregon that develops, manufactures and supplies photonic and advanced 3D imaging technologies (the "Voxtel Acquisition"), for the six-month periods ended September 23, 2022 and September 24, 2021:

(Amounts in thousands, except share and per share amounts)

		Level 3 Contingent Consideration
Balance at March 25, 2022	$	2,800
Change in fair value of contingent consideration		(2,700)
Balance at September 23, 2022	$	100
Balance at March 26, 2021	$	4,800
Change in fair value of contingent consideration		600
Balance at September 24, 2021	$	5,400

Assets and liabilities measured at fair value on a recurring basis also consist of marketable securities, unit investment trust funds, loans, bonds, stock and other investments which are the Company's defined benefit plan assets. Fair value information for those assets and liabilities, including their classification in the fair value hierarchy, is included in Note 13, "Retirement Plans."

During the six-month periods ended September 23, 2022 and September 24, 2021, there were no transfers among Level 1, Level 2 and Level 3 assets or liabilities.

6. Trade Accounts Receivable, net

Trade accounts receivable, net (including related party trade accounts receivable) consisted of the following:

		September 23, 2022		March 25, 2022
Trade accounts receivable	$	138,834	$	129,539
Less:				
Provision for expected credit losses		(189)		(105)
Returns and sales allowances		(19,565)		(14,819)
Related party trade accounts receivable		(32,411)		(27,256)
Total	$	86,669	$	87,359

The Company is exposed to credit losses primarily through trade and other financing receivables arising from revenue transactions. The Company uses an aging schedule method to estimate current expected credit losses ("CECL") based on days of delinquency, including information about past events and current economic conditions. The Company's accounts receivable are separated into two categories using a portfolio methodology to evaluate the allowance under the CECL impairment model based on sales categorization and similar credit quality and worthiness of the customers: original equipment manufacturers ("OEMs") and distributors. The receivables in each category share similar risk characteristics. The Company increases the provision for expected credits losses when the Company determines all or a portion of a receivable is uncollectible, and the Company recognizes recoveries as a decrease to the provision for expected credit losses.

(Amounts in thousands, except share and per share amounts)

Changes in the Company's expected credit losses and returns and sales allowances were as follows:

Description	Allowance for Doubtful Accounts	Returns and Sales Allowances	Total
Balance at March 25, 2022	$ 105	$ 14,819	$ 14,924
Charged to costs and expenses or revenue	84	52,630	52,714
Write-offs, net of recoveries	—	(47,884)	(47,884)
Balance at September 23, 2022	$ 189	$ 19,565	$ 19,754
Balance at March 26, 2021	$ 138	$ 15,274	$ 15,412
Charged to costs and expenses or revenue	38	82,365	82,403
Write-offs, net of recoveries	—	(80,232)	(80,232)
Balance at September 24, 2021	$ 176	$ 17,407	$ 17,583

7. Inventories

Inventories include material, labor and overhead and consisted of the following:

	September 23, 2022	March 25, 2022
Raw materials and supplies	$ 13,010	$ 11,941
Work in process	61,520	55,855
Finished goods	23,896	18,364
Total	$ 98,426	$ 86,160

The Company recorded inventory write-offs totaling $2,947 and $5,062 for the three- and six-month periods ended September 23, 2022, respectively, and $1,852 and $5,041 for the three- and six-month periods ended September 24, 2021, respectively.

8. Property, Plant and Equipment, net

Property, plant and equipment, net is stated at cost, and consisted of the following:

	September 23, 2022	March 25, 2022
Land	$ 14,748	$ 15,775
Buildings, building improvements and leasehold improvements	56,413	59,816
Machinery and equipment	563,645	542,745
Office equipment	5,927	6,247
Construction in progress	31,940	22,428
Total	672,673	647,011
Less accumulated depreciation	(453,433)	(436,983)
Total	$ 219,240	$ 210,028

Total depreciation expense amounted to $10,980 and $21,830 for the three- and six-month periods ended September 23, 2022, respectively, and $11,222 and $22,342 for the three- and six-month periods ended September 24, 2021, respectively.

(Amounts in thousands, except share and per share amounts)

Long-lived assets include property, plant and equipment and related deposits on such assets, and capitalized tooling costs. The geographic locations of the Company's long-lived assets, net, based on physical location of the assets, as of September 23, 2022 and March 25, 2022 are as follows:

	September 23, 2022	March 25, 2022
United States	$ 36,539	$ 35,221
Philippines	174,835	167,488
Other	9,602	7,746
Total	$ 220,976	$ 210,455

Amortization of prepaid tooling costs amounted to $33 and $65 for the three- and six-month periods ended September 23, 2022, respectively, and $33 and $66 for the three- and six-month periods ended September 24, 2021, respectively.

9. Goodwill and Intangible Assets

The table below summarizes the changes in the carrying amount of goodwill as follows:

	Total
Balance at March 25, 2022	$ 20,009
Goodwill arising from acquisitions	8,229
Currency translation	(201)
Balance at September 23, 2022	$ 28,037
Balance at March 26, 2021	$ 20,106
Foreign currency translation	(13)
Balance at September 24, 2021	$ 20,093

Intangible assets, net is as follows:

	September 23, 2022			
Description	Gross	Accumulated Amortization	Net Carrying Amount	Weighted- Average Lives
Patents	$ 38,364	$ 16,649	$ 21,715	10 years
Customer relationships	6,542	6,344	198	9 years
Process technology	28,074	2,393	25,681	12 years
Indefinite-lived and legacy process technology	5,636	1,650	3,986	
Trademarks	200	84	116	5 years
Legacy trademarks	630	58	572	
Other	32	32	—	
Total	$ 79,478	$ 27,210	$ 52,268	

	March 25, 2022			
Description	Gross	Accumulated Amortization	Net Carrying Amount	Weighted- Average Lives
Patents	$ 36,577	$ 15,304	$ 21,273	10 years
Customer relationships	6,582	6,348	234	9 years
Process technology	13,100	1,742	11,358	12 years
Indefinite-lived and legacy process technology	4,050	1,650	2,400	
Trademarks	200	64	136	5 years
Legacy trademarks	627	58	569	
Other	32	32	—	
Total	$ 61,168	$ 25,198	$ 35,970	

(Amounts in thousands, except share and per share amounts)

Intangible assets amortization expense was $1,194 and $2,230 for the three- and six-month periods ended September 23, 2022, respectively, and $1,084 and $2,103 for the three- and six-month periods ended September 24, 2021, respectively.

As of September 23, 2022, annual amortization expense of intangible assets for the next five fiscal years is expected to be as follows:

Remainder of 2023	$ 2,027
2024	3,859
2025	3,591
2026	3,318
2027	2,999
Thereafter	31,916
Total	$ 47,710

10. Accrued Expenses and Other Current Liabilities

The composition of accrued expenses and other current liabilities is as follows:

	September 23, 2022	March 25, 2022
Accrued management incentives	$ 19,031	$ 33,607
Accrued salaries and wages	18,261	14,699
Accrued warranty costs	3,745	541
Accrued vacation	7,404	5,715
Accrued severance	2,500	839
Accrued professional fees	3,014	1,252
Accrued income taxes	2,467	1,831
Accrued utilities	1,246	607
Other current liabilities	6,273	6,368
Total	$ 63,941	$ 65,459

11. Debt and Other Borrowings

On September 30, 2020, the Company entered into a term loan credit agreement with Credit Suisse AG, Cayman Islands Branch, as administrative agent and collateral agent, and the other agents, arrangers and lenders party thereto, providing for a $325,000 senior secured term loan facility due in fiscal 2028 (the "Term Loan Facility"). On September 30, 2020, the Company also entered into a revolving facility credit agreement with Mizuho Bank, Ltd., as administrative agent and collateral agent, and the other agents, arrangers and lenders party thereto, providing for a $50,000 senior secured revolving credit facility expiring in 2023 (the "Revolving Credit Facility" and, together with the Term Loan Facility, the "Senior Secured Credit Facilities"). The Company's outstanding borrowings bore an interest rate of 6.27% at September 23, 2022. As of both September 23, 2022 and March 25, 2022, the Company had $25,000 outstanding under the Term Loan Facility and had not borrowed on the Revolving Credit Facility. As of September 23, 2022 and March 25, 2022, the unamortized portion of the deferred financing costs associated with the Revolving Credit Facility was $99 and $149, respectively, and the related short-term and long-term portions were classified within "Prepaid expenses and other current assets" and "Other assets, net" on its unaudited condensed consolidated balance sheets.

On November 26, 2019, the Company, through its subsidiaries, entered into a line of credit agreement with a financial institution that provides for a maximum borrowing capacity of 60,000 Philippine pesos (approximately $1,036 at September 23, 2022) at the bank's prevailing interest rate. The line of credit is due to expire on August 31, 2023. There were no borrowings outstanding under this line of credit as of September 23, 2022 and March 25, 2022.

On November 20, 2019, the Company, through its subsidiaries, entered into a line of credit agreement with a financial institution that provides for a maximum capacity of 75,000 Philippine pesos (approximately $1,295 at September 23, 2022) at the bank's prevailing interest rate. The line of credit is due to expire on June 30, 2023. There were no borrowings outstanding under this line of credit as of September 23, 2022 and March 25, 2022.

(Amounts in thousands, except share and per share amounts)

12. Other Long-Term Liabilities

The composition of other long-term liabilities is as follows:

	September 23, 2022	March 25, 2022
Accrued management incentives	$ 51	$ 826
Accrued retirement	8,204	8,903
Accrued contingent consideration	100	2,800
Provision for uncertain tax positions	2,808	2,757
Total	$ 11,163	$ 15,286

13. Retirement Plans

The Company recognizes the funded status (i.e., the difference between the fair value of plan assets and the benefit obligations) of its defined benefit pension plans in its unaudited condensed consolidated balance sheets with a corresponding adjustment to accumulated other comprehensive income, net of tax. These amounts will continue to be recognized as a component of future net periodic benefit costs consistent with the Company's past practice. Further, actuarial gains and losses and prior service costs that arise in future periods and are not recognized as net periodic benefit costs in the same periods will be recognized as a component of other comprehensive income. Those amounts will also be recognized as a component of future net periodic benefit costs consistent with the Company's past practice. The Company uses a measurement date for its defined benefit pension plans and other postretirement benefit plans that is equivalent to its fiscal year-end.

Plan Descriptions

Non-U.S. Defined Benefit Plan

The Company, through its wholly owned subsidiary, Allegro MicroSystems Philippines, Inc. ("AMPI"), has a defined benefit pension plan, which is a noncontributory plan that covers substantially all employees of the respective subsidiary. The plan's assets are invested in common trust funds, bonds and other debt instruments and stocks.

Effect on the unaudited statements of operations

Expense related to the non-United States ("U.S.") defined benefit plan was as follows:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Service cost	$ 307	$ 371	$ 635	$ 754
Interest cost	185	161	382	327
Expected return on plan assets	(73)	(76)	(151)	(155)
Amortization of prior service cost	(2)	—	(4)	—
Actuarial loss	19	52	40	105
Net periodic pension expense	$ 436	$ 508	$ 902	$ 1,031

(Amounts in thousands, except share and per share amounts)

Information on Plan Assets

The table below sets forth the fair value of the entity's non-U.S. defined benefit plan's plan assets as of September 23, 2022 and March 25, 2022, using the same three-level hierarchy of fair value inputs described in the significant accounting policies included in the Company's 2022 Annual Report.

	Fair Value at September 23, 2022	Level 1	Level 2	Level 3
Assets of non-U.S. defined benefit plan:				
Government securities	$ 2,077	$ 2,077	$ —	$ —
Unit investment trust fund	1,004	—	1,004	—
Loans	540	—	—	540
Bonds	581	—	581	—
Stocks and other investments	1,969	1,004	2	963
Total	$ 6,171	$ 3,081	$ 1,587	$ 1,503

	Fair Value at March 25, 2022	Level 1	Level 2	Level 3
Assets of non-U.S. defined benefit plan:				
Government securities	$ 1,920	$ 1,920	$ —	$ —
Unit investment trust fund	1,165	—	1,165	—
Loans	553	—	—	553
Bonds	676	—	676	—
Stocks and other investments	2,783	1,716	2	1,065
Total	$ 7,097	$ 3,636	$ 1,843	$ 1,618

The following table shows the change in fair value of Level 3 plan assets for the six-month periods ended September 23, 2022 and September 24, 2021:

	Level 3 Non-U.S. Defined Benefit Plan Assets	
	Loans	Stocks
Balance at March 25, 2022	$ 553	$ 1,065
Additions during the year	253	—
Redemptions during the year	(216)	—
Revaluation of equity securities	3	—
Change in foreign currency exchange rates	(53)	(102)
Balance at September 23, 2022	$ 540	$ 963
Balance at March 26, 2021	$ 584	$ 1,133
Additions during the year	273	—
Redemptions during the year	(214)	—
Revaluation of equity securities	(1)	—
Change in foreign currency exchange rates	(22)	(37)
Balance at September 24, 2021	$ 620	$ 1,096

The investments in the Company's major benefit plans largely consist of low-cost, broad-market index funds to mitigate risks of concentration within the market sectors. In recent years, the Company's investment policy has shifted toward a closer matching of the interest-rate sensitivity of the plan assets and liabilities. The appropriate mix of equity and bond investments is determined primarily through the use of detailed asset-liability modeling studies that look to balance the impact of changes in the discount rate against the need to provide asset growth to cover future service cost. The Company, through its wholly owned subsidiary, Allegro MicroSystems, LLC's ("AML"), non-U.S. defined benefit plan, has added a greater proportion of fixed income securities with return characteristics that are more closely aligned with changes in liabilities caused by discount rate volatility. There are no significant restrictions on the amount or nature of the investments that may be acquired or held by the plans.

During the three- and six-month periods ended September 23, 2022, the Company contributed approximately $327 and $699 to its non-U.S. pension plan, respectively. During the three- and six-month periods ended September 24, 2021, the Company contributed approximately $343 and $696 to its non-U.S. pension plan, respectively. The Company expects to contribute approximately $1,546 to its non-U.S. pension plan in fiscal year 2023.

Defined Contribution Plan

The Company has a 401(k) plan that covers all employees meeting certain service and age requirements. Employees are eligible to participate in the plan upon hire when the service and age requirements are met. Employees may contribute up to 35% of their compensation, subject to the maximum contribution allowed by the Internal Revenue Service. All employees are 100% vested in their contributions at the time of plan entry.

Eligible AML U.S. employees may contribute up to 50% of their pretax compensation to a defined contribution plan, subject to certain limitations, and AML may match, at its discretion, 100% of the participants’ pretax contributions, up to a maximum of 5% of their eligible compensation. Matching contributions by AML totaled approximately $1,052 and $2,482 for the three- and six-month periods ended September 23, 2022, respectively, and approximately $1,089 and $2,345 for the three- and six-month periods ended September 24, 2021, respectively.

14. Commitments and Contingencies

Insurance

The Company, through its subsidiaries, utilizes self-insured employee health programs for employees in the United States. The Company records estimated liabilities for its self-insured health programs based on information provided by the third-party plan administrators, historical claims experience and expected costs of claims incurred but not reported. The Company monitors its estimated liabilities on a quarterly basis. As facts change, it may become necessary to make adjustments that could be material to the Company’s unaudited condensed consolidated financial position and results of operations.

Legal proceedings

The Company is subject to various legal proceedings, claims and regulatory examinations or investigations arising in the normal course of business, the outcomes of which are subject to significant uncertainty, and the Company’s ultimate liability, if any, is difficult to predict. The Company records an accrual for legal contingencies when it is determined that it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. In making such determinations, the Company evaluates, among other things, the degree of probability of an unfavorable outcome and, when it is probable that a liability has been incurred, the ability to make a reasonable estimate of the loss. If the occurrence of liability is probable, the Company will disclose the nature of the contingency, and if estimable, will provide the likely amount of such loss or range of loss. The Company does not believe there are any current matters that could have a material adverse effect on its financial position, results of operations or cash flows.

Indemnification

From time to time, the Company has agreed to indemnify and hold harmless certain customers for potential allegations of infringement of intellectual property rights and patents arising from the use of its products. To date, the Company has not recognized or incurred any costs in connection with such indemnification arrangements; therefore, there was no accrual of such amounts at September 23, 2022 or March 25, 2022.

Environmental Matters

The Company establishes accrued liabilities for environmental matters when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. If the contingency is resolved for an amount greater or less than the accrual, or the Company’s share of the contingency increases or decreases or other assumptions relevant to the development of the estimate were to change, the Company would recognize an additional expense or benefit in the unaudited condensed consolidated statements of operations during the period such determination was made. No significant environmental accruals were established at September 23, 2022 or March 25, 2022.

(Amounts in thousands, except share and per share amounts)

15. Net Income per Share

The following table sets forth the basic and diluted net income attributable to Allegro MicroSystems, Inc. per share.

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Net income attributable to Allegro MicroSystems, Inc.	$ 50,614	$ 33,186	$ 60,861	$ 60,855
Net income attributable to common stockholders	50,648	33,223	60,931	60,930
Basic weighted average shares of common stock	191,284,631	189,673,788	190,959,616	189,629,535
Dilutive effect of common stock equivalents	1,354,945	2,002,634	1,694,481	1,786,715
Diluted weighted average shares of common stock	192,639,576	191,676,422	192,654,097	191,416,250
Basic net income attributable to Allegro MicroSystems, Inc. per share	$ 0.26	$ 0.17	$ 0.32	$ 0.32
Basic net income attributable to common stockholders per share	$ 0.26	$ 0.18	$ 0.32	$ 0.32
Diluted net income attributable to Allegro MicroSystems, Inc. per share	$ 0.26	$ 0.17	$ 0.32	$ 0.32
Diluted net income attributable to common stockholders per share	$ 0.26	$ 0.17	$ 0.32	$ 0.32

The computed net income per share for the three- and six-month periods ended September 23, 2022 and September 24, 2021 does not assume conversion of securities that would have an antidilutive effect on income per share. The following table represents the securities excluded as conversion of such securities would have an antidilutive effect on income per share:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Restricted stock units	77,043	—	48,725	—
Performance stock units	169,939	—	107,390	—
Employee stock purchase plan	—	1,567	—	6,012
Total	246,982	1,567	156,115	6,012

The following table represents issuable weighted average share information for the respective periods:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Restricted stock units	541,201	1,026,069	624,738	922,968
Performance stock units	810,426	976,565	1,066,425	863,747
Employee stock purchase plan	3,318	—	3,318	—
Total	1,354,945	2,002,634	1,694,481	1,786,715

16. Common Stock and Stock-Based Compensation

The Company accounts for stock-based compensation through the measurement and recognition of compensation expense for share-based payment awards made to employees over the related requisite service period, including PSUs, RSUs and restricted shares (all part of our equity incentive plan).

During the six-month periods ended September 23, 2022 and September 24, 2021, the Company granted RSUs to employees of 2,144,417 and 960,031, respectively, with an estimated grant date fair value of $22.96 and $24.96, respectively. During the six-month periods ended September 23, 2022 and September 24, 2021, 1,070,849 and 64,583 shares vested, respectively, and 152,126 and 61,039 shares were cancelled, respectively. Stock-based compensation expense related to non-vested awards not yet recorded at September 23, 2022 was $46,164, which is expected to be recognized over a weighted-average of 1.53 years.

PSUs are included at 100% - 200% of target goals. The intrinsic value of the PSUs that were unvested during the six-month period ended September 23, 2022 was $63,476. A total of 855,916 and no shares vested during the six-month periods ended September 23, 2022 and September 24, 2021, respectively. The total compensation cost related to unvested awards not yet recorded at September 23, 2022 was $25,750, which is expected to be recognized over a weighted average of 2.88 years.

(Amounts in thousands, except share and per share amounts)

During the six-month periods ended September 23, 2022 and September 24, 2021, 23,425 and 59,201, respectively, shares of the Company's restricted common stock vested. No shares and 9,757 shares, respectively, were forfeited, which reduced common stock outstanding during the same periods. The Company had 117,101 unvested shares of restricted common stock at September 23, 2022 with a weighted average grant date fair value of $14.00 and remaining vesting period of 0.58 years.

The Company recorded stock-based compensation expense in the following expense categories of its unaudited condensed consolidated statements of operations:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Cost of sales	$ 1,124	$ 722	$ 1,956	$ 1,250
Research and development	1,711	1,043	2,839	1,795
Selling, general and administrative	5,369	4,431	37,545	7,982
Total stock-based compensation	$ 8,204	$ 6,196	$ 42,340	$ 11,027

During the first fiscal quarter of 2023, the Company's (former) President and Chief Executive Officer, Ravi Vig, provided notice of his retirement from the Company and its board of directors (the "Board"), effective June 13, 2022. Additionally, the Company entered into a second amended and restated severance agreement (the "Second A&R Severance Agreement") with Mr. Vig that amended and restated the amended agreement from September 30, 2020. As provided for in the Second A&R Severance Agreement, the Company agreed, in addition to other cash-settled and health insurance-related compensation, to modifications to Mr. Vig's stock-based compensation, including: (i) acceleration of the vesting of all unvested RSUs, (ii) modification of certain PSUs with performance conditions that had been achieved as of the retirement date to permit these awards to remain outstanding and eligible to vest in accordance with their terms, and (iii) the forfeiture of certain unvested PSUs with performance conditions that had not been achieved as of the retirement date and replacement thereof with new immediately vesting RSUs. The impact of these modifications on stock-based compensation expense was $26,349 for the six-month period ended September 23, 2022, which was recorded in selling, general and administrative expense in the Company's unaudited condensed consolidated statements of operations.

17. Income Taxes

The Company recorded the following tax provision in its unaudited condensed consolidated statements of operations:

	Three-Month Period Ended		Six-Month Period Ended	
	September 23, 2022	September 24, 2021	September 23, 2022	September 24, 2021
Provision for income taxes	$ 8,438	$ 6,143	$ 10,403	$ 10,406
Effective tax rate	14.3%	15.6%	14.6%	14.6%

The Company's provision for income taxes is comprised of the year-to-date taxes based on an estimate of the annual effective tax rate plus the tax impact of discrete items.

The Company is subject to tax in the U.S. and various foreign jurisdictions. The Company's effective tax rate can fluctuate primarily based on: the mix of its U.S. and foreign income; the impact of discrete transactions; and the difference between the amount of tax benefit generated by the foreign derived intangible income deduction ("FDII") and research credits offset by the additional tax from the global intangible low-tax income ("GILTI").

The effective tax rate ("ETR") was primarily impacted by Internal Revenue Code ("IRC") Section 174 Capitalization ("174 Capitalization"), a reduction in state taxes and an increase in current year non-deductible executive compensation expense. 174 Capitalization increased U.S. taxable income, cash taxes, FDII deductions, and Subpart F and GILTI inclusions. The net tax impact from 174 Capitalization is favorable because the increased FDII deductions of $9,000 exceed the additional inclusion for Subpart F and GILTI income inclusions of $3,280 ("Net 174 Benefit"). The Net 174 Benefit is offset in the current year by increased non-deductible executive compensation of $6,826, state tax benefits and discrete tax impacts.

The Company regularly assesses the likelihood of outcomes that could result from the examination of its tax returns by the IRS and other tax authorities to determine the adequacy of its income tax reserves and expense. Should actual events or results differ from the Company's then-current expectations, charges or credits to the Company's provision for income taxes may become necessary. Any such adjustments could have a significant effect on the results of operations.

18. Related Party Transactions

Transactions involving Sanken

The Company sells products to, and purchases in-process products from, Sanken. As of September 23, 2022, Sanken held approximately 51.5% of the Company's outstanding common stock.

Net sales of the Company's products to Sanken totaled $45,026 and $86,735 during the three- and six-month periods ended September 23, 2022, respectively, and $37,165 and $72,618 during the three- and six-month periods ended September 24, 2021, respectively. Trade accounts receivables, net of allowances from Sanken, totaled $32,411 and $27,256 as of September 23, 2022 and March 25, 2022, respectively. Other accounts receivable from Sanken totaled $117 and $104 as of September 23, 2022 and March 25, 2022, respectively.

Termination of Sanken Distribution Agreement

On September 29, 2022, the Company entered into a transition agreement with Sanken that provides for the termination of the distribution agreement dated as of July 5, 2007, by and between the Company and Sanken (the "Distribution Agreement") and sets forth the terms governing the collaboration between the parties to transition the marketing and sale of the Company's products in Japan from Sanken to the Company during the 12-month transition period beginning on September 29, 2022 (the "Transition Agreement"). Following the 12-month transition period, both the Transition Agreement and the Distribution Agreement will terminate.

Under the terms of the Transition Agreement, Sanken will cease to place new orders for the Company's products and will begin to transition existing orders to the Company. All orders are expected to be transferred by June 30, 2023. Sanken also will continue to provide support to the Company's customers and logistical support to the Company during the transition period. In addition, in the Transition Agreement, the Company and Sanken agreed to enter into a separate agreement regarding the transfer of inventory to the Company and a one-time payment to Sanken based on Sanken's analysis of its inventory position as of December 23, 2022. The Transition Agreement had no impact on the Company's results during the second quarter of fiscal 2023.

The Transition Agreement and termination of the Distribution Agreement are expected to transfer related party distributor sales to third party distributors and direct customers, as well as eliminate the distributor discount historically provided to Sanken.

Transactions involving Polar Semiconductor, LLC ("PSL")

The Company purchases in-process products from PSL. PSL is a subsidiary of Sanken, 70% owned by Sanken and 30% owned by the Company.

Purchases of various products from PSL totaled $14,479 and $29,150 for the three- and six-month periods ended September 23, 2022, respectively, and $13,129 and $26,509 for the three- and six-month periods ended September 24, 2021, respectively. Accounts payable to PSL included in amounts due to a related party totaled $4,709 and $5,222 as of September 23, 2022 and March 25, 2022, respectively.

On December 2, 2021, AML entered into a loan agreement with PSL wherein PSL provided an initial promissory note to AML for a principal amount of $7,500 (the "Initial PSL Loan"). The Initial PSL Loan will be repaid in equal installments, comprising principal and interest accrued at 1.26% per annum, over a term of four years with payments due on the first day of each calendar year quarter (April 1, July 1, October 1, and January 1). In addition, on July 1, 2022, PSL borrowed an additional $7,500 under the same terms of the PSL Loan (the "Secondary PSL Loan" and, together with the Initial PSL Loan, the "PSL Promissory Notes"). The loan funds were used by PSL to procure a deep ultraviolet scanner and other associated manufacturing tools necessary to increase wafer fabrication capacity in support of the Company's increasing wafer demand. As of September 23, 2022, the outstanding balance of the PSL Promissory Notes was $14,063. During the six months ended September 23, 2022, PSL made required quarterly payments to AML totaling $991, which included $53 of interest income. On October 1, 2022, PSL made a quarterly payment to AML of $938, which included $77 of interest income.

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our unaudited condensed consolidated financial statements and the related notes and other information included elsewhere in this Quarterly Report, as well as the audited financial statements and the related notes thereto, and the discussion under “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Business” included in our Annual Report on Form 10-K for the year ended March 25, 2022, filed with the Securities and Exchange Commission (“SEC”) on May 18, 2022, as amended by Amendment No. 1 on Form 10-K/A filed with the SEC on August 29, 2022 (as amended, *the “2022 Annual Report”).*

In addition to historical data, this discussion contains forward-looking statements about our business, results of operations, cash flows, financial condition and prospects based on current expectations that involve risks, uncertainties and assumptions. Our actual results could differ materially from such forward-looking statements. Factors that could cause or contribute to those differences include, but are not limited to, those identified below and those discussed in the section titled “Forward-Looking Statements” and in Part I, Item 1A. “Risk Factors” of our 2022 Annual Report and Part II, Item 1A. “Risk Factors” of this Quarterly Report. Additionally, our historical results are not necessarily indicative of the results that may be expected for any period in the future.

We operate on a 52- or 53-week fiscal year ending on the last Friday of March. Each fiscal quarter has 13 weeks, except in a 53-week year, when the fourth fiscal quarter has 14 weeks. All references to the three- and six-month periods ended September 23, 2022 and September 24, 2021 relate to the 13- and 26-week periods ended September 23, 2022 and September 24, 2021, respectively. All references to “2022,” “fiscal year 2022” or similar references relate to the 52-week period ended March 25, 2022.

Overview

Allegro MicroSystems, Inc., together with its consolidated subsidiaries (“Allegro”, “we”, “us” or “our”) is a leading global designer, developer, manufacturer and marketer of sensor integrated circuits (“ICs”) and application-specific analog power ICs enabling important emerging technologies in the automotive and industrial markets. We are a leading supplier of magnetic sensor IC solutions worldwide based on market share, driven by our market leadership in automotive. We focus on providing complete IC solutions to sense, regulate and drive a variety of mechanical systems. This includes sensing the angular or linear position of a shaft or actuator, driving an electric motor or actuator, and regulating the power applied to sensing and driving circuits so they operate safely and efficiently.

We are headquartered in Manchester, New Hampshire and have a global footprint with 17 locations across four continents. Our portfolio includes more than 1,000 products, and we ship over one billion units annually to more than 10,000 customers worldwide. During the three- and six-month periods ended September 23, 2022, we generated $237.7 million and $455.4 million in total net sales, respectively, with $50.6 million and $60.9 million in net income, respectively. During the three- and six-month periods ended September 24, 2021, we generated $193.6 million and $381.8 million in total net sales, respectively, with $33.2 million and $60.9 million in net income, respectively.

Recent Initiatives to Improve Results of Operations

We implemented several initiatives during the fiscal year 2022 and into fiscal year 2023 designed to improve our operating results during those fiscal years and going forward.

We continue to implement initiatives to improve gross margins, which is calculated as gross profit divided by total net sales. Our gross margin improved from 53.0% in the second quarter of 2022 to 55.5% in the second quarter of 2023. This gross margin improvement was a result of our operational transformation, improved product mix of higher average selling prices (“ASPs”) on more value-added products, increased leverage of our distribution channel, and continued efficiency and leverage on higher volumes. We expect to continue to realize this lower level of cost of goods and improvements in operating income for the immediate future. Additionally, we will continue to leverage our facility to increase production where demand for our products warrants.

We have been successful in increasing our ASPs through a focus on feature-rich products and selective price increases. Increased ASPs and manufacturing efficiencies have allowed us to continue to improve gross margin in an environment of limited capacity at our suppliers and rising input costs. Limited supply and increased demand for many of our products and applications, as well as supply chain disruptions related to the COVID-19 pandemic and inflation, have contributed to input cost increases on the components needed to manufacture our products. We will continue to consider opportunities for strategic price increases and process efficiencies to offset input cost increases on the materials and supplies that we use in production.

With our efforts to leverage our fixed cost and operating margin improvements, we have attained efficiencies through cost structure improvements, streamlining of manufacturing and support processes, and further utilization of excess capacity. These manufacturing efficiencies allowed us to leverage higher volumes to keep pace with increasing demand across most of our applications, while reducing cost of goods sold and increasing the absorption of fixed costs. Although these initiatives have resulted in gross margin and operating income improvements over the previous quarters, we cannot ensure that these trends will continue over the long-term.

In May 2022, we entered into an agreement to acquire Heyday Integrated Circuits ("Heyday"), a privately held company specializing in compact, fully integrated isolated gate drivers that enable energy conversion in high-voltage gallium nitride and silicon carbide wide-bandgap semiconductor designs (the "Heyday Acquisition"). The Heyday Acquisition is expected to complement our existing solutions for energy efficiency, including our market-leading current sensor solutions. Additionally, it is expected to significantly expand Allegro's addressable market for xEV, solar inverters, data center and 5G power supplies, and broad-market industrial applications. The Heyday Acquisition was completed on September 1, 2022.

On September 29, 2022, the Company entered into a transition agreement with Sanken that provides for the termination of the distribution agreement dated as of July 5, 2007, by and between the Company and Sanken (the "Distribution Agreement") and sets forth the terms governing the collaboration between the parties to transition the marketing and sale of the Company's products in Japan from Sanken to the Company during the twelve-month transition period beginning on September 29, 2022 (the "Transition Agreement"). The Transition Agreement and termination of the Distribution Agreement are expected to transfer related party distributor sales to third party distributors and direct customers in Japan, as well as eliminate the distributor discount historically provided to Sanken. Additionally, we will invest in expanding our operations in Japan in order to directly manage and service our customers in that market, which is expected to result in increases in our cost of goods sold and operating expenses. The net impacts of the transition from the existing sales model in Japan is expected to provide incremental benefits to our gross margin over the long-term.

Other Key Factors and Trends Affecting our Operating Results

Our financial condition and results of operations have been, and will continue to be, affected by numerous other factors and trends, including the following:

Inflation

Inflation rates in the markets in which we operate have increased and may continue to rise. Inflation over the last several months has led us to experience higher costs, including higher labor costs, wafer and other costs for materials from suppliers, and transportation costs. Our suppliers have raised their prices and may continue to raise prices, and in the competitive markets in which we operate, we may not be able to make corresponding price increases to preserve our gross margins and profitability. If inflation rates continue to rise or remain elevated for a sustained period of time, they could have a material adverse effect on our business, financial condition, results of operations and liquidity. We have generally been able to offset increases in these costs through various productivity and cost reduction initiatives, as well as adjusting our selling prices to pass through some of these higher costs to our customers; however, our ability to raise our selling prices depends on market conditions and competitive dynamics. Given the timing of our actions compared to the timing of these inflationary pressures, there may be periods during which we are unable to fully recover the increases in our costs.

Design Wins with New and Existing Customers

Our end customers continually develop new products in existing and new application areas, and we work closely with our significant OEM customers in most of our target markets to understand their product roadmaps and strategies. For new products, the time from design initiation and manufacturing until we generate sales can be lengthy, typically between two and four years. As a result, our future sales are highly dependent on our continued success at winning design mandates from our customers. Further, despite current inflationary and pricing conditions, we expect the ASPs of our products to decline over time, and we consider design wins to be critical to our future success and anticipate being increasingly dependent on revenue from newer design wins for our newer products. The selection process is typically lengthy and may require us to incur significant design and development expenditures in pursuit of a design win with no assurance that our solutions will be selected. As a result, the loss of any key design win or any significant delay in the ramp-up of volume production of the customer's products into which our product is designed could adversely affect our business. In addition, volume production is contingent upon the successful introduction and market acceptance of our customers' end products, which may be affected by several factors beyond our control.

Customer Demand, Orders and Forecasts

Demand for our products is highly dependent on market conditions in the end markets in which our customers operate, which are generally subject to seasonality, cyclicality and competitive conditions. In addition, a substantial portion of our total net sales is derived from sales to customers that purchase large volumes of our products. These customers generally provide periodic forecasts of their requirements, but these forecasts do not commit such customers to minimum purchases, and customers can revise these forecasts without penalty. In addition, as is customary in the semiconductor industry, customers are generally permitted to cancel orders for our products within a specified period. While historically we have permitted order cancellations for most customers, most of our current customer order backlog is noncancellable, which helps mitigate our exposure to unforeseen order cancellations. However, cancellations of orders could still result in the loss of anticipated sales without allowing us sufficient time to reduce our inventory and operating expenses. In addition, changes in forecasts or the timing of orders from customers exposes us to the risks of inventory shortages or excess inventory. We continue to see demand for our products exceed supply, and we are currently operating in an inflationary environment.

Manufacturing Costs and Product Mix

Gross margin has been, and will continue to be, affected by a variety of factors, including the ASPs of our products, product mix in a given period, material costs, yields, manufacturing costs and efficiencies. We believe the primary driver of gross margin is the ASP negotiated between us and our customers relative to material costs and yields. Our pricing and margins depend on the volumes and the features of the products we produce and sell to our customers. As our products mature and unit volumes increase, despite current price leverage, we expect their ASPs to decline in the long term. We continually monitor and work to reduce the cost of our products and improve the potential value our solutions provide to our customers as we target new design win opportunities and manage the product life cycles of our existing customer designs. We also maintain a close relationship with our suppliers and subcontractors to improve quality, increase yields and lower manufacturing costs. As a result, these declines often coincide with improvements in manufacturing yields and lower wafer, assembly, and testing costs, which offset some or all of the margin reduction that results from declining ASPs. However, we expect our gross margin to fluctuate on a quarterly basis as a result of changes in ASPs due to product mix, new product introductions, transitions into volume manufacturing and manufacturing costs. Gross margin generally decreases if production volumes are lower as a result of decreased demand, which leads to a reduced absorption of our fixed manufacturing costs. Gross margin generally increases when the opposite occurs.

Cyclical Nature of the Semiconductor Industry

The semiconductor industry has historically been highly cyclical and is characterized by increasingly rapid technological change, product obsolescence, competitive pricing pressures, evolving standards, short product life cycles and fluctuations in product supply and demand. New technology may result in sudden changes in system designs or platform changes that may render some of our products obsolete and require us to devote significant research and development resources to compete effectively. Periods of rapid growth and capacity expansion are occasionally followed by significant market corrections in which sales decline, inventories accumulate, and facilities go underutilized. During periods of expansion, our margins generally improve as fixed costs are spread over higher manufacturing volumes and unit sales. In addition, we may build inventory to meet increasing market demand for our products during these times, which serves to absorb fixed costs further and increase our gross margins. During an expansion cycle, we may increase capital spending and hiring to add to our production capacity. During periods of slower growth or industry contractions, our sales, production and productivity suffer, and margins generally decline.

Results of Operations

Three-Month Period Ended September 23, 2022 Compared to Three-Month Period Ended September 24, 2021

The following table summarizes our results of operations for the three-month periods ended September 23, 2022 and September 24, 2021.

	Three-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	$	%
	(Dollars in thousands)			
Total net sales (1)	$ 237,666	$ 193,610	$ 44,056	22.8 %
Cost of goods sold (1)	105,644	91,078	14,566	16.0 %
Gross profit	132,022	102,532	29,490	28.8 %
Operating expenses:				
Research and development	35,567	29,590	5,977	20.2 %
Selling, general and administrative	39,117	34,088	5,029	14.8 %
Change in fair value of contingent consideration	(2,500)	300	(2,800)	(933.3)%
Total operating expenses	72,184	63,978	8,206	12.8 %
Operating income	59,838	38,554	21,284	55.2 %
Other income (expense), net:				
Interest expense	(531)	(1,228)	697	(56.8)%
Interest income	467	78	389	498.7 %
Foreign currency transaction gain	266	202	64	31.7 %
(Loss) income in earnings of equity investment	(1,029)	226	(1,255)	(555.3)%
Other, net	75	1,534	(1,459)	(95.1)%
Total other expense, net	(752)	812	(1,564)	(192.6)%
Income before income tax provision	59,086	39,366	19,720	50.1 %
Income tax provision	8,438	6,143	2,295	37.4 %
Net income	50,648	33,223	17,425	52.4 %
Net income attributable to non-controlling interests	34	37	(3)	(8.1)%
Net income attributable to Allegro MicroSystems, Inc.	$ 50,614	$ 33,186	$ 17,428	52.5 %

(1) Our total net sales and cost of goods sold for the periods presented above include related party net sales generated through our distribution agreement with Sanken. See our unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report for additional information regarding our related party net sales for the periods set forth above.

The following table sets forth our results of operations as a percentage of total net sales for the periods presented.

	Three-Month Period Ended	
	September 23, 2022	September 24, 2021
Total net sales	100.0 %	100.0 %
Cost of goods sold	44.5 %	47.0 %
Gross profit	55.5 %	53.0 %
Operating expenses:		
Research and development	15.0 %	15.3 %
Selling, general and administrative	16.5 %	17.6 %
Change in fair value of contingent consideration	(1.1)%	0.2 %
Total operating expenses	30.4 %	33.1 %
Operating income	25.1 %	19.9 %
Other income (expense), net:		
Interest expense	(0.2)%	(0.6)%
Interest income	0.2 %	— %
Foreign currency transaction gain	0.1 %	0.1 %
(Loss) income in earnings of equity investment	(0.3)%	0.1 %
Other, net	— %	0.8 %
Total other expense, net	(0.2)%	0.4 %
Income before income tax provision	24.9 %	20.3 %
Income tax provision	3.6 %	3.2 %
Net income	21.3 %	17.1 %
Net income attributable to non-controlling interests	— %	— %
Net income attributable to Allegro MicroSystems, Inc.	21.3 %	17.1 %

Total net sales

Total net sales increased by $44.1 million, or 22.8%, to $237.7 million in the three-month period ended September 23, 2022 from $193.6 million in the three-month period ended September 24, 2021. This increase was primarily attributable to higher shipment of our data center, advanced driver assistance systems ("ADAS"), safety, comfort and convenience, electrified vehicle ("xEV"), and computing applications.

Sales Trends by Market

The following table summarizes total net sales by market. The categorization of net sales by market is based on the characteristics of the end product and application into which our product will be designed.

	Three-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
Automotive	$ 157,398	$ 126,031	$ 31,367	24.9 %
Industrial	48,176	36,321	11,855	32.6 %
Other	32,092	31,258	834	2.7 %
Total net sales	$ 237,666	$ 193,610	$ 44,056	22.8 %

The increase in net sales by market was driven primarily by increases in automotive of $31.4 million, or 24.9%, and industrial of $11.9 million, or 32.6%.

Automotive net sales increased in the three-month period ended September 23, 2022 compared to the three-month period ended September 24, 2021, primarily due to higher demand for our ADAS, safety, comfort and convenience and xEV applications.

Industrial net sales improved in the three-month period ended September 23, 2022 compared to the three-month period ended September 24, 2021, primarily due to increases in demand for our data center and Industry 4.0 applications.

Sales Trends by Product

The following table summarizes net sales by product.

	Three-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
Power integrated circuits (“PIC”)	$ 97,327	$ 65,523	$ 31,804	48.5 %
Magnetic sensors (“MS”) and other	140,339	128,087	12,252	9.6 %
Total net sales	$ 237,666	$ 193,610	$ 44,056	22.8 %

The increase in net sales by product was driven by increases of $12.2 million, or 9.6%, in MS and other product sales and $31.8 million, or 48.5%, in PIC product sales.

Sales Trends by Geographic Location

The following table summarizes net sales by geographic location based on ship-to location.

	Three-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
Americas:				
United States	$ 25,131	$ 27,785	$ (2,654)	(9.6)%
Other Americas	7,244	5,427	1,817	33.5 %
EMEA:				
Europe	40,710	32,466	8,244	25.4 %
Asia:				
Greater China	63,203	50,683	12,520	24.7 %
Japan	45,026	37,165	7,861	21.2 %
South Korea	20,931	19,746	1,185	6.0 %
Other Asia	35,421	20,338	15,083	74.2 %
Total net sales	$ 237,666	$ 193,610	$ 44,056	22.8 %

Net sales increased across all international locations in the three-month period ended September 23, 2022 compared to the three-month period ended September 24, 2021, primarily due to content and market share gains, partially offset by a decrease in product sales in the U.S.

Other Asia and South Korea experienced sales growth of $15.1 million and $1.2 million, respectively, mainly due to higher demand for our data center, internal combustion engine (“ICE”), safety, comfort and convenience, ADAS and computing offerings. The increase in net sales of $12.5 million, or 24.7%, in Greater China related to higher automotive demand, primarily in our ADAS, safety, comfort and convenience and xEV sectors. The increase in net sales of $8.2 million, or 25.4%, in Europe, predominantly comprised of Germany and France, was primarily driven by increases in automotive and industrial demand. Net sales in Japan grew $7.9 million, or 21.2%, which was primarily driven by higher demand in our xEV, ICE and industrial offerings. Other Americas increased $1.8 million, or 33.5%, mainly due to higher automotive demand, specifically in our ADAS applications.

The increases above were partially offset by lower net sales in the United States of $2.7 million, or 9.6%, primarily driven by a decline in our industrial sector.

Cost of goods sold, gross profit and gross margin

Cost of goods sold increased by $14.6 million, or 16.0%, to $105.6 million in the three-month period ended September 23, 2022 from $91.1 million in the three-month period ended September 24, 2021. The increase in cost of goods sold was primarily attributable to higher sales volume and, to a lesser extent, higher warranty costs.

Gross profit increased by $29.5 million, or 28.8%, to $132.0 million in the three-month period ended September 23, 2022 from $102.5 million in the three-month period ended September 24, 2021. The increase in gross profit was driven by a $44.1 million increase in net sales to all markets discussed above, partially offset by the impacts to cost of goods sold discussed above.

R&D expenses

R&D expenses increased by $6.0 million, or 20.2%, to $35.6 million in the three-month period ended September 23, 2022 from $29.6 million in the three-month period ended September 24, 2021. This increase was primarily due to a combined $4.7 million increase in personnel and outside service costs, higher stock-based compensation expense of $0.7 million, and a $0.4 million increase in general operating expenses.

R&D expenses represented 15.0% of our total net sales for the three-month period ended September 23, 2022, a decrease from 15.3% of our total net sales for the three-month period ended September 24, 2021. This percentage decrease was primarily due to the growth in net sales in the three-month period ended September 23, 2022.

SG&A expenses

SG&A expenses increased by $5.0 million, or 14.8%, to $39.1 million in the three-month period ended September 23, 2022 from $34.1 million in the three-month period ended September 24, 2021. This increase was primarily due to an increase in personnel costs of $3.0 million and higher combined dues and subscriptions and professional fees of $1.0 million, as well as higher stock-based compensation expense of $0.9 million.

SG&A expenses represented 16.5% of our total net sales for the three-month period ended September 23, 2022, a decrease from 17.6% of our total net sales for the three-month period ended September 24, 2021. This percentage decrease was primarily due to the growth in net sales in the three-month period ended September 23, 2022.

Interest expense, net

Interest expense, net was $0.5 million in the three-month period ended September 23, 2022 compared to $1.2 million in the three-month period ended September 24, 2021. The decrease in interest expense, net was primarily due to higher interest income received from investments and a related party in the second quarter of 2023, partially offset by higher mandatory interest payments on the Term Loan Facility in the second quarter of 2023.

Foreign currency transaction gain

We recorded a foreign currency transaction gain of $0.3 million in the three-month period ended September 23, 2022 compared to a gain of $0.2 million in the three-month period ended September 24, 2021. The foreign currency transaction gains recorded in each three-month period were primarily due to the realized and unrealized gains from our United Kingdom location, partially offset by losses from our Philippines location.

(Loss) income in earnings of equity investment

(Loss) income in earnings of equity investment reflected losses of $1.0 million and gains of $0.2 million in the three-month periods ended September 23, 2022 and September 24, 2021, respectively, representing the (loss) earnings on our 30% investment in PSL.

Other, net

Other, net decreased by $1.5 million to $0.1 million of miscellaneous gains in the three-month period ended September 23, 2022 from $1.5 million of miscellaneous gains in the three-month period ended September 24, 2021. This decrease was largely attributable to $1.0 million of unrealized gains on equity securities recognized during the second quarter of fiscal 2022 that did not repeat in the second quarter of fiscal 2023.

Income tax provision

Income tax provision and the effective income tax rate were $8.4 million, or 14.3%, and $6.1 million, or 15.6%, respectively, in the three-month periods ended September 23, 2022 and September 24, 2021, respectively. The effective tax rate ("ETR") was primarily impacted by IRC Section 174 Capitalization ("174 Capitalization"), a reduction in state taxes and an increase in current year non-deductible executive compensation expense. 174 Capitalization increased U.S. taxable income, cash taxes, FDII deductions, and Subpart F and GILTI inclusions. The net tax impact from 174 Capitalization is favorable because the increased FDII deductions of $9.0 million exceed the additional inclusion for Subpart F and GILTI income inclusions of $3.3 million ("Net 174 Benefit"). The Net 174 Benefit is offset in the current year by increased non-deductible executive compensation of $6.8 million, state tax benefits and discrete tax impacts.

Six-Month Period Ended September 23, 2022 Compared to Six-Month Period Ended September 24, 2021

The following table summarizes our results of operations for the six-month periods ended September 23, 2022 and September 24, 2021.

	Six-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	$	%
	(Dollars in thousands)			
Total net sales [(1)]	$ 455,419	$ 381,752	$ 73,667	19.3 %
Cost of goods sold [(1)]	205,023	185,060	19,963	10.8 %
Gross profit	250,396	196,692	53,704	27.3 %
Operating expenses:				
Research and development	69,424	59,144	10,280	17.4 %
Selling, general and administrative	109,097	66,152	42,945	64.9 %
Change in fair value of contingent consideration	(2,700)	600	(3,300)	(550.0)%
Total operating expenses	175,821	125,896	49,925	39.7 %
Operating income	74,575	70,796	3,779	5.3 %
Other income (expense), net:				
Interest expense	(968)	(1,654)	686	(41.5)%
Interest income	784	159	625	393.1 %
Foreign currency transaction gain (loss)	2,190	(52)	2,242	(4311.5)%
(Loss) income in earnings of equity investment	(1,893)	505	(2,398)	(474.9)%
Other, net	(3,354)	1,582	(4,936)	(312.0)%
Total other expense, net	(3,241)	540	(3,781)	(700.2)%
Income before income tax provision	71,334	71,336	(2)	— %
Income tax provision	10,403	10,406	(3)	— %
Net income	60,931	60,930	1	— %
Net income attributable to non-controlling interests	70	75	(5)	(6.7)%
Net income attributable to Allegro MicroSystems, Inc.	$ 60,861	$ 60,855	$ 6	— %

(1) Our total net sales and cost of goods sold for the periods presented above include related party net sales generated through our distribution agreement with Sanken. See our unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report for additional information regarding our related party net sales for the periods set forth above.

The following table sets forth our results of operations as a percentage of total net sales for the periods presented.

	Six-Month Period Ended	
	September 23, 2022	September 24, 2021
Total net sales	100.0 %	100.0 %
Cost of goods sold	45.0 %	48.5 %
Gross profit	55.0 %	51.5 %
Operating expenses:		
Research and development	15.2 %	15.5 %
Selling, general and administrative	24.0 %	17.3 %
Change in fair value of contingent consideration	(0.6)%	0.2 %
Total operating expenses	38.6 %	33.0 %
Operating income	16.4 %	18.5 %
Other income (expense), net:		
Interest expense	(0.2)%	(0.4)%
Interest income	0.2 %	— %
Foreign currency transaction gain (loss)	0.5 %	— %
(Loss) income in earnings of equity investment	(0.4)%	0.1 %
Other, net	(0.8)%	0.5 %
Total other expense, net	(0.7)%	0.2 %
Income before income tax provision	15.7 %	18.7 %
Income tax provision	2.3 %	2.8 %
Net income	13.4 %	15.9 %
Net income attributable to non-controlling interests	— %	— %
Net income attributable to Allegro MicroSystems, Inc.	13.4 %	15.9 %

Total net sales

Total net sales increased by $73.7 million, or 19.3%, to $455.4 million in the six-month period ended September 23, 2022 from $381.8 million in the six-month period ended September 24, 2021. This increase was primarily attributable to higher shipment of our data center, ADAS, xEV, computing, and safety, comfort and convenience applications.

Sales Trends by Core End Market and Application

The following table summarizes total net sales by market. The categorization of net sales by market is based on the characteristics of the end product and application into which our product will be designed.

	Six-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
Automotive	$ 307,047	$ 259,554	$ 47,493	18.3 %
Industrial	88,316	66,630	21,686	32.5 %
Other	60,056	55,568	4,488	8.1 %
Total net sales	$ 455,419	$ 381,752	$ 73,667	19.3 %

The increase in net sales by market was driven by increases in automotive of $47.4 million, or 18.3%, industrial of $21.7 million, or 32.5%, and other of $4.5 million, or 8.1%.

Automotive net sales increased in the six-month period ended September 23, 2022 compared to the six-month period ended September 24, 2021, as we continued to experience higher demand for our ADAS, xEV, and safety, comfort and convenience applications.

Industrial net sales increased in the six-month period ended September 23, 2022 compared to the six-month period ended September 24, 2021, primarily due to increases in demand for our data center and Industry 4.0 applications.

Other net sales increased in the six-month period ended September 23, 2022 compared to the six-month period ended September 24, 2021 mainly due to increases in demand for certain computer products.

Sales Trends by Product

The following table summarizes net sales by product.

	Six-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
PIC	$ 177,987	$ 132,195	$ 45,792	34.6 %
MS and other	277,432	249,557	27,875	11.2 %
Total net sales	$ 455,419	$ 381,752	$ 73,667	19.3 %

The growth in net sales by product was driven by increases of $45.8 million in PIC product sales and $27.8 million in MS and other product sales during the six-month period ended September 23, 2022 compared to the same period last year.

Sales Trends by Geographic Location

The following table summarizes net sales by geographic location based on ship-to location.

	Six-Month Period Ended		Change	
	September 23, 2022	September 24, 2021	Amount	%
	(Dollars in thousands)			
Americas:				
United States	$ 53,522	$ 54,626	$ (1,104)	(2.0)%
Other Americas	13,731	11,776	1,955	16.6 %
EMEA:				
Europe	76,043	67,217	8,826	13.1 %
Asia:				
Greater China	118,319	93,462	24,857	26.6 %
Japan	86,735	72,618	14,117	19.4 %
South Korea	41,910	41,679	231	0.6 %
Other Asia	65,159	40,374	24,785	61.4 %
Total net sales	$ 455,419	$ 381,752	$ 73,667	19.3 %

The increase in net sales across geographic locations in the six-month period ended September 23, 2022 compared to the six-month period ended September 24, 2021 was primarily due to content and market share gains, partially offset by a decrease in product sales in the U.S.

The increase in net sales of $24.9 million, or 26.6%, in Greater China related to higher automotive demand, primarily in our ADAS, xEV, and safety, comfort and convenience sectors. Other Asia experienced sales growth of $24.8 million, or 61.4%, mainly due to higher demand for our data center, ICE, safety, comfort and convenience, ADAS and computing applications. Net sales in Japan grew $14.1 million, or 19.4%, which was primarily driven by higher demand in our xEV, safety, comfort and convenience, ICE and industrial offerings. The increase in net sales of $8.8 million, or 13.1%, in Europe, predominantly comprised of Germany and France, was primarily driven by increases in automotive and industrial demand. Other Americas increased $2.0 million, or 16.6%, mainly due to higher automotive demand, specifically in our ADAS applications.

The increases above were partially offset by lower net sales in the United States of $1.1 million, or 2.0%, primarily driven by a decline in our industrial sector.

Cost of goods sold, gross profit and gross margin

Cost of goods sold increased by $20.0 million, or 10.8%, to $205.0 million in the six-month period ended September 23, 2022 from $185.1 million in the six-month period ended September 24, 2021. The increase in cost of goods sold was primarily attributable to higher production volume in support of higher product sales during the first half of fiscal 2023 and, to a lesser extent, higher warranty costs incurred.

Gross profit increased by $53.7 million, or 27.3%, to $250.4 million in the six-month period ended September 23, 2022 from $196.7 million in the six-month period ended September 24, 2021. The increase in gross profit was driven by a $73.7 million increase in total net sales to all end markets discussed above, partially offset by the impacts to cost of goods sold discussed above.

R&D expenses

R&D expenses increased by $10.3 million, or 17.4%, to $69.4 million in the six-month period ended September 23, 2022 from $59.1 million in the six-month period ended September 24, 2021. This increase was primarily due to a combined $8.3 million increase in employee salaries, contract labor, and inventory and supplies costs, a $1.0 million increase in stock-based compensation expense, and a combined $0.6 million increase in other general operating expenses.

R&D expenses represented 15.2% of our total net sales for the six-month period ended September 23, 2022, a decrease from 15.5% of our total net sales in the six-month period ended September 24, 2021. This percentage decrease was primarily due to the growth in net sales in the six-month period ended September 23, 2022.

SG&A expenses

SG&A expenses increased by $42.9 million, or 64.9%, to $109.1 million in the six-month period ended September 23, 2022 from $66.2 million in the six-month period ended September 24, 2021. This increase was primarily due to a $29.6 million increase in stock-based compensation expense, including accelerated expense from the retirement of our former chief executive officer of approximately $26.3 million, a combined increase of $11.6 million in professional fees, severance and travel and meeting costs, and a combined $8.3 million increase in employee salaries and insurance costs, partially offset by $6.8 million in combined general operating expenses.

SG&A expenses represented 24.0% of our total net sales in the six-month period ended September 23, 2022, an increase from 17.3% of our total net sales in the six-month period ended September 24, 2021. This percentage increase was primarily due to the impacts noted above, partially offset by growth in net sales in the six-month period ended September 23, 2022.

Interest expense, net

Interest expense, net was $1.0 million in the six-month period ended September 23, 2022 compared to $1.7 million in the six-month period ended September 24, 2021. The decrease in interest expense, net was primarily due to higher interest income received from investments and a related party in the six-month period ended September 23, 2022, partially offset by slightly higher mandatory interest payments on the Term Loan Facility in the first half of fiscal 2023.

Foreign currency transaction gain (loss)

Foreign currency transaction gain increased by $2.3 million to $2.2 million in the six-month period ended September 23, 2022 compared to $0.1 million in foreign currency transaction losses in the six-month period ended September 24, 2021. The foreign currency transaction gain recorded in the six-month period ended September 23, 2022 and September 24, 2021 was primarily due to $3.6 million and $0.2 million, respectively, of realized and unrealized gains from our United Kingdom location. During the six-month period ended September 23, 2022, we also recognized foreign currency transaction losses of $0.8 million and $0.5 million related to our operations in Japan and Philippines, respectively.

(Loss) income in earnings of equity investment

(Loss) income in earnings of equity investment reflected losses of $1.9 million and gains of $0.5 million in the six-month periods ended September 23, 2022 and September 24, 2021, respectively, representing the (loss) earnings on our 30% investment in PSL.

Other, net

Other, net changed by $5.0 million to $3.4 million of miscellaneous losses in the six-month period ended September 23, 2022 from $1.6 million of miscellaneous gains in the six-month period ended September 24, 2021. This change was largely attributable to $3.5 million of unrealized losses on equity securities recognized during the first half of fiscal 2023 compared to $1.0 million in unrealized gains on equity securities recognized during the same period last year.

Income tax provision

Income tax provision and the effective income tax rate were $10.4 million, or 14.6%, and $10.4 million, or 14.6%, respectively, in the six-month periods ended September 23, 2022 and September 24, 2021. The ETR was primarily impacted by 174 Capitalization, a reduction in state taxes and an increase in current year non-deductible executive compensation expense. 174 Capitalization increased U.S. taxable income, cash taxes, FDII deductions, and Subpart F and GILTI inclusions. The net tax impact from 174 Capitalization is favorable because the increased FDII deductions of $9.0 million exceed the additional inclusion for Subpart F and GILTI income inclusions of $3.3 million. The Net 174 Benefit is offset in the current year by increased non-deductible executive compensation of $6.8 million, state tax benefits and discrete tax impacts.

Liquidity and Capital Resources

As of September 23, 2022, we had $293.6 million of cash and cash equivalents and $432.7 million of working capital compared to $282.4 million of cash and cash equivalents and $407.5 million of working capital as of March 25, 2022. Working capital is impacted by the timing and extent of our business needs.

Our primary requirements for liquidity and capital are working capital, capital expenditures, principal and interest payments on our outstanding debt and other general corporate needs. Historically, these cash requirements have been met through cash provided by operating activities and cash and cash equivalents. Our current capital deployment strategy for 2023 is to invest excess cash on hand to support our continued growth initiatives into select markets, planned capital expenditures and strategic arrangements, as well as consider potential acquisitions. As of September 23, 2022, the Company is not party to any off-balance sheet arrangements that have or are reasonably likely to have a current or future material effect on our financial condition, results of operations, liquidity, capital expenditures, or capital resources. The cash requirements for the upcoming fiscal year relate to our operating leases, operating and capital purchase commitments and expected contributions to our defined benefit and contribution plans. For information regarding the Company's expected cash requirements and timing of payments related to leases and noncancellable purchase commitments, see Note 17, "Commitments and Contingencies" to the Company's 2022 Annual Report. Additionally, refer to Note 16, "Retirement Plans" to the Company's 2022 Annual Report for more information related to the Company's pension and defined contribution plans.

We believe that our existing cash will be sufficient to finance our continued operations, growth strategy, planned capital expenditures and the additional expenses that we expect to incur during the next 12 months. In order to support and achieve our future growth plans, we may need or seek advantageously to obtain additional funding through equity or debt financing. We believe that our current operating structure will facilitate sufficient cash flows from operations to satisfy our expected long-term liquidity requirements beyond the next 12 months. If these resources are not sufficient to satisfy our liquidity requirements due to changes in circumstances, we may be required to seek additional financing. If we raise additional funds by issuing equity securities, our stockholders will experience dilution. Debt financing, if available, may contain covenants that significantly restrict our operations or our ability to obtain additional debt financing in the future. Any additional financing that we raise may contain terms that are not favorable to us or our stockholders. We cannot assure you that we would be able to obtain additional financing on terms favorable to us or our existing stockholders, or at all.

Cash Flows from Operating, Investing and Financing Activities

The following table summarizes our cash flows for the six-month periods ended September 23, 2022 and September 24, 2021:

	Six-Month Period Ended	
	September 23, 2022	**September 24, 2021**
	(dollars in thousands)	
Net cash provided by operating activities	$ 91,804	$ 69,876
Net cash used in investing activities	(54,948)	(23,297)
Net cash (used in) provided by financing activities	(14,596)	1,291
Effect of exchange rate changes on cash and cash equivalents	(8,777)	3,939
Net increase in cash and cash equivalents and restricted cash	$ 13,483	$ 51,809

Operating Activities

Net cash provided by operating activities was $91.8 million in the six-month period ended September 23, 2022, resulting primarily from our net income of $60.9 million and noncash charges of $51.3 million, including a one-time charge of approximately $26.3 million related to the acceleration of stock-based compensation expense from the retirement of our former chief executive officer, partially offset by a net decrease in operating assets and liabilities of $20.5 million. Net changes in operating assets and liabilities consisted of a $17.3 million increase in inventories, a $9.5 million increase in prepaid expenses, a $5.7 million decrease in net amounts due from related parties, and a $5.0 million decrease in accrued expenses and other current and long-term liabilities, partially offset by an $8.9 million increase in trade accounts payable, a $5.5 million decrease in trade accounts receivable, net, and a $2.5 million decrease in other receivables. The increase in inventories was primarily the result of inventory builds to support anticipated sales growth in fiscal 2023. The increase in prepaid expenses and other assets were mostly due to higher long-term deposits and the timing of tax payments, including value-added taxes receivable, insurance and contract costs. The decrease in net amounts due to related parties was primarily due to variations in the timing of such payments in the ordinary course of business. The decrease in accrued expenses and other current and long-term liabilities was primarily the result of lower accrued personnel costs, including management incentives, and a reduction in the balance due on the acquisition of Voxtel, Inc. (“Voxtel”). Accounts payable increased mainly due to the timing of payments to suppliers and vendors, partially offset by higher operating purchases, including unpaid capital expenditures of $3.9 million. The decrease in trade accounts receivable, net was primarily due to the timing of receipts from customers. The decrease in other receivables was primarily due to increased distributor sales year-over-year, as well as the timing of receipts from Sanken.

Net cash provided by operating activities was $69.9 million in the six-month period ended September 24, 2021, resulting primarily from our net income of $60.9 million and noncash charges of $35.5 million, partially offset by a net decrease in operating assets and liabilities of $26.5 million. Net changes in operating assets and liabilities consisted of a $17.2 million decrease in accrued expenses and other current and long-term liabilities, a $6.8 million increase in prepaid expenses, a $6.2 million decrease in trade accounts payable, and a $2.3 million increase in trade accounts receivable, net, partially offset by a $4.4 million decrease in inventories and a $1.3 million increase in net amounts due from related parties. The decrease in accrued expenses and other current and long-term liabilities was primarily the result of management incentive payments, partially offset by higher accrued personnel costs. The decrease in accrued expenses and other current and long-term liabilities was primarily due to the release of deposits related to the sale of our manufacturing facility in Thailand (the “AMTC Facility”) and reduction of the balance due on the Voxtel acquisition. The increase in prepaid expenses and other assets were primarily due to an increase in prepaid contracts and deposits, investments in marketable equity securities, and the timing of tax payments, including value-added taxes receivable, insurance and contract costs. Accounts payable decreased mainly due to the timing of payments to suppliers and vendors, partially offset by higher operating purchases, including unpaid capital expenditures of $3.2 million. The increase in trade accounts receivable, net was primarily a result of increased sales year-over-year, as well as the timing of receipts from customers. The decrease in inventories was primarily a result of the continued drawdown after building inventory up in prior periods to support anticipated sales growth and recovery from the COVID-19 pandemic. The increase in net amounts due to related parties was primarily due to variations in the timing of such payments in the ordinary course of business.

Investing Activities

Net cash used in investing activities was $54.9 million in the six-month period ended September 23, 2022, consisting of purchases of property, plant and equipment of $35.2 million and payments related to the acquisition of Heyday of $19.7 million.

Net cash used in investing activities was $23.3 million in the six-month period ended September 24, 2021, consisting of purchases of property, plant and equipment of $33.8 million, payments related to the acquisition of Voxtel of $12.5 million, and purchases of marketable securities of $4.3 million, partially offset by $27.4 million of cash received for the sale of the AMTC Facility.

Financing Activities

Net cash used in financing activities was $14.6 million in the six-month period ended September 23, 2022, consisting of taxes related to the net settlement of equity awards and additional funds loaned to PSL under our related party loan agreement, partially offset by proceeds received in connection with the issuance of common stock under our employee stock purchase plan and proceeds received related to the quarterly payment from PSL on our related party loan.

Net cash provided by financing activities was $1.3 million in the six-month period ended September 24, 2021, consisting of proceeds received in connection with the issuance of common stock under our employee stock purchase plan.

Debt Obligations

On September 30, 2020, we entered into a term loan credit agreement with Credit Suisse AG, Cayman Islands Branch, as administrative agent and collateral agent, and the other agents, arrangers and lenders party thereto, providing for a $325.0 million senior secured term loan facility due in 2027 (the “Term Loan Facility”). On September 30, 2020, we also entered into a revolving facility credit agreement with Mizuho Bank, Ltd., as administrative agent and collateral agent, and the other agents, arrangers and lenders party thereto, providing for a $50.0 million senior secured revolving credit facility expiring in 2023 (the “Revolving Credit Facility” and, together with the Term Loan Facility, the “Senior Secured Credit Facilities”). As of September 23, 2022, we had $25.0 million in aggregate principal amount of debt outstanding under our Senior Secured Credit Facilities. There were no material changes in our debt obligations from those disclosed in our 2022 Annual Report.

AMPI Credit Facilities

Refer to Note 11, “Debt and Other Borrowings” for information regarding the line of credit agreements in our Philippine location.

Recent Accounting Pronouncements

See Note 2, “Summary of Significant Accounting Policies” in the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report for a full description of recent accounting pronouncements, including the respective dates of adoption or expected adoption and effects on our condensed consolidated financial statements contained in Item 1 of this Quarterly Report.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, and disclosures of contingencies at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Our significant accounting policies are described in Note 2, “Summary of Significant Accounting Policies” to our consolidated financial statements included in our 2022 Annual Report. There have been no material changes in our critical accounting policies and estimates since March 25, 2022.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

There have been no material changes in our exposures to market risk since March 25, 2022. For details on the Company’s interest rate, foreign currency exchange, and inflation risks, see “Part I, Item 7A. “Quantitative and Qualitative Information About Market Risks” in our 2022 Annual Report.

Item 4. Controls and Procedures.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer (our principal executive officer and principal financial officer, respectively), evaluated the effectiveness of our disclosure controls and procedures as of September 23, 2022. Based on the evaluation of our disclosure controls and procedures as of September 23, 2022, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15(d)-15(f) under the Exchange Act) that occurred during the period covered by this Quarterly Report 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.

From time to time, we may be involved in claims, regulatory examinations or investigations and proceedings arising in the ordinary course of our business. The outcome of any such claims or proceedings, regardless of the merits, and the Company's ultimate liability, if any, is inherently uncertain. We are not currently party to any material legal proceedings, and we are not aware of any pending or threatened legal proceeding against us that we believe could have a material adverse effect on our business, operating results, cash flows or financial condition.

Item 1A. Risk Factors.

There have been no material changes in the risk factors previously disclosed in Part II, Item 1A of our Quarterly Report on Form 10-Q for the quarter ended June 24, 2022, which amended the risk factors previously disclosed in item 1A of our Annual Report.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

None.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

None.

Item 6. Exhibits

(a) Exhibits

Exhibit No.	Description of Exhibit
10.1	Transition Agreement by and among Allegro MicroSystems, Inc. and Sanken Electric Co., Ltd., dated as of September 29, 2022 (incorporated by reference from Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 3, 2022).
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	Inline XBRL Instance Document. The instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101 filed herewith).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ALLEGRO MICROSYSTEMS, INC.

Date: October 31, 2022	By:	/s/ Vineet Nargolwala
		Vineet Nargolwala
		President and Chief Executive Officer
		(principal executive officer)
Date: October 31, 2022	By:	/s/ Derek P. D’Antilio
		Derek P. D’Antilio
		Senior Vice President, Chief Financial Officer and Treasurer
		(principal financial and accounting officer)

Exhibit 31.1

CERTIFICATION

I, Vineet Nargolwala, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Allegro MicroSystems, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: October 31, 2022 By: /s/ Vineet Nargolwala

Vineet Nargolwala
President and Chief Executive Officer
(principal executive officer)

Exhibit 31.2

CERTIFICATION

I, Derek P. D’Antilio, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Allegro MicroSystems, 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;

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3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: October 31, 2022	By:	/s/ Derek P. D’Antilio
		Derek P. D’Antilio Chief Financial Officer (principal financial officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Allegro MicroSystems, Inc. (the “Company”) for the quarterly period ended September 23, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

1. the Report fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934; and

2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 31, 2022	By:	/s/ Vineet Nargolwala
		Vineet Nargolwala President and Chief Executive Officer (principal executive officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Allegro MicroSystems, Inc. (the “Company”) for the quarterly period ended September 23, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

1. the Report fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934; and

2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 31, 2022	By:	/s/ Derek P. D’Antilio
		Derek P. D’Antilio Chief Financial Officer (principal financial officer)