ANNUAL REPORT

FISCAL YEAR
2018

SMART
GLOBAL HOLDINGS

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

FORM 10-K

(Mark One)

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

For the fiscal year ended August 31, 2018

or

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

For the transition period from to

Commission File Number 001-38102

SMART GLOBAL HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Cayman Islands **(State or other jurisdiction of incorporation or organization)**	**98-1013909** **(I.R.S. Employer Identification No.)**
c/o Maples Corporate Services Limited **P.O. Box 309** **Ugland House** **Grand Cayman, Cayman Islands** **(Address of principal executive offices)**	**KY1-1104** **(Zip Code)**

Registrant's telephone number, including area code: (510) 623-1231

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

Title of each class	Name of each exchange on which registered
Ordinary Shares, $0.03 par value per share	The Nasdaq Stock Market LLC (NASDAQ Global Select Market)

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting 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 Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The NASDAQ Stock Market on October 19, 2018, was $376.7 million. Shares of common stock held by each executive officer, director, and their affiliated holders have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of October 19, 2018, the registrant had 22,605,548 ordinary shares outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2018 General Meeting are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended August 31, 2018.

SMART GLOBAL HOLDINGS, INC.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K ("Annual Report") contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which statements involve substantial risks and uncertainties. Forward-looking statements generally relate to future events or our future financial or operating performance. In some cases, you can identify forward-looking statements by the use of forward-looking words such as "anticipate," "believe," "could," "expect," "should," "plan," "intend," "estimate" and "potential," among others.

Forward-looking statements appear in a number of places in this Annual Report and include, but are not limited to, statements regarding our intent, belief or current expectations. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. Such statements are subject to risks and uncertainties, 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 under the section entitled "Item 1A. Risk Factors" in this Annual Report. These risks and uncertainties include factors relating to:

- the losses we have experienced in the past and may experience in the future;
- the unpredictable fluctuation of our operating results from quarter to quarter;
- the highly cyclical markets in which we compete have experienced severe downturns;
- declines in memory component prices and average selling prices that may cause declines in our net sales and gross profit;
- worldwide economic and political conditions in Brazil or other countries, as well as other factors may adversely affect our operations and cause fluctuations in the demand for our products;
- our dependence on growth in the memory market in Brazil, which could cease or contract;
- the dependence of our sales and profit margins in Brazil on the continuing existence of local content requirements for electronics products;
- the dependence of a significant portion of our net sales on the continuing existence of, and demand from, a limited number of key customers;
- the amount of corporate income and excise and import taxes we pay that may increase significantly if tax incentives or tax holiday arrangements in Brazil or Malaysia are discontinued or if our interpretations and assumptions with respect to such tax incentives or tax holiday arrangements are incorrect;
- other factors that may affect our financial condition, liquidity and results of operations; and
- other risk factors discussed under "Item 1A. Risk Factors."

Forward-looking statements speak only as of the date they are made, and we do not undertake any obligation to update them in light of new information or future developments or to release publicly any revisions to these statements in order to reflect later events or circumstances or to reflect the occurrence of unanticipated events, except as otherwise required by the rules and regulations of the Securities and Exchange Commission.

ABOUT THIS ANNUAL REPORT

Unless otherwise indicated or the context otherwise requires, all references in this Annual Report on Form 10-K to “SMART Global Holdings” or the “Company,” “Registrant,” “we,” “our,” “ours,” “us” or similar terms refer to SMART Global Holdings, Inc., or SMART Global Holdings, together with its subsidiaries, and, where the context requires, our predecessor entities. We use a 52- to 53-week fiscal year ending on the last Friday in August. Unless the context indicates otherwise, whenever we refer in this Annual Report to a particular year, with respect to ourselves, we mean the fiscal year ending in that particular calendar year. Financial information for two of our subsidiaries, SMART Modular Technologies Indústria de Componentes Eletrônicos Ltda., or SMART Brazil, and SMART Modular Technologies do Brasil Indústria e Comércio de Componentes Ltda., or SMART do Brazil, is included in our consolidated financial statements on a one-month lag because their fiscal years begin August 1 and end July 31.

All references herein to the “real,” “reais” or “R$” are to the Brazilian real. All references herein to “U.S. dollars,” “dollars” or “$” are to U.S. dollars. Solely for the convenience of the reader, we have translated certain amounts in this Annual Report from reais into U.S. dollars using the exchange rate as reported by the Banco Central do Brasil as of July 31, 2018 of R$3.7549 to $1.00. These translations should not be considered representations that any such amounts have been, could have been or could be converted into U.S. dollars at that or at any other exchange rate as of that or any other date. In addition, translations should not be construed as representations that the real amounts represent or have been or could be converted into U.S. dollars as of that or any other date.

Part I.

Item 1. Business

Overview

We are a global leader in specialty memory solutions, serving the electronics industry for over 25 years. We have a leading market position worldwide, as measured by revenue, in specialty memory where we work closely with original equipment manufacturer, or OEM, customers to develop solutions, which incorporate customer-specific requirements. Our products are designed-in by OEMs in the networking, enterprise storage, telecom, industrial and other such vertical markets. In addition, as part of our global business, we have established a leading market position, as measured by market share, in Brazil as the largest in-country manufacturer of memory for desktops, notebooks and servers, as well as mobile memory for smartphones. As a result of our acquisition of Penguin Computing, Inc., or Penguin Computing, in June 2018 and the creation of a new business unit, SMART Specialty Compute & Storage Solutions, or SCSS, we have expanded our serviceable markets into areas requiring specialized computing platforms in artificial intelligence and machine learning, advanced modeling and high performance computing serving a broad base of enterprise and government customers. Additionally, in the fourth quarter of fiscal 2018, we began a new business in Brazil to focus on battery assembly for smartphones, which we expect will contribute to revenue in fiscal 2019. We believe our customers rely on us as a strategic supplier due to our application-specific products, quality and technical support, our global footprint and, in Brazil, our ability to provide locally manufactured products. We also provide customized, integrated supply chain services to certain OEM customers to assist them in the management and execution of their procurement processes. Our global, diversified customer base includes over 450 end customers such as Cisco Systems, Inc., or Cisco, Samsung Electronics Co., Ltd., or Samsung, Hewlett Packard Enterprise, or HPE, Dell Technologies, or Dell, and LG Electronics, or LG.

In our specialty memory solutions business, we focus on design and manufacture of application-specific products, technical support and value-added testing services that differ from the core focus of standard memory module providers. We collaborate closely with our global OEM customers throughout their design process and across multiple projects to create solutions for demanding applications with differentiated requirements, such as specific form factors, higher density, lower power, specific firmware or greater durability and reliability compared to standard solutions. We target opportunities where we believe we can be a primary supplier of longer-lifecycle solutions to OEM customers for diverse and growing end markets within the networking, communications, storage, industrial, medical and automotive industries. In this business, we offer an extensive portfolio of over 2,000 products, which includes all generations of DRAM, as well as embedded and removable Flash, enterprise memory and hybrid volatile and non-volatile memory solutions. We also offer customized, integrated supply chain services to enable our customers to manage supply chain planning and execution, which reduces costs and increases productivity. Our supply chain services are based on our proprietary software platform that we developed and integrated with our customers' respective procurement management systems as well as our suppliers' distribution management systems.

In the fourth quarter of fiscal 2018, we acquired Penguin Computing and created SCSS which has expanded our serviceable markets into areas requiring specialized computing platforms in artificial intelligence, or AI, and machine learning, advanced modeling and high performance computing. Through SCSS, we design, manufacture and sell specialty compute and storage systems to a broad base of enterprise and government customers and government contractors. SCSS also offers a broad portfolio of hardware and software products including solutions based on the Open Compute Project, or OCP. Our products include Linux-based servers, software, integrated turn-key clusters, enterprise-grade storage, and bare metal high performance computing, or HPC, all available in hardware or cloud-based solutions via Penguin Computing® On-Demand™ (POD™).

We believe our close collaboration with customers, customer-specific designs, long-lifecycle solutions and proprietary supply chain services create significant customer attachment, allows us the ability to identify new opportunities for growth and provide us with a high level of relative visibility and stability through macroeconomic cycles. Furthermore, we believe our business has relatively low capital expenditure requirements, and we have been able to leverage a flexible cost structure to maintain generally stable margins throughout market cycles.

Since 2002, when we commenced our operations in Brazil, we have invested over $210 million to build and improve our advanced manufacturing facilities and have assembled and trained a staff of over 620 employees, who comprise many of the leading semiconductor technology professionals in the country. In Brazil, we process imported wafers and cut, package and test them to create memory components used to manufacture modules and other memory and Flash-based products. We have a strategic, long-term relationship with a global memory wafer supplier that has provided us with a stable source of competitively priced wafers for the Brazilian market and provides our supplier with access to that market through our in-country infrastructure and capabilities.

Our business in Brazil was initially focused on Dynamic Random Access Memory, or DRAM, components and modules for desktops, notebooks and servers, where local content and tax regulations provide substantial financial incentives to our customers to procure locally manufactured memory products, particularly when they are made with locally processed components. We have leveraged our experience and success in these markets to expand into mobile memory, primarily for smartphones, which include embedded multimedia controllers, or eMMC, and embedded multi-chip package, or eMCP products, where additional local content requirements and tax incentives have been introduced. In fiscal 2018, 2017 and 2016, these mobile memory products accounted for 68%, 67% and 65%, respectively, of our net sales in Brazil. Based on industry reports of expected unit sales for mobile phones in Brazil, taking into account our average selling price of approximately $28.17 per eMCP for mobile memory during the full fiscal year 2018, we believe that the total addressable market for locally produced mobile memory for mobile phones in Brazil will reach approximately $765 million by 2020. We have also demonstrated our ability to service the smartphone market in Brazil as we are now qualified at seven of the top ten mobile vendors in Brazil representing, according to industry data, over 94% of the mobile phones sold in Brazil in calendar 2017.

The Brazilian government has a long history of utilizing local content requirements to promote job creation, sustain economic growth and increase the competitiveness of various domestic industries. Local content requirements have been important in the development of numerous industries in Brazil, including automotive, oil and gas, aerospace, healthcare and IT. Beginning in 1991, local content regulation was introduced to vitalize Brazil's IT industry. Specifically, requirements for locally manufactured memory have been in place for over 20years and have increased significantly over time as manufacturing capacity has increased. For example, in notebooks, the requirement for locally manufactured DRAM integrated circuits, or ICs, has increased from 30% in 2010 to 80% in 2018, which means that 80% of the DRAM modules purchased by an OEM in 2018 for use in notebooks for the Brazil market must contain ICs locally manufactured in order for the OEM to qualify for certain tax benefits. As a result of the proliferation of mobile devices, the requirements for locally manufactured embedded memory for smartphones were introduced in March 2014, which has initially increased from 5% in calendar 2014 to 30% in calendar 2017, 50% for calendar 2018 and is scheduled to increase to 60% for calendar 2019. With the local content requirements for various IT products increasing, we believe that our local manufacturing capabilities provide a valuable and differentiated offering to our OEM customers in Brazil. We also believe that our long-term relationships with many of these customers as the largest supplier of locally manufactured memory products provides us with stability and visibility for our Brazilian business, as well as significant growth prospects.

We sell our solutions directly to a diversified base of global customers; both OEM's and end users. Our top ten end customers, five of which have been our end customers for over a decade, accounted for 84% and 84% of our net sales in fiscal 2018 and 2017, respectively. Our global sales channel consists of a direct sales force supported by a broad network of independent sales representatives located throughout North America, Latin America, Europe and Asia. Our integrated sales process incorporates our direct sales force and customer service representatives and a high level of involvement from our senior executives. Our on-site field application engineers, or FAEs, collaborate with our customers and provide us with insight into their product roadmaps, allowing us to identify opportunities to grow our business. The combination of our integrated sales network with our FAEs allows us to be more responsive to each customer's unique requirements, enabling us to navigate the complex qualification processes at leading global OEM and end users. We believe our strong and often longstanding relationships with our customers reinforce our competitive position.

Our Industry

We believe that significant opportunities exist across the major markets in which our business operates due to the increasing global demand for existing and next generation memory technologies, continued growth and demand for compute and storage systems serving AI and other technical computing markets, and OEM and end user requirements for high quality and reliability backed by premium service and support. We believe that a number of trends are driving the expansion of our market opportunity:

Memory continues to be critical to system performance. With the growth in mobility, cloud computing and data intensive applications, the importance of and demand for memory continues to increase. Based on industry data, we believe that worldwide demand for DRAM and NAND Flash memory units will increase by 184% and 80%, respectively, when comparing 2022 to 2017. The increasing diversity of demanding applications requires memory solutions tailored to meet these varying and growing needs. Memory density also continues to increase. Higher memory densities, lower power requirements and increasingly smaller form factors are especially important in mobile and embedded devices, where high performance and lower power consumption are critical.

Stabilization of DRAM market. Industry consolidation, increased capital expenditure requirements, continued technology advancements and the shift in new production from DRAM to NAND have stabilized global DRAM supply and pricing in recent years. Further improvement in availability of DRAM and a greater variety of DRAM technologies present an improved opportunity for our specialty memory solutions.

Flash memory market continues to grow. The markets for Flash memory-based solutions continue to grow driven by a variety of applications. High capacity applications such as for datacenter servers are increasing demand for very high density 3D NAND components. Meanwhile many applications such as networking, storage and industrial applications continue to grow but require lower density solutions with application-driven requirements such as long endurance, ruggedness, wider temperature ranges and different form factors.

Increasing memory demand for smartphones in Brazil. Consumer demand for smartphones in Brazil is expected to grow, supported by the growing middle class, improvement in cellular and wireless infrastructure and current low levels of penetration of mobile devices. According to the Brazilian Institute of Geography and Statistics, the Brazilian middle class is expected to expand from 41% of the population, or 76 million people, in 2005, to 58% of the population, or 127 million people, by 2025. As a result, smartphone penetration is expected to increase. Based on industry reports, we expect sales of mobile phones in Brazil to grow to 52.1 million units in 2020, with smartphone sales expected to account for 51.0 million units in 2020 (a 14.7% increase over 2016). We expect this increase in smartphone penetration to drive a corresponding increase in the demand for mobile memory components and modules.

Increasing local content requirements in Brazil and other incentives. Local content requirements have been central to the Brazilian regulatory environment since the 1960s. These regulations are aimed at promoting job creation, sustaining economic growth and increasing the competitiveness of various domestic industries, and have helped enable a significant expansion of the Brazilian middle class. Local content requirements have been instrumental in the development of numerous key industries in Brazil, including automotive, oil and gas, aerospace, healthcare and IT. Once implemented, Brazil’s local content requirements have been generally maintained or increased over time.

In the IT industry, government programs have been introduced to incentivize manufacturers to establish and expand their operations in Brazil and to incentivize OEMs to purchase locally manufactured components for their products.

Lei da Informática—Processo Produtivo Básico (PPB/IT Program), 1991: Provides for significant tax benefits for companies that develop or produce computing and automation goods locally and invest in IT-related research and development in Brazil. The PPB/IT Program requirements for local content are published publicly on a periodic basis and typically include the requirements for the three to four-year period following publication. The PPB/IT Program requirements for locally sourced memory components from calendar years 2008 to 2019 are set forth below.

Local Content Requirements

PPB/IT Program Requirements for PC and Server Memory	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Notebook DRAM IC Packaging	0%	30%	30%	40%	50%	60%	80%	80%	80%	70%	80%	80%
Desktop DRAM IC Packaging	10%	10%	10%	10%	10%	30%	50%	60%	80%	80%	80%	80%
Server DRAM IC Packaging	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

PPB/IT Program Requirements for Mobile Memory	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Notebook SSD IC Package	0%	0%	0%	35%	40%	30%	40%	40%	35%	50%	50%	50%
SSD Module Flash IC Package	0%	0%	0%	0%	0%	40%	60%	80%	30%	40%	60%	60%
Mobile/Smartphones microSD Cards	0%	0%	0%	0%	5%	5%	10%	20%	40%	50%	50%	50%
All Other Memory Types [(1)]	0%	0%	0%	0%	0%	0%	5%	20%	30%	30%	50%	60%

PPB/IT Program Requirements for TV	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
TV IC Package	0%	0%	0%	0%	0%	0%	0%	0%	30%	40%	40%	40%

(1) Includes mobile DRAM, eMMC and eMCP.

Source: Brazilian Ministry of Science, Technology and Innovation, Interministerial Ordinances 287/2014, 85/2014, 239/2016, 179/2016, 141/2015, 263/2014, 14/2016, 21/2017, 52/2017, 20/2018 and 44/2018.

OEMs that are PPB/IT Program-compliant and who fulfill the above local content requirements receive substantial benefits, including a reduction in excise taxes on their purchases from qualified suppliers as well as a reduction in taxes that they are required to charge on sales to their end customers. We estimate that the aggregate of the PPB/IT Program-related benefits is around 28% of the resale value of the OEM's end products. These tax benefits provide a strong incentive for OEMs to purchase products from local content manufacturers such as us.

Other tax incentives introduced to incentivize manufacturers to establish and expand their operations in Brazil, include the following:

- *Lei do Bem, 2005:* Fosters technology innovation in Brazil by providing a reduction in corporate income tax through allowance of expenses related to research and development activities.
- *Support Program for the Technological Development of the Semiconductor and Display Industries (PADIS), 2007, extended in 2016:* Awards incentives and provides significant tax relief, including reductions in the Brazilian aggregate statutory income tax rates, to semiconductor and display companies that invest in research and development and that promote the development, design, test and packaging processes in Brazil. Furthermore, combining PADIS and PPB/IT Program-compliance provides additional financial incentives to OEMs that purchase products containing memory components that are locally processed from wafers.

In 2013, the European Union, or EU, later joined by Japan, requested the establishment of a panel within the World Trade Organization, or WTO, to determine whether certain measures enacted by the Brazilian government concerning tax incentives and local content requirements for the automotive and several other industries including the IT industry and including PADIS, the PPB/IT Program and Lei do Bem, are inconsistent with WTO rules. On August 30, 2017, the WTO panel released a report in which the panel concluded, among other things, that the tax exemptions, reductions and suspensions granted for the automotive, IT and other industries amount to subsidies that are inconsistent with the principles of the various WTO agreements, and the panel recommended that Brazil withdraw these subsidies. The parties all appealed the report's findings and hearings on the appeals were held in June 2018. Government officials in Brazil have expressed their intent to continue to dispute the panel's report and, if necessary, to restructure the incentives to be consistent with the WTO principles in order to continue to support local industry. There can be no assurance, however, that, if needed, the programs will ultimately be restructured and implemented or, if implemented, whether the restructured programs will provide the same level of support as is currently in place. While we cannot predict the outcome of the appeal or the impact of the WTO's report, this recommendation could result in significant adverse changes to the local content rules and incentives available to us and our customers in Brazil. Any suspension, early termination or other adverse change in the local content requirements could significantly reduce the demand for, and the profit margins on, our products in Brazil, and would have a material adverse effect on our business, results of operations and financial condition.

Rapid growth in AI and HPC. SCSS is a leading provider of HPC, AI, and enterprise data center and cloud solutions. According to an August 2018 Hyperion Research presentation, the Global HPC market is expected to grow to $38.4 billion in 2022. We believe that SCSS will be able to service a substantial portion of these potential markets.

Our Competitive Strengths

We believe our core competitive strengths include:

Business model focused on specialized markets and strong customer collaboration. The complexity of applications today requires sophisticated solutions with a high degree of specialization and customization to fulfill the requirements of OEMs. These products are designed-in by OEMs in the networking, enterprise storage, telecom, industrial and other such vertical markets. We focus on opportunities in markets that feature products with longer life cycles (typically five to seven years), specialized form factors and customized firmware, which typically require intensive and time-consuming qualification processes and create high switching costs for our customers. Our research and development teams are closely aligned with our customers, and this collaboration enables early stage adoption of our solutions and significant visibility into our customers' product roadmaps. Our global supply chain services also foster further customer attachment. Our high level of collaboration and integration with our customers make it difficult, costly and time consuming for them to switch to an alternative supplier.

Strong presence in Brazil. We are the largest local manufacturer of DRAM components and DRAM modules for the desktop, notebook and server markets in Brazil as measured by market share. We are also the first company to develop manufacturing capabilities for Flash-based products in Brazil, where we are the leading manufacturer of mobile memory products, such as mobile DRAM, eMMC and eMCP. We benefit from having a first mover advantage in Brazil (having invested over $210 million in the country since 2002 to build and improve our advanced manufacturing facilities) and understanding government initiatives and how to navigate regulatory requirements to benefit our company and our customers. We believe we are well positioned to maintain our established leadership in Brazil's memory market and to extend our leadership in the growing mobile memory market.

Our experience in Brazil has helped us develop expertise in semiconductor technology and advanced manufacturing that allows us to be a trusted local supplier to OEMs. We have demonstrated our ability to produce solutions with shrinking geometries and increasing complexity. In addition, we benefit from a strategic wafer supply relationship that has provided us with a strong, continuous supply of competitively priced wafers for use in the local market. Through this relationship, our collaboration on technology and processes with key suppliers and our continued capital investment, we strive to maintain our advanced manufacturing capabilities and operate at a high level of efficiency with capabilities and scale that are difficult for a competitor to replicate. We are leveraging on our deep experience in the Brazil market to build a battery assembly business to expand our penetration into the smartphone market in the country. We have also made significant investments in assembling and training a staff of over 620 employees who comprise many of the leading semiconductor technology professionals in the country.

Well positioned to benefit from Brazilian local content regulations. Increasing local content requirements for local manufacturing help drive our growth strategy in Brazil. While qualified suppliers are allowed to import a relatively small portion of this requirement with minimal local processing, we are one of the few companies currently qualified that can package and test these products locally and the largest in terms of production volume. Global suppliers of memory components and modules not manufactured in Brazil cannot address the local content purchasing requirements of OEM customers selling products in Brazil. Because of our infrastructure, scale and capabilities in Brazil, we have a significant advantage in being able to satisfy these local content requirements.

Global footprint and delivery network. We are located near many of our largest customers and their manufacturing partners around the world, offering extensive global manufacturing, engineering and supply chain management capabilities. We have four manufacturing facilities located in the United States, Brazil and Malaysia; eight facilities with engineering and research and development operations located in five countries; and employees located in nine countries across the world. Our established global network of component sources helps to ensure that our pricing remains competitive and that we are able to provide a stable source of supply for our customers.

Advanced manufacturing capabilities. We have invested in facilities and processes tailored to meet the exacting demands and specialized requirements of our OEM customers while maintaining a high level of efficiency, quality and productivity. Our advanced processes enable us to provide quick turnaround to meet our customer demands. Our extensive quality control programs and sophisticated test capabilities help to ensure a low defect rate and, for markets that require it, we offer reliability testing and screening substantially above standard industry practices. Our advanced manufacturing capabilities and processes are International Organization for Standardization, or ISO, 9001:2008, 14001:2004 and Occupational Health and Safety Assessment Series, or OHSAS, 18001:2007 compliant, and our manufacturing facilities have been audited for compliance with the standards of the Responsible Business Alliance, or RBA (formerly known as the Electronics Industry Citizenship Coalition, or EICC), which is increasingly a requirement of major global OEMs.

Flexible operating model. We believe our operating model has enabled us to maintain margins that are more stable than those of many of the largest memory manufacturers, as such memory manufacturers own their own wafer fabs which are extremely costly to build. Our advanced manufacturing capabilities are focused on packaging and test of ICs after they are produced in wafer form at a wafer fab. As we do not own or operate our own wafer fabs, we have low capital expenditures relative to semiconductor manufacturers. Our business also is characterized by low fixed costs. Both factors have helped us maintain generally stable margins through market cycles.

Ability to manage complex supply chains at scale. Our need to manage complex supply chains helped us develop our proprietary software platform, utilized by a team of dedicated professionals to meet the specific needs of our customers. We integrate our proprietary software platform with our customers' procurement management as well as our suppliers' distribution management systems to enable supply chain planning and execution, which lowers costs and increases efficiency. We believe this ability to manage complex supply chains at scale helps our customers minimize inventory levels while ensuring timely supply of material.

Advanced open technologies for AI and HPC. Our SCSS products and services focus on the benefits that come from bringing open hardware and software solutions to our customers. This approach provides freedom of choice by eliminating vendor lock-in, enables customers to take advantage of leading edge technologies early in cycle and increases the customers' overall return on investment. Our OCP enables flexibility and quick adoption allowing us to meet the specialized needs of key customers in demanding verticals such as social media, oil and gas, financial services, media and entertainment, universities and government agencies.

Proven management team with history of execution. We have an experienced and long-serving senior management team with an average tenure of approximately 18 years. The management team has a successful track record of operating the business through many market cycles and industry changes. Our senior management team has deep relationships throughout the sector and extensive knowledge of the global memory, storage and compute markets as well as the Brazilian IT industry and regulatory environment.

Our Strategy

Our goals are to further strengthen our leadership position in the design, manufacture and supply of specialty solutions for leading OEMs, to diversify and broaden our reach and capabilities into new technologies, markets and channels through SCSS that leverage our proven platform of integrating and growing businesses, and to pursue other opportunities for growth in existing and new markets. We are pursuing the following strategies to achieve our goals:

Grow our leadership in specialty memory. We intend to grow our position among specialty memory suppliers. We will continue to focus on delivering innovative solutions to help our customers improve functionality, enhance their supply chain, reduce costs and accelerate their time-to-market. To ensure we can meet the demands of our existing customers, we will continue to invest in research and development, our facilities and our workforce, especially as our new product offerings in DDR4 and embedded Flash memory continue to ramp. In addition, we are increasing our focus on tier 2 and tier 3 customers.

Expand our total addressable market by offering innovative new memory, compute and storage solutions and by capitalizing on new market opportunities. We intend to leverage our experience and capabilities to launch new products and expand into new markets. We believe this will allow us to further penetrate our existing customers as well as increase the number of customers that we serve. Our strategy is based on providing specialized products that require levels of service and support that larger semiconductor manufacturers often do not provide. As part of this strategy, we introduced eMMC products for networking, communications, industrial and medical markets, where we expect strong growth for eMMC solutions. We believe that our long-term customer and supplier relationships provide a key advantage in gaining entry into new markets. In addition, we added memory solutions for SmartTVs to our product offerings in Brazil. We plan to continue investing in innovation in strategic areas, such as Flash and solid-state storage, persistent memory and the evolving artificial intelligence market.

Diversify and expand our products, capabilities and markets through acquisition and organic growth. We will further diversify our business through acquisitions like Penguin Computing and the creation of SCSS, which enable us to accelerate and broaden our reach and capabilities into new technologies, markets and channels that leverage our proven platform of integrating and growing businesses. We intend to further expand our products, capabilities and markets with future acquisitions that strategically, financially and culturally match our goals. Additionally, we will further diversify our business by investing in new products such as our expansion into the battery assembly business in the fourth quarter of fiscal 2018.

Capture growing mobile memory market in Brazil. We expect to continue to leverage our experience and success in our desktop, notebook and server DRAM business to capitalize upon high-growth markets for mobile memory. We will seek to continue to grow our market share with OEMs that are currently utilizing imported mobile memory components to manufacture smartphones in Brazil, as local content requirements for mobile memory components, such as eMMC, eMCP and mobile DRAM. In December 2013 and again in December 2014, one of our subsidiaries in Brazil obtained financing from BNDES to purchase capital equipment and invest in further expansion of our operations in Brazil. We utilized much of the proceeds from the BNDES Agreements to purchase capital equipment and expand our manufacturing capabilities to capture growth opportunities in the mobile memory market. We believe our investments in infrastructure, customer relationships and broad set of solutions position us to capitalize on growing mobile memory demand and increasing local content requirements.

Expand our global coverage. Devices and applications using memory are required in every region of the world, requiring OEMs to maintain a global supply chain to meet that demand. In addition to the United States and Brazil, we plan to increase our presence internationally and target new OEM customers as well as new end user customers in Europe and Asia.

Our Products and Services

We design, manufacture and supply specialty memory, compute and storage solutions for leading OEMs and end users worldwide. By working closely with our customers we are able to deliver technically advanced products designed to meet their specific needs. As a result of close collaboration with our customers and suppliers, we are able to design competitive solutions to satisfy our customers' memory, storage and compute requirements, shorten their time-to-market and enhance the performance of their end products and applications. We also offer a wide array of integrated supply chain services to enable our customers to manage supply chain planning and execution, which reduces costs and increases productivity.

	Category	Description	SMART Product
Brazil	DRAM Components DRAM Modules	Modules for desktops, notebooks and servers and ICs for SmartTVs	• DRAM ICs • RDIMM,UDIMM,SODIMM,DIMM
	Mobile Memory	Mobile DRAM and Flash	• LPDDR3, eMMC, eMCP
	WiFi/Bluetooth Modules	WiFi/Bluetooth communication modules for notebooks	M.2 WiFi/BT
	Batteries	Batteries for smartphones	Lithium-polymer batteries
Specialty Memory	DRAM	Specialty DRAM modules: • DDR4 • DDR3 • DDR2 • DDR • PC133/100 • FPM/EDO • SDRAM	• NVDIMM • LRDIMM • FBDIMM • RDIMM • UDIMM • SO-DIMM • Mini-DIMM • XR-DIMM • MIP: Module in a package
	Flash	Embedded and Removable NAND Flash: • SLC • MLC	• eMMC • Compact Flash: CF card, CFast • SATA: mSATA, SATA Slim, iSATA, uSATA • 2.5" SSD, M.2 • EFD: Embedded flash drive • USB: eUSB, Enterprise USBMK • SD cards • microSD cards • M.2 PCIe NVMe
Supply Chain	Supply Chain Services	Customized, integrated supply chain services to assist customers in the management and execution of their procurement processes	• Procurement • Inventory management • Temporary warehousing • Kitting • Packaging services • Programming
Specialty Compute and Storage Systems	Compute Solutions	Configure to order technical computing solutions - from individual systems to fully integrated data-center installations	• Tundra Extreme Scale • Relion Intel x86 servers • Altus AMD servers
	Network Solutions		Artica Network Switch • NVIDIA DGX-1
	Storage Solutions	Fully-configured Software-defined Storage Solutions	• Frosbyte-BeeGFS • Frosbyte-RedHat Ceph • Frosbyte-RedHat Gluster • Frosbyte-Lustre • Icebreaker Storage Servers
	HPC Software	Software to manage and use on-premise and cloud high-performance computing clusters	• Scyld Clusterware • Scyld Cloud Manager • Scyld Cloud Workstation

DRAM

In Brazil, we process imported wafers and cut, package and test them to create DRAM memory components used to manufacture modules and other products. We also manufacture standard, high-volume DRAM modules for desktop, notebook and server applications. In 2014, we began to manufacture mobile DRAM components to address new markets in Brazil for mobile products, such as smartphones.

In our specialty memory solutions business, we offer an extensive lineup of DRAM modules utilizing a wide range of DRAM technologies from legacy Synchronous DRAM to double data-rate, or DDR, DDR2, DDR3 and leading edge, high-performance DDR4 DRAM devices. These modules encompass a broad range of form factors and functions, including dual in-line memory modules, or DIMMs, nonvolatile DIMMs, load reducing DIMMs, registered DIMMs, unbuffered DIMMs, small outline dual in-line memory modules, and mini-DIMMs and XR-DIMMs for industrial, communications and networking applications. These memory modules come in configurations of up to 288 pins and densities of up to 128 gigabytes. We utilize advanced printed circuit board and device packaging/stacking technologies to achieve cost-effective high-density solutions. We also develop specialized memory module designs based on specific OEM requirements. We employ extensive software based electrical and thermal simulations in the design of DDR, DDR2, DDR3 and DDR4 DIMMs and test those designs on high-end functional testers utilizing a broad set of test suites. These products are designed to meet the quality requirements of enterprise class systems pursuant to stringent specifications required by various high-speed applications described above.

Flash

In Brazil, we also process Flash wafers to manufacture eMMC and eMCP products to address the local markets for mobile products including smartphones.

In our specialty memory solutions business, we design and manufacture Flash memory products in a variety of form factors and capacities. Our wide range of Flash memory products includes CompactFlash, SD/micro SD Cards and PCIe configurations. We also offer USB products in removal key and embedded configurations, and Serial Advanced Technology Attachment, or SATA, products in mSATA, SATA Slim, iSATA, uSATA, M.2 and 2.5” form factors. Our Flash modules are predominantly used in communications equipment, aerospace, automotive, industrial, defense, printers, servers and storage, switches and routers. Additionally, we are developing a line of eMMCs to address industrial, medical and networking specialty memory markets.

Specialty Compute and Storage Solutions

We offer specialty compute and storage system solutions to customers in a broad set of verticals. We provide our Open Compute Tundra Extreme Scale products to solve technical challenges. We use industry-standard hardware components and open source Linux based operating systems to create configured-to-order solutions. We also provide turn-key storage solutions that provide power and flexibility with hardware optimized for software-defined storage based upon our Frostbyte storage platform. Our rackmount servers and GPU accelerated computing platforms give customers powerful tools to implement their AI and Machine Learning, or ML, applications. Our software-defined Arctica network switches provide economical, full-featured, managed switching. Complementing our compute, storage and networking hardware solutions is our Scyld Software line of cloud and cluster management software. These products provide advanced capabilities for management of HPC clusters from department-level systems to supercomputers. In addition, they enable customers to provide their own HPC cloud with remote access via our proprietary Cloud Workstation browser-based solution.

Supply Chain Services

We also offer supply chain services, including procurement, logistics, inventory management, temporary warehousing, programming, kitting and packaging services. We tailor our supply chain service offerings to meet the specific needs of our customers to enable our customers to manage supply chain planning and execution, which reduces costs and increases productivity. Our supply chain services are based on our proprietary software platform that we develop, which are then integrated with our customers’ respective procurement management systems as well as our suppliers’ distribution management systems. Our global footprint allows us to provide these services to our customers and their manufacturing partners in many regions of the world. Our global inventory management capabilities allow us to manage a vast array of customer and supplier part numbers across our worldwide manufacturing and logistics hubs, helping our customers minimize inventory levels while maintaining reliable delivery and availability of supply. In fiscal 2018, we processed over 2.2 million transactions with an aggregate value of $1.1 billion. We believe that our close collaboration with customers on proprietary supply chain services increases the switching costs and the level of attachment of our specialty memory customers.

Manufacturing and Test

Manufacturing

We have manufacturing facilities in Atibaia, Brazil; Newark and Fremont, California; and Penang, Malaysia. Our manufacturing facilities have been ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 certified. Additionally, we are a member of the RBA (formerly known as the EICC), and our manufacturing facilities are compliant with the RBA Code of Conduct, which is increasingly a business requirement of global OEM customers. We believe that our manufacturing operations have benefited from our many years of design experience and our existing library of proven designs which stress high manufacturability and quality. Over 30 years of manufacturing experience enables us to quickly move from manufacturing initiation to full production volumes of new products, which is paramount in helping our customers, achieve rapid time-to-market for their new product introductions. As a result of our design efficiencies, high level of automation and expertise in utilizing advanced manufacturing processes, we achieve high manufacturing yields and reduced direct labor costs and offer our customers quick turnaround of both small and large production orders, which is a key factor in enabling our build-to-order model.

While we do not own or operate wafer fabs, we have capabilities for subsequent stages of the product manufacturing cycle. Our manufacturing capabilities in Brazil consist of receiving unmounted ICs in wafer form from third-party wafer fabs, preparing and packaging the ICs into semiconductor components, testing the components, and in some cases placing these components on substrates or printed circuit boards to make modules or multi-chip packages. Our advanced manufacturing capabilities have enabled us to become the largest local manufacturer of DRAM components and DRAM modules for the desktop, notebook and server markets in Brazil, as measured by market share. In recent years, we have expanded our manufacturing capabilities to enable us to manufacture mobile DRAM components and products as well as to process Flash wafers to manufacture NAND components. We also manufacture various Flash-based products, including eMCP and eMMC products. Through our investments and experience in Brazil, we have developed expertise in semiconductor technology and advanced manufacturing that allows us to manufacture products with shrinking geometries and increasing complexity. We continue to make significant capital investments to expand our manufacturing capabilities and operate at a high level of efficiency.

Product testing is an important aspect of our manufacturing operations and we believe that we have established substantial technical expertise in the testing of products for high-end applications. Our extensive testing capabilities not only help to ensure a low defect rate, but they also enable us, in certain situations, to sell specialized testing as an additional service. We test our products for full functionality and, we design customer specific testing processes that differ from the core focus of standard providers. We have achieved stringent quality targets across a broad spectrum of system applications and customer-specific designs. Our staff includes experienced test engineers who have developed proprietary testing routines and parameters which, combined with our advanced test equipment, enable us to diagnose problems in components as well as in system design, and enable us to characterize the performance of new products and to provide high quality products in volume.

We employ extensive software-based electrical and thermal simulations in the design of DDR, DDR2, DDR3 and DDR4 modules and test those designs on high-end functional testers utilizing a broad set of test suites. These tests are designed to meet the quality requirements of enterprise class systems pursuant to stringent specifications required by various high speed applications. We also conduct design verification testing of hardware and firmware as well as system integration and reliability testing. We work to continually improve our test routines and associated software and have recently developed a high-volume, fully automated reliability testing and screening capability substantially beyond standard industry practices that enables us to reduce the occurrence of early life failures and weak module fallout which can save our customers from the often significant expenses associated with replacing products that fail after their field deployment.

Customers

Our principal end customers include global OEMs as well as end customers that compete in the computing, networking, communications, storage, aerospace, defense, mobile, social media and entertainment along with the Federal Government and industrial markets.

Overall, we served more than 450 end customers in fiscal 2018. In fiscal 2018, 2017 and 2016, sales to our ten largest end customers (including sales to contract manufacturers or ODMs at the direction of such end customers) accounted for 84%, 84% and 81% of net sales, respectively. Of our end customers, Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; Cisco accounted for 12%, 15% and 19% of net sales in fiscal 2018, 2017 and 2016, respectively; Lenovo accounted for 11%, 11% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; and Dell accounted for 10% of net sales in fiscal 2018. Direct sales to Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; direct sales to Flex accounted for 13%, 14% and 17% of net sales in fiscal 2018, 2017 and 2016, respectively; and direct sales to Hon Hai accounted for 13% and 11% of net sales in fiscal 2017 and 2016, respectively. During these periods, no other customers accounted for more than 10% of our net sales. Our longstanding relationship with Cisco, spanning over 20 years, exists within multiple business units and engineering organizations within Cisco. Our products are manufactured on a build-to-order basis. Our sales are made primarily pursuant to customer purchase orders and are not based on long-term supply agreements. Most of our business is on a purchase order basis; accordingly, we have limited backlog and we do not believe our backlog is material or indicative of anticipated net sales.

Suppliers

To address the needs of our customers, we have developed and maintained relationships with leading semiconductor suppliers located in Asia, Europe and the Americas. Our semiconductor suppliers include many of the world’s largest memory manufacturers including Samsung, Micron Technology, Inc., or Micron, SK Hynix, Inc., or SK Hynix, and Toshiba Corporation, or Toshiba. They also include some of the world’s largest providers of computing and graphics processers including AMD, Intel and Nvidia. We frequently work jointly with our suppliers in bidding for customers’ design-in opportunities. We also work closely with our suppliers to better ensure that materials are available and delivered on time. Our established global network of component sources helps to ensure that our pricing remains competitive and that we are able to provide a stable source of supply for our customers.

We believe that our longstanding relationships with leading suppliers put us in a favorable position to procure sufficient quantities of materials, including during periods of industry shortages. Our flexible and responsive global manufacturing capabilities, inventory management systems and global IT system allow us to cost-effectively move materials from one site to another and often deploy what might otherwise be excess inventory among other products and customers. We purchase almost all of our materials, including wafers used in our memory products in Brazil, from our suppliers on a purchase order basis and generally do not have long-term commitments from suppliers.

Sales, Support and Marketing

We primarily sell our products directly to global OEMs and end customers located across North America, Latin America, Asia and Europe. Our sales and marketing efforts are conducted through an integrated process incorporating our direct sales force, customer service representatives and our FAEs with a network of independent sales representatives. Our sales and marketing efforts also include a high level of involvement from our senior executives. Larger customers are also often supported by dedicated sales and support teams. As of August 31, 2018, we had 110 sales and marketing personnel worldwide.

Our on-site FAEs work closely with our sales team to provide product design support to our customers. Our FAEs collaborate closely with our customers, providing us with insight into their product roadmaps and allowing us to identify opportunities at an early stage to help grow our business. The combination of our integrated sales network with our FAEs enables us to be more responsive and successful in navigating through each customer’s unique and oftentimes complex design qualification process.

Our marketing activities include advertising in technical journals, publishing articles in leading industry periodicals and utilizing direct email solicitation. In addition to these marketing activities, we also participate in many industry trade shows worldwide. We have active memberships in industry organizations such as the Joint Electron Device Engineering Council, or JEDEC, the USB Implementers Forum, the SD Card Association, the Storage Networking Industry Association, the CompactFlash Association, and Peripheral Component Interconnect Special Interest Group, or PCI-SIG.

Research and Development

The timely development of new products is essential to maintaining our competitive position. Our research and development activities are conducted primarily at our research and development centers in Newark, Fremont and Irvine, California; Atibaia, Brazil; Penang, Malaysia; Gilbert, Arizona; Seongnam-City, South Korea; New Taipei City, Taiwan; and Tewksbury, Massachusetts. Our research and development activities are focused on driving innovation in our products as well as continuous process improvement for our procurement and manufacturing. Our product development includes innovations for next generation DRAM products, mobile DRAM, hybrid memories such as hybrid volatile and non-volatile DRAM or NVDIMM, enterprise memory, and many Flash-based products, such as eMMC and eMCP. We plan to continue to devote research and development efforts to the innovation and design of these and other new products which address the requirements of our customers, especially for growing markets for DRAM and Flash mobile memory products, such as mobile and automotive.

We are developing a broad offering of Flash-based products targeting the automotive, industrial, medical, communications, mobile and networking markets. In order to enhance our efforts to develop innovative Flash products, we have increased our engineering resources significantly, including in our research and development center in New Taipei City, where our engineering team is dedicated to firmware development, systems engineering and integration, system and platform validation and applications, and product and reliability engineering for new Flash memory products, including our eMMC product. In addition, in order to take advantage of local regulations and government incentive programs for the growing mobile memory market in Brazil, we have invested substantial financial and management resources to expand our Brazilian research and development capabilities to enable us to develop a broad offering of Flash-based products for the local market

Our advanced engineering and design capabilities allow us to address our customers' increasingly complex needs. We design our products to be compatible with existing industry standards and, where appropriate, develop and promote new standards or provide custom solutions to meet customers' requirements. An important aspect of our research and development effort is understanding the challenges presented by our customers' requirements and addressing them by utilizing our industry knowledge, proprietary technologies and technical expertise. By working closely with our customers and suppliers, we are able to deliver technically advanced products designed to meet customer-specific needs with competitive solutions to satisfy our customers' memory, storage and compute requirements, shorten their time-to-market and enhance the performance of our customers' end products and applications.

We spent $39.8 million, $38.2 million and $38.1 million on research and development in fiscal 2018, 2017 and 2016, respectively. As of August 31, 2018, we had 162 research and development personnel worldwide.

Competition

We primarily compete against global and local memory module providers, and to a lesser extent, large semiconductor memory IC manufacturers that utilize a portion of their capacity to manufacture memory modules. The principal competitive factors in our markets include the ability to meet customer-specific requirements and provide high product quality, strong technical support, technologically advanced products and services, advanced testing capabilities, flexible and global delivery options, reliable supply and reasonable pricing. Our principal competitors include:

- Providers of specialty memory products, including Viking Technology (a division of Sanmina Corporation), or Viking Technology, ATP Electronics, Inc., or ATP, Unigen Corporation, or Unigen, Apacer Technology, Inc., or Apacer, and Transcend Information, Inc., or Transcend;
- In Brazil, local manufacturers of DRAM modules and Flash products and local manufacturers of memory ICs, including HT Micron Semicondutores Ltda., or HT Micron
- Semiconductor memory IC manufacturers that also manufacture DRAM modules and Flash products, including Samsung, Micron, Western Digital Corporation, or Western Digital, SK Hynix, and Toshiba;
- In our supply chain services business, a broad set of companies, including distributors and third party logistics providers as well as our customers' in-house solutions; and
- Providers of compute and storage systems, including HPE, Dell, Cray Computer Corporation, or Cray.

Some of our global competitors are large international companies that have substantially greater financial, technical, marketing, distribution and other resources, as well as greater name recognition and longer-standing relationships with customers and suppliers than we do. In contrast with our focus on specialty memory products with high levels of service and support, these competitors are generally focused on high-volume memory and storage products that are manufactured to industry standard specifications, and they have limited customization and service capabilities.

In addition, some of our competitors are also our suppliers or customers. See “Item A. Risk Factors—Risks Relating to Our Business—Sales to a limited number of customers represents a significant portion of our net sales, and the loss of any key customer or key program, or the demands of our key customers, could materially harm our business, results of operations and financial condition” and “—Our dependence on a small number of sole or limited source suppliers subjects us to certain risks, including the risk that we may be unable to obtain adequate supplies at a reasonable price and in a timely manner.”

In Brazil, our competitors are generally much smaller in scale than we are in terms of revenue and capabilities for manufacturing and for research and development. To a lesser degree, we compete with companies that import DRAM and Flash components and products. We believe that import duties and local content requirements in Brazil give us an advantage over these companies. As the local market grows, competition may increase in Brazil.

Intellectual Property

We rely on a combination of trade secrets, know-how, trademarks, copyright and, to a lesser extent, patents to protect our intellectual property rights. As of September 28, 2018, we have 33 issued patents, including 31 patents issued in the United States, one patent issued in Brazil and one patent issued in South Korea, expiring between 2022 and 2037, excluding any additional patent term for patent term adjustments. In addition, we have 29 patent applications pending, including 14 patent applications in the United States, 7 patent applications in Brazil, 6 patent applications in Malaysia, 1 patent application in South Korea, and 1 patent application in Argentina. We also own a number of trademark registrations, including registrations in the United States for the word marks MHUB, SMART MODULAR TECHNOLOGIES and PENGUIN COMPUTING, and trademarks for our stylized “S” logo in combination with the word SMART and in combination with the words SMART MODULAR TECHNOLOGIES; a trademark in the US and Canada for the graphic logo containing the words PENGUIN COMPUTING; in Brazil, registrations for our stylized “S” logo in combination with the words SMART Modular Technologies; and in Canada, a registration for the word mark PENGUIN COMPUTING.

While many of our products contain proprietary aspects, the majority of our products are built to meet industry standards, such as those set by JEDEC, the standards-setting organization for the semiconductor industry. The absence of patent protection for most of our products means that we cannot prevent our competitors from reverse-engineering and duplicating those products. Much of our intellectual property is know-how and trade secrets, and often we rely on the technological skills and innovation of our personnel rather than on patent protection. We believe that our continued success depends largely on our customer relationships, manufacturing and support capabilities and the technical expertise we have developed in manufacturing and designing products, and we rely on trade secret laws and non-disclosure agreements to protect this aspect of our business.

Employees

As of August 31, 2018, we had 1,538 full-time employees.

Our employee relations in Brazil are subject to Brazilian labor laws and regulations as well as collective bargaining arrangements that are negotiated every year. Four of these collective bargaining agreements are specific to our company while there are other collective bargaining agreements that are generally applicable to certain segments of the electronics industry. The applicable labor laws and regulations, as well as the collective bargaining agreements, principally relate to matters such as formal working time compensation, paid annual vacation, paid sick days, length of the workday and payments for overtime, profit sharing and severance. Although a very small number of our employees in Brazil are members of a labor union, all employees in Brazil are represented by the unions for labor and employment matters.

We have never experienced a work stoppage in any of our locations worldwide, and we consider our employee relations to be good.

Brazilian Local Content Requirements and Other Regulatory Issues

Brazilian Local Content Requirements

We expect to continue to invest in maintaining our leadership position, as measured by market share, in both our core Brazilian desktop, notebook and server DRAM businesses and our mobile DRAM and Flash memory products business. We further expect that local content requirements as well as other government incentive programs in Brazil will help drive our growth strategies, as significant incentives exist to promote the development of the local IT industry. In Brazil, we participate in three government investment incentive programs.

- *PPB/IT Program, 1991:* Provides for significant relief from various tax provisions for companies that develop or produce computing and automation goods and invest in IT-related research and development in Brazil. OEMs that are PPB/IT Program-compliant and who fulfill the local content requirements receive substantial benefits including a reduction in excise taxes on their purchases from qualified suppliers as well as a reduction in the taxes that they are required to charge on sales to their end customers. We estimate that the aggregate of the PPB/IT Program-related tax benefits can range from 15% to as high as 36% of the resale value of the OEMs' end products. These tax benefits are a strong incentive for OEMs to purchase products from local content manufacturers such as SMART Brazil, our Brazilian operating subsidiary.
- *Lei do Bem, 2005:* Fosters technology innovation in Brazil by providing a reduction in corporate income tax through the allowance of deductions for expenses related to research and development activities.
- *PADIS, 2007, extended in 2016:* Awards incentives and significant tax relief, including reductions in the Brazilian aggregate statutory income tax rates, to semiconductor and display companies that invest in research and development and that promote the development, design, test and packaging processes in Brazil. Furthermore, combining PADIS with PPB/IT Program-compliance provides additional financial incentives to OEMs that purchase modules that contain components that are locally processed from wafers.

As the leading local manufacturer of desktop, notebook and server DRAM modules and DRAM components as well as DRAM and Flash mobile memory products in Brazil, as measured by market share, we benefit substantially from these incentives and local content requirements. A cancellation, reduction or other adverse change in any of these incentives or local content requirements, or our failure to meet these requirements, could have a substantial negative impact on our tax rates and could significantly reduce the demand for, and the profit margins on, our products in Brazil.

In 2013, the EU, later joined by Japan, requested the establishment of a panel within the WTO to determine whether certain measures enacted by the Brazilian government concerning tax incentives and local content requirements for the automotive and several other industries including the IT industry and including PADIS, the PPB/IT Program and Lei do Bem, are inconsistent with WTO rules. On August 30, 2017 the WTO panel released a report in which the panel concluded, among other things, that the tax exemptions, reductions and suspensions granted for the automotive, IT and other industries amount to subsidies that are inconsistent with the principles of the various WTO agreements, and the panel recommended that Brazil withdraw these subsidies. The parties all appealed the report's findings and hearings on the appeals were held in June 2018. Government officials in Brazil have expressed their intent to continue to dispute the panel's report and, if necessary, to restructure the incentives to be consistent with the WTO principles in order to continue to support local industry. There can be no assurance, however, that, if needed, the programs will ultimately be restructured and implemented or, if implemented, whether the restructured programs will provide the same level of support as is currently in place. While we cannot predict the outcome of the appeal or the impact of the WTO's report, this recommendation could result in significant adverse changes to the local content rules and incentives available to us and our customers in Brazil. Any suspension, early termination or other adverse change in the local content requirements could significantly reduce the demand for, and the profit margins on, our products in Brazil, and would have a material adverse effect on our business, results of operations and financial condition.

Environmental Regulations

Our operations and properties are subject to a variety of environmental laws and regulations of the United States and other jurisdictions governing, among other things, air emissions, wastewater discharges, management and disposal of hazardous and non-hazardous materials and wastes, reverse logistics (take-back policy) and remediation of releases of hazardous materials. The presence of lead in quantities not believed to be significant have been found in the ground under one of the multi-tenant buildings we lease in Brazil. While we did not cause the contamination, we may be held responsible if remediation is required, although we may be entitled to seek indemnification from responsible parties under Brazilian law and from our lessor under our lease. We cannot be certain that identification of presently unidentified environmental conditions, more vigorous enforcement by regulatory agencies, enactment of more stringent laws and regulations or other unanticipated events will not arise in the future and cause additional material liabilities which could have a material adverse effect on our business, financial condition and results of operations.

Corporate Information

Our address in the Cayman Islands is c/o Maples Corporate Services Limited, P.O. Box 309, Ugland House, Grand Cayman, KY1-1104, Cayman Islands. Our U.S. principal executive offices are located at 39870 Eureka Drive, Newark, California 94560. Our telephone number at this address is (510) 623-1231. Our principal website is http://www.smartm.com. The information contained on, or that can be accessed through, our website is not a part of this Annual Report.

SMART Global Holdings, SMART Modular Technologies, SMART, the SMART logo, Penguin Computing, the Penguin Computing logo, and our other trademarks or service marks appearing in this Annual Report are our property. Trade names, trademarks and service marks of other companies appearing in this Annual Report are the property of the respective holders.

Available Information

We make available, free of charge through our website, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, and amendments to those reports, filed or furnished pursuant to Sections 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after they have been electronically filed with, or furnished to, the Securities Exchange Commission, or SEC.

The public may read and copy any materials we file with the SEC at the SEC’s Public Reference Room at 100 F. Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an internet site (http://www.sec.gov) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

Item 1A. Risk Factors

You should carefully consider the risks and uncertainties described below and the other information in this Annual Report on Form 10-K, including “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes. Our business, financial condition or results of operations could be materially and adversely affected if any of these risks occurs and, as a result, the market price of our ordinary shares could decline and you could lose all or part of your investment.

This Annual Report also contains forward-looking statements that involve risks and uncertainties. See “Cautionary Note Regarding Forward-Looking Statements” for additional information. Our actual results could differ materially and adversely from those anticipated in these forward-looking statements as a result of certain factors, including the risks facing our company described below and elsewhere in this Annual Report.

Risks Relating to Our Business

We have experienced losses in the past and may experience losses in the future.

Our business has experienced quarterly and annual operating losses during the periods presented in the financial statements included in this Annual Report. In fiscal 2018, we had net income and income from operations of $119.5 million and $170.2 million, respectively. In fiscal 2017, we had a net loss and income from operations of $7.8 million and $53.9 million, respectively. In fiscal 2016, we had a net loss and income from operations of $20.0 million and $6.2 million, respectively. Our ability to achieve and maintain profitability depends in part on revenue growth from, among other things, increased demand for our memory solutions, products and related service offerings in our current markets including Brazil, growth in our new SCSS business unit as well as our ability to expand into new markets. We may not be successful in achieving and maintaining the necessary revenue growth. Moreover, as we continue to expend substantial funds for research and development projects, enhancements to sales and marketing efforts and to otherwise operate our business, we cannot assure you that we will achieve and maintain profitability on an annual or quarterly basis even if our revenue does grow.

Our operating results have fluctuated in the past and may fluctuate from quarter to quarter in the future, which makes them difficult to predict.

Our quarterly operating results have fluctuated in the past and may fluctuate in the future. As a result, our past quarterly operating results are not necessarily indicative of future performance. Furthermore, we may not be able to maintain the margins we have achieved in recent periods. Our operating results in any given quarter can be influenced by numerous factors, many of which we are unable to predict or are outside of our control, including:

- the cyclical nature of the markets in which we compete;
- changes in memory component prices or the average selling prices of our products, including fluctuations in the market price of DRAM and Flash memory components;
- lack of growth or contraction or increased competition in the memory market in Brazil or other markets;
- adverse changes to the local content regulations in Brazil;
- corruption or adverse political situations in Brazil or other markets;
- increased trade restrictions or trade wars;
- the loss of, significant reduction in sales to, or demand from, key customers;
- industry consolidation, which may further reduce the number of our potential customers and/or suppliers;
- fluctuations in the markets served by our OEM customers, including the computing, networking, communications, storage, aerospace, defense, mobile and industrial markets;
- difficulty matching our purchasing and production to customer demand, which is difficult to forecast accurately;
- cancellations, modifications or delays in customer orders, product returns and inventory value or obsolescence risk;
- competitive developments, including the introduction of new competitive products;
- our failure to develop new or enhanced products and introduce them in a timely manner;
- reductions in government spending; and
- the other factors described in this “Item 1A. Risk Factors” section and elsewhere in this report.

Due to the various factors mentioned above and other factors, the results of any prior quarterly or annual period should not be relied upon as an indication of our future operating performance. In one or more future periods, our results of operations may fall below the expectations of securities analysts and investors. In that event, the market price of our ordinary shares would likely decline. In addition, the market price of our ordinary shares may fluctuate or decline regardless of our operating performance.

We depend on the desktop, notebook, server and smartphone markets in Brazil, and lack of growth, or the occurrence of contraction, in these markets have in the past, and could again in the future, have a material adverse impact on our business, results of operations and financial condition.

A significant portion of our sales and operations are focused on Brazil. Sales to customers in Brazil accounted for 62%, 52% and 46% of our net sales in fiscal 2018, 2017 and 2016, respectively. We have invested substantial financial and management resources to develop a research and development center and a semiconductor packaging and test facility in Brazil in order to target the growing market for memory in Brazil and to take advantage of certain Brazilian laws and government incentives, as described below in "—Risks Relating to our International Operations." Our future financial performance will depend in large part on growth in the Brazilian market, which may not grow again at historical rates, or at all.

Demand for our products in Brazil is dependent upon, among other things, demand in the markets served by our customers, including the Brazilian computing and mobile markets. From time to time, the markets served by our Brazilian customers have experienced downturns, often in connection with political unrest or in connection with, or in anticipation of, declines in general economic conditions. A decline or significant shortfall in demand in any of the markets that we serve could have a significant negative impact on the demand for our products. In addition, a prolonged economic downturn in Brazil, even absent a worldwide economic downturn, may lead to higher interest rates or significant changes in the rate of inflation in Brazil, or an inability of our Brazilian customers and suppliers to access capital on acceptable terms. Our customers and suppliers in Brazil could experience cash flow problems, credit defaults or other financial hardships. A major corruption scandal involving Brazil's largest energy company, Petrobras, began to unfold in 2014, and by 2015 contributed to a significant decrease in the value of the Brazilian real, which in turn led to a substantial downturn in the Brazilian economy and a substantial rise in unemployment. This in turn had a significant negative impact on our revenues, results of operations and our financial condition.

In addition, as discussed in greater detail below, our sales and our profit margins in Brazil are favorably impacted by laws establishing local content requirements for electronics products. See "—Our success in Brazil depends in part on Brazilian laws establishing local content requirements for electronics products. The elimination of or a reduction in the local content requirements, or our inability to secure the benefits of these regulations, could significantly reduce the demand for, and the profit margins on, our products in Brazil."

Any of these circumstances could have a material adverse effect on our business, results of operations and financial condition.

The markets in which we compete historically have been highly cyclical and have experienced severe downturns that have materially adversely affected, and may in the future materially adversely affect, our business, results of operations and financial condition.

Historically, the markets in which we compete have been highly cyclical and have experienced significant downturns often connected with, or in anticipation of, maturing product cycles of both component suppliers and electronic equipment manufacturers, and/or declines in general economic conditions. These downturns have been characterized by diminished product demand, production overcapacity, high inventory levels and accelerated erosion of selling prices and inventory values. Our industry depends on the continued growth of the electronics industry and on end-user demand for our customers' products. Economic downturns often have had an adverse effect upon manufacturers and end-users of electronics products. The timing of new product developments, the lifecycle of existing electronics products and the level of acceptance and growth of new products can also affect demand for our products. Downturns in the markets we serve could have a significant negative impact on the demand for our products. Additionally, due to changing conditions, our customers have experienced and may in the future experience periods of excess inventory that could have a significant adverse impact on our sales. During an industry downturn, there is also a higher risk that some of our trade receivables become delinquent or even uncollectible and that our inventory would decrease in value. We cannot predict the timing or the severity of the cycles within our industry. In particular, it is difficult to predict how long and to what levels any industry upturn or downturn, or general economic strength or weakness, will last or develop.

Our customers primarily serve end users in the computing, networking, communications, storage, aerospace, defense, mobile and industrial markets. Sales of our products are dependent upon demand in these markets. From time to time, each of these markets has experienced cyclical downturns, often in connection with, or in anticipation of, declines in general economic conditions, and we may experience substantial period-to-period fluctuations in our operating results due to factors affecting these markets. Changes in end-user demand for our customers' products could have a material adverse effect on demand for our products, particularly if the customer has accumulated excess inventories of products purchased from us or from competitors selling similar products. Reduced demand for our products could have a material adverse effect on our business, results of operations and financial condition.

Declines in memory component prices and our average selling prices may result in declines in our net sales and gross profit and could have a material adverse effect on our business, results of operations and financial condition.

Our industry has historically been characterized by declines in average selling prices. Our average selling prices may decline due to several factors, including general declines in demand for our products and excess supply of DRAM and Flash memory components as a result of overcapacity. In the past, transitions to smaller design geometries and other factors causing overcapacity in memory markets have led to significant increases in the worldwide supply of memory components. If not accompanied by increases in demand, supply increases usually result in significant declines in component prices and, in turn, declines in the average selling prices and profit margins of our products. During periods of overcapacity, our net sales may decline if we fail to increase sales volume of existing products or to introduce and sell new products in quantities sufficient to offset declines in selling prices. Our efforts to increase sales or to introduce new products to offset the impact of declines in average selling prices may not be successful. Furthermore, our competitors and customers also impose significant pricing pressures on us. These declines in average selling prices have in the past had, and may again in the future have, a material adverse effect on our business, results of operations and financial condition. Declines in prices also could affect the valuation of our inventory, which could result in inventory write-downs. Declines in average selling prices also might enable OEMs to pre-install higher density memory modules into new systems at existing price points, thereby reducing the demand for future memory upgrades. In addition, our net sales and gross profit may be negatively affected by shifts in our product mix during periods of declining average selling prices.

Worldwide economic and political conditions as well as other factors may adversely affect our operations and cause fluctuations in demand for our products.

Uncertainty in global economic and political conditions poses a risk to the overall economy, as consumers and businesses have made it difficult for customers, suppliers and us to accurately forecast and plan future business activities. Declines in the worldwide semiconductor market, economic conditions or consumer confidence would likely decrease the overall demand for our products. Other factors that could cause demand for our products to fluctuate include:

- a downturn in the computing, networking, communications, storage, aerospace, defense, mobile or industrial markets;
- changes in consumer confidence caused by changes in market conditions, including changes in the credit markets, expectations for employment and inflation and energy prices;
- corruption or adverse political situations in Brazil or other markets;
- increased trade restrictions or trade wars;
- changes in the level of customers' components inventory;
- competitive pressures, including pricing pressures, from companies that have competing products, architectures, manufacturing technologies and marketing programs;
- changes in technology or customer product needs;
- strategic actions taken by our competitors; and
- market acceptance of our products.

If demand for our products decreases, our manufacturing or assembly and test capacity could be underutilized, and we may be required to record an impairment on our long-lived assets, including facilities and equipment, as well as intangible assets, which would increase our expenses. In addition, if product demand decreases or we fail to forecast demand accurately, we could be required to write-off inventory or record underutilization charges, which would have a negative impact on our profitability. If product demand increases more or faster than anticipated, we may not be able to add manufacturing or assembly and test capacity fast enough to meet market demand. These changes in demand for our products, and changes in our customers' product needs, could have a variety of negative effects on our competitive position and our financial results, and, in certain cases, may reduce our net sales, increase our costs, lower our profit margins or require us to recognize impairments of our assets. The occurrence of any of the foregoing could have a material adverse effect on our business, results of operations and financial condition.

Our success in Brazil depends in part on Brazilian laws establishing local content requirements for electronics products. The elimination of or a reduction in the local content requirements, or our inability to secure the benefits of these regulations, could significantly reduce the demand for, and the profit margins on, our products in Brazil.

Successive Brazilian governmental administrations have adopted economic policies intended to foster innovation and investment in local production, stimulate job growth, provide stimulus to exports and defend local manufacturers in various industries. In recent decades, the Brazilian government identified the design and manufacture of ICs as a priority and established tax incentives and local content requirements intended to promote the development of the local IT industry. These incentives include the PPB/IT Program, PADIS and Lei do Bem. The PPB/IT program is intended to promote local manufacturing by allowing qualified companies to sell specified IT products, including desktops, notebooks, servers, SmartTVs and mobile products, with a reduced Brazilian federal excise tax rate, or the IPI, as compared to the rate that is required to be collected by non-qualified suppliers. The PPB/IT Program provides an incentive for certain customers to purchase products from us because they are not required to pay the regular level of IPI on their purchases. Under the PPB/IT Program, the percentage of local content required in specified IT products has increased significantly from 2006 to present, and the law that provides the PPB/IT Program benefits is currently legislated to remain in force through the end of 2029. For example, under the PPB/IT Program, from 2006 to present the total requirement of DRAM modules made with locally packaged DRAM ICs for notebook computers has increased from 0% to 80% and is expected to remain at current levels through the end of 2029. In order to receive the intended treatment as a PPB/IT Program supplier, our subsidiary, SMART do Brazil, is required to invest in research and development activities in an amount equal to 4% of its gross annual sales revenues reduced by the following: the cost of raw materials qualified as products eligible for the PPB/IT Program, including the ICs that are purchased from our other Brazilian subsidiary, SMART Brazil, and that are used to make memory modules; applicable sales taxes; the value of products exported out of Brazil; and the value of products shipped to the Manaus Free Trade Zone. Brazil's local content requirements for the IT industry have been subject to criticism by other governments and international organizations.

In 2013, the EU, later joined by Japan, requested the establishment of a panel within the WTO to determine whether certain measures enacted by the Brazilian government concerning tax incentives and local content requirements for the automotive and several other industries including the IT industry and including PADIS, the PPB/IT Program and Lei do Bem, are inconsistent with WTO rules. On August 30, 2017 the WTO panel released a report in which the panel concluded, among other things, that the tax exemptions, reductions and suspensions granted for the automotive, IT and other industries amount to subsidies that are inconsistent with the principles of the various WTO agreements, and the panel recommended that Brazil withdraw these subsidies. The parties all filed appeals to the report's findings and hearings on the appeals were held in June 2018. Government officials in Brazil have expressed their intent to continue to dispute the panel's report and, if necessary, to restructure the incentives to be consistent with the WTO principles in order to continue to support local industry. There can be no assurance, however, that, if needed, the programs will ultimately be restructured and implemented or, if implemented, whether the restructured programs will provide the same level of support as is currently in place. While we cannot predict the outcome of the appeals or the impact of the WTO's report, this recommendation could result in significant adverse changes to the local content rules and incentives available to us and our customers in Brazil. Any suspension, early termination or other adverse change in the local content requirements could significantly reduce the demand for, and the profit margins on, our products in Brazil, and would have a material adverse effect on our business, results of operations and financial condition.

In addition, we benefit from various other tax incentives extended to us in Brazil to promote the development of the local IT industry, and are subject to related risks, as described below under "—Risks Relating to our International Operations—If the tax incentive or tax holiday arrangements from which we benefit in Brazil or Malaysia change or cease to be in effect or applicable in part or in whole, for any reason, or if our assumptions and interpretations regarding tax laws and incentive or holiday arrangements prove to be incorrect, the amount of corporate income, excise, import and contribution taxes we have to pay could increase significantly."

Sales to a limited number of customers represent a significant portion of our net sales, and the loss of any key customer or key program, or the demands of our key customers, could materially harm our business, results of operations and financial condition.

Our principal end customers include global OEMs that compete in the computing, networking, communications, storage, aerospace, defense, mobile and industrial markets. In fiscal 2018, 2017 and 2016, sales to our ten largest end customers (including sales to contract manufacturers or ODMs at the direction of such end customers) accounted for 84%, 84% and 81% of net sales, respectively. Of our end customers, Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; Cisco accounted for 12%, 15% and 19% of net sales in fiscal 2018, 2017 and 2016, respectively; Lenovo accounted for 11%, 11% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; and Dell accounted for 10% of net sales in fiscal 2018. Direct sales to Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; direct sales to Flex accounted for 13%, 14% and 17% of net sales in fiscal 2018, 2017 and 2016, respectively; and direct sales to Hon Hai accounted for 13% and 11% of net sales in fiscal 2017 and 2016, respectively. While Samsung is a significant customer of ours, purchasing eMCPs from us in their smartphone division and DRAM modules from us in their PC division, Samsung's semiconductor division is also a major supplier and a competitor. See "Risk Factors—Risks Relating to Our Business—Our dependence on a small number of sole or limited source suppliers subjects us to certain risks, including the risk that we may be unable to obtain adequate supplies at a reasonable price and in a timely manner" and "—The memory market is intensely competitive, and we may not be able to maintain or improve our competitive position."

We expect that sales to relatively few customers will continue to account for a significant percentage of our net sales for the foreseeable future. However, we can provide no assurance that any of these customers or any of our other customers will continue to utilize our products or our services at current levels, or at all. Although we have master agreements with one or more key customers, these agreements govern the terms and conditions of the relationship and do not contain requirements for them to purchase minimum volumes.

Our customer concentration may also subject us to perceived or actual bargaining leverage that our key customers may have, given their relative size and importance to us. Since a large percentage of our sales is to a small number of customers that are primarily large OEMs, these customers are able to exert, have exerted and we expect will continue to exert, pressure on us to make concessions on price and on terms and conditions which can adversely affect our business, results of operations and financial condition. If our key customers seek to negotiate their agreements on terms less favorable to us and we accept such unfavorable terms, such unfavorable terms may have a material adverse effect on our business, results of operations and financial condition. Accordingly, unless and until we diversify and expand our customer base, our future success will significantly depend upon the timing and volume of business from our largest customers and the financial and operational success of these customers. If we were to lose one of our key customers or have a key customer cancel a key program or otherwise significantly reduce its volume of business with us, our sales and profitability would be materially reduced and our business and financial condition would be seriously harmed.

The markets that we serve are intensely competitive, and we may not be able to maintain or improve our competitive position.

The markets that we serve are characterized by intense competition. Our competitors include many large domestic and international companies that have substantially greater financial, technical, marketing, distribution and other resources, greater name recognition, broader product lines, lower cost structures and longer-standing relationships with customers and suppliers than we do. As a result, our competitors may be able to respond better to new or emerging technologies or standards and to changes in customer requirements. Further, some of our competitors are in a better financial and marketing position from which to influence industry acceptance of a particular product standard or competing technology than we are. Our competitors may also be able to devote greater resources to the development, promotion and sale of products, and may be able to deliver competitive products at a lower price than we can.

Our primary competitors in the specialty memory market include Viking Technology, ATP, Unigen, Apacer and Transcend. In Brazil, we compete against local manufacturers of DRAM modules and local manufacturers of memory ICs, including HT Micron Semicondutores Ltda., or HT Micron, and Multilaser Indústria de Equipamentos de Informática, Eletrônicos e Ópticos Ltda.

We compete globally against semiconductor memory IC manufacturers that also manufacture DRAM ICs and modules and Flash products, including Samsung, Micron, Western Digital, SK Hynix and Toshiba. While these companies generally focus on higher volume commodity products, they sometimes compete with some of our specialty memory products. In addition to competing with certain portions of our product offering, Samsung is also a major supplier and a significant customer. See "Risk Factors—Risks Relating to Our Business—Sales to a limited number of customers represents a significant portion of our net sales, and the loss of any key customer or key program, or the demands of our key customers, could materially harm our business, results of operations and financial condition" and "—Our dependence on a small number of sole or limited source suppliers subjects us to certain risks, including the risk that we may be unable to obtain adequate supplies at a reasonable price and in a timely manner."

In our supply chain services business, we compete in a fragmented market with a broad set of companies, including distributors and third party logistics providers as well as our customers' in-house solutions.

Through imports of DRAM components and modules and Flash products, we face some of the same competitors in Brazil as we do elsewhere. We also face competition from local manufacturers of DRAM modules and Flash products, and expect to face more competition in the future from local start-up semiconductor packaging companies, such as Adata Integration Brazil S/A, which began production of its new packaging plant in Brazil in the first half of calendar year 2017. We believe that import duties and local content requirements in Brazil give us an advantage over companies that import DRAM modules or Flash products or import memory components; however, that competitive advantage may become less significant in the event that competitors build manufacturing facilities in Brazil or local content regulations change or are eliminated. As the local market grows, competition may increase in Brazil.

In SCSS, we compete with HPE, Dell, Cray Computer Corporation, or Cray, and other smaller companies manufacturing computing components and products. We also compete with the direct to customer efforts from several of our large partners including Intel Corporation, or Intel, Quanta Services, Inc., or Quanta, Synnex Corporation, or Synnex, and Super Micro Computer, Inc., or Super Micro

We face competition from existing competitors and expect to face new companies that may enter our existing or future markets with similar or alternative products, which may be less costly or provide additional features. We also face competition from current and prospective customers that evaluate our capabilities against the merits of manufacturing products internally. Competition may also arise due to the development of cooperative relationships among our current and potential competitors and/or suppliers or third parties to increase the ability of their products to address the needs of our prospective customers. Accordingly, it is possible that new competitors or alliances among competitors and/or suppliers may emerge and acquire significant market share.

We expect that our competitors will continue to improve the performance of their current products, reduce their prices and introduce new products that may offer greater performance and improved pricing, any of which could cause a decline in sales or market acceptance of our products. In addition, our competitors may develop enhancements to, or future generations of, competitive products that may render our technology or products obsolete or uncompetitive. To remain competitive, we must continue to provide technologically advanced products and manufacturing services, maintain high quality, offer flexible delivery schedules, deliver finished products on a reliable basis, reduce manufacturing and testing costs, and compete favorably on the basis of price. Competitive pressure has led in the past and may continue to lead to intensified price competition resulting in lower net sales and profit margins which could negatively impact our financial performance. Our efforts to maintain and improve our competitive position, or our failure to do so, could have a material adverse effect on our business, results of operations and financial condition.

Industry consolidation and company failures may reduce the number of our potential customers, increase our reliance on our existing key customers and negatively impact the competitiveness of our supplier base.

Our customer and supplier markets are characterized by a limited number of large companies. Some participants in the industries in which we serve have merged and/or been acquired, and this trend may continue. In addition, there have been company failures among both our customer and supplier base. Industry consolidation and company failures could decrease the number of potential significant customers for our products and services. Consolidation and company failures in some of our customers' industries may also result in the loss of customers. The decrease in the number of potential significant customers will increase our reliance on key customers and, due to the increased size of these companies, may negatively impact our bargaining position and thus our profit margins. Furthermore, the loss of, or a relatively reduced relationship with, key customers due to industry consolidation and company failures could negatively impact our business, results of operations and financial condition. Additionally, consolidation and company failures in our supplier base could reduce our purchasing alternatives and reduce the competition for our business resulting in higher cost of goods and less availability of components which would have a negative impact on our business, results of operations and financial condition.

Customer demand is difficult to forecast accurately and, as a result, we may be unable to optimally match purchasing and production to customer demand, which may have a material adverse effect on our business, results of operations and financial condition.

In most cases we do not obtain long-term purchase orders or commitments from our customers but instead we work with our customers to develop non-binding estimates or forecasts of future requirements. Utilizing these non-binding estimates or forecasts, we make significant decisions based on our estimates of customer requirements including determining the levels of business that we will seek and accept, production scheduling, component purchasing and procurement commitments, inventory levels, personnel and production facility needs and other resource requirements. A variety of conditions, both specific to each individual customer and generally affecting each customer's industry, may cause customers to cancel, reduce or delay orders that were either previously made or anticipated, and often with little or no notice to us. Generally, customers may cancel, reduce or delay purchase orders and commitments without penalty. The short-term and flexible nature of commitments by many of our customers, and the possibility of unexpected changes in demand for their products, reduces our ability to accurately estimate future customer requirements. On occasion, customers may require rapid increases in production, which can challenge our resources and can reduce profit margins. We may not have sufficient capacity at any given time to meet our customers' demands. Downturns in the markets in which our customers compete can, and have, caused our customers to significantly reduce the amount of products ordered from us or to cancel or delay existing orders leading to lower utilization of our facilities. This in turn can cause us to have more inventory than we need and can result in inventory write-downs or write-offs. Additionally, as many of our costs and operating expenses are relatively fixed, reduction in customer demand would have an adverse effect on our operating income, results of operations and financial condition.

We may experience inventory write-downs or write-offs.

To the extent we manufacture products or make purchases in anticipation of future demand that does not materialize, or in the event a customer cancels or reduces outstanding orders, we could experience an unanticipated increase in our inventory. We have had in the past and expect we could again have in the future, inventory write-downs and/or write-offs due to obsolescence, excess quantities and declines in market value below our costs. In particular, if product obsolescence causes product demand to decrease or we fail to forecast demand accurately, we could be required to write-off inventory or record under-utilization charges, which would have a negative impact on our profit margins and our profitability. Any one or more of these occurrences could have a negative impact on our results of operations and financial condition. Our inventory write-downs were $5.2 million, $2.8 million and $1.8 million for fiscal 2018, 2017 and 2016, respectively.

In connection with delivering our supply chain services, we make significant inventory purchases based on customer forecasts and/or customer purchase orders. In most instances, forecasts are non-binding and purchase orders can be rescheduled at the customer's option, often times without penalty. When actual consumption does not meet the customer's forecast or the customer's purchase orders, it will result in unanticipated and sometimes significant increases in our inventory. Additionally, some of our logistics transactions contemplate extended periods of inventory management. These programs generally obligate customers to eventually purchase certain aged logistics inventory with minimal right to price reductions, and typically provide for periodic carrying charges. We can provide no assurance, however, that the customers will comply with these obligations. If a customer of our supply chain services has significant delays in delivery of inventory, this could have a negative impact on our profitability. If a customer of our supply chain services fails to consume the inventory that we purchase for it, this could result in significant inventory write-downs or write-offs. Any one or more of these occurrences could have a significant negative impact on our cash flows, business, results of operations and financial condition. At the end of each of the last four fiscal quarters, logistics inventory (including inventory specifically requested by customers) ranged between 22% and 28% of our total inventory.

New product development requires significant investment. Our failure to develop new or enhanced products and introduce them in a timely manner would undermine our competitiveness.

The memory market is subject to rapid technological change, product obsolescence, frequent new product introductions and feature enhancements, changes in end-user requirements and evolving industry standards. Our ability to successfully compete and to continue to grow our business depends in significant part upon our ability to develop, introduce and sell new and enhanced products on a timely and cost-effective basis, and to anticipate and respond to changing customer requirements. We have experienced, and may experience in the future, delays and unanticipated expenses in the development and introduction of new products. A failure to develop products with required feature sets or performance standards, or a delay as short as a number of weeks in bringing a new product to market could significantly reduce our return on investment as well as our net sales, all of which would have a material adverse effect on our business, results of operations and financial condition.

Delays in the development, introduction and qualification of new products could provide a competitor a first-to-market advantage and allow a competitor to achieve greater market share. These delays could also result in customers having the right to cancel orders without penalty. Defects or errors found in our products after sampling or commencement of commercial shipments could result in delays in market acceptance of our products. Lack of market acceptance for our new products for any reason would jeopardize our ability to recoup substantial research and development expenditures, hurt our reputation and have a material adverse effect on our business, results of operations and financial condition. Accordingly, we can provide no assurance that our future product development efforts will be successful or result in products that gain market acceptance.

We have invested in the past and expect in the future to invest in new technologies and emerging markets. If these new technologies and emerging markets fail to gain acceptance or grow, it would have a material adverse effect on our business, results of operations and financial condition. In particular, we have made and expect to continue to make significant investments in embedded Flash-based products. There is significant competition in these markets and we can provide no assurance that we will develop and introduce products in a timely manner or that our new products will gain market acceptance, be price competitive or result in any significant increase in our net sales. If these investments fail to provide the expected returns, then such failure would have a material adverse effect on our business, results of operations and financial condition.

Our OEM customers require that our products undergo a lengthy and expensive process of evaluation and qualification without any assurance of net sales.

Our products are often incorporated into our OEM customers' systems at the design stage. As a result, we rely on OEMs to select our product designs, which we refer to as design wins, and then to qualify our products for production buys. We often incur significant expenditures in the development of a new product without any assurance that any OEM will select our product for design into its system. Additionally, in some instances, we are dependent on third parties to obtain or provide information that we need to achieve a design win. These third parties may not supply this information to us on a timely basis, if at all. Furthermore, even if an OEM designs one of our products into its system, we cannot be assured that they will qualify or use our product in production, that the OEM's product will be commercially successful or that we will receive significant orders as a result of that design win or qualification. Generally, our OEM customers are not obligated to purchase our products even if we get a design win. If we are unable to achieve design wins or if our OEM customers' systems incorporating our products are not commercially successful, it could have a material adverse effect on our business, results of operations and financial condition.

In addition, because the qualification process is both product-specific and platform-specific, our existing customers sometimes require us to requalify our products, or to qualify our new products, for use in new platforms or applications. For example, as our OEM customers transition from third generation double date-rate, or DDR3, DRAM architectures, or fourth generation DDR, or DDR4, DRAM architectures, we must design and qualify new products for use by those customers. In the past, the process of design and qualification has taken several months to complete, during which time our net sales to those customers declined significantly. After our products are qualified, it can take several months before the customer begins production and we begin to generate net sales from such customer.

Likewise, when our suppliers discontinue production of components, it may be necessary for us to design and qualify new products for our customers. Such customers may require of us or we may decide to purchase an estimated quantity of discontinued memory components necessary to ensure a steady supply of existing products until products with new components can be qualified. Purchases of this nature may affect our liquidity. Additionally, our estimation of quantities required during the transition may be incorrect, which could adversely impact our results of operations through lost revenue opportunities or charges related to excess and obsolete inventory.

We must devote substantial resources, including design, engineering, sales, marketing and management efforts, to qualify our products with prospective customers in anticipation of sales. Significant delays in the qualification process could result in an inability to keep up with rapid technological change or new, competitive technologies. If we delay or do not succeed in qualifying a product with an existing or prospective customer, we will not be able to sell that product to that customer, which may result in us losing potential revenue and holding excess or obsolete inventory, any of which may have a material adverse effect on our business, results of operations and financial condition.

If our OEM customers decide to utilize a standardized memory solution instead of our specialty memory products, our net sales and market share may decline.

Many of our specialty memory products are specifically designed for our OEM customers' systems. In an effort to reduce costs and assure supply of their memory module requirements, a number of our OEM customers design commodity JEDEC-standard DRAM modules into their products. Although we also manufacture JEDEC-standard modules, an increase in such efforts by our customers could reduce the demand for our higher priced specialized or customized memory solutions, which in turn would have a negative impact on our business, results of operations and financial condition. In addition, when customers utilizing custom memory solutions choose to adopt a JEDEC-standard instead of a custom module, new competitors producing standardized memory modules may take a portion of our customers' business previously purchased from us.

Our dependence on a small number of sole or limited source suppliers subjects us to certain risks, including the risk that we may be unable to obtain adequate supplies at reasonable prices and in a timely manner.

We are dependent upon a small number of sole or limited source suppliers for certain materials, including certain critical components, we use in manufacturing our products. We purchase almost all of our materials from our suppliers on a purchase order basis and generally do not have long-term commitments from suppliers. Our suppliers are not required to supply us with any minimum quantities and there is no assurance that our suppliers will supply the quantities of components we may need to meet our production goals. Our major suppliers include Samsung, Micron and SK Hynix. These suppliers also compete with us in the memory market. For example, while Samsung, Micron and SK Hynix all sell DRAM modules to us, and Samsung and Micron supply us with DRAM ICs, Flash ICs and finished products, they also compete with us by selling DRAM ICs and modules and Flash ICs and finished products to many of our customers, usually focusing on higher volume commodity products. Samsung is also a significant customer, as Samsung's smartphone division purchases eMCPs from us, and its PC division purchases DRAM modules from us.

In Brazil, we purchase the wafers used in our memory products exclusively from a single global memory wafer supplier. The target volume and pricing of wafers are established annually, and our purchases are generally made monthly on a purchase order basis and are not cancelable. In the event that our wafer supply relationship or our purchase orders are terminated, or if our supplier's production of silicon wafers is reduced or disrupted, we may be unable to obtain sufficient quantities of high-quality wafers at reasonable prices, and in a timely manner, to fulfill our Brazilian customers' requirements. In addition, there can be no assurance that we will reach agreement with our wafer supplier on the pricing and quantities of wafers that they will supply and we will purchase.

The markets in which we operate have experienced, and may experience in the future, shortages in components, including DRAM and Flash ICs, which are essential components of our memory products. These shortages cause some suppliers to place their customers, including us, on component allocation. As a result, we may not be able to obtain the components that we need to fill customer orders. If any of our suppliers experience quality control or intellectual property infringement problems, we may not be able to fill customer orders. Furthermore, our products that utilize that supplier's components may be disqualified by one or more of our customers and we may not be able to fill their orders. The inability to fill customer orders could cause delays, customer cancellations, disruptions or reductions in product shipments or require costly product redesigns and/or re-qualifications which could, in turn, damage relationships with current or prospective customers, increase costs and have a material adverse effect on our business, results of operations and financial condition.

A disruption in or termination of our supply relationship with any of our significant suppliers or our inability to develop relationships with new suppliers, if required, would cause delays, disruptions or reductions in product manufacturing and shipments or require product redesigns which could damage relationships with our customers, increase our costs or the prices we need to charge for our products and could materially and adversely affect our business, results of operations and financial condition.

Unless we maintain manufacturing efficiency, we may not remain profitable and our future profitability could be materially adversely affected.

The memory industry is characterized by constant and rapid technological changes and product obsolescence. For example, new manufacturing process technologies using smaller feature sizes and offering better performance characteristics are generally introduced every one to two years. The introduction of new manufacturing process technologies allows us to increase the functionality of our products while at the same time optimizing performance parameters, decreasing power consumption and/or increasing storage capacity. In order to remain competitive, it is essential that we secure the capabilities to develop and qualify new manufacturing process technologies. If we are delayed in transitioning to new technologies, our business, results of operations and financial condition could be materially adversely affected.

If the lifecycle of a product is shortened as a result of the introduction of a new technology, we may be forced to transition our manufacturing capabilities to a new configuration more quickly than originally planned. This can result in increased capital and other expenditures. This can also cause decreases in demand for the older technology products and our manufacturing or assembly and test capacity to be under-utilized. As a result, we may be required to record an impairment on our long-lived assets, including facilities and equipment, as well as intangible assets, which would increase our expenses. When new technologies are introduced, the capacity to manufacture the new products often cannot meet the demand and product shortages can arise. If our suppliers cannot support such demand, we may not be able to fill customer orders or participate in new markets as they emerge.

Our manufacturing efficiency can significantly affect our results of operations, and we cannot be sure that we will be able to maintain or increase our manufacturing efficiency to the same extent as our competitors. We continuously modify our manufacturing processes in an effort to improve yields and product performance and decrease costs. During periods when we are implementing new process technologies, manufacturing facilities may not be fully productive and may experience higher than acceptable defect rates. We may fail to achieve acceptable yields or may experience product delivery delays as a result of, among other things, capacity constraints, delays in the development of new process technologies, increased defect rates, changes in our process technologies, upgrades or expansion of existing facilities, impurities or other difficulties in the manufacturing process. Any of these occurrences could adversely impact our relationships with customers, cause harm to our reputation in the marketplace, cause customers to move future business to our competitors or cause us to make financial concessions to our customers. Improving our manufacturing efficiency in future periods is dependent on our ability to:

- develop advanced process technologies and advanced products that utilize those technologies;
- successfully transition to more advanced process technologies;
- continue to reduce test times;
- ramp product and process technology improvements rapidly and effectively to commercial volumes across our facilities;
- achieve acceptable levels of manufacturing output and yields, which may decrease as we implement more advanced technologies; and
- maintain our quality controls and rely upon the quality and process controls of our suppliers.

Disruption of our operations at our manufacturing facilities would substantially harm our business.

A disruption at one of our manufacturing facilities could adversely impact our manufacturing operations and consequently our customer relations and our business. Such a disruption could result from, among other things, sustained process abnormalities, government intervention, waste disposal issues, power failures or other circumstances, or from ramp-up related challenges, such as obtaining sufficient raw materials, hiring of qualified factory personnel, installation and efficient operation of new equipment and management and coordination of our logistics networks within our global operations. We maintain insurance to protect against certain claims associated with business interruption; however, our insurance may not cover all or any part of a particular loss. Since a large percentage of our production is done in a small number of facilities, a disruption to operations, or a loss that is in excess of, or excluded from, our insurance coverage could adversely impact our business, results of operations and financial condition.

We are subject to a number of procurement laws and regulations. Our business and our reputation could be adversely affected if we fail to comply with these laws

With respect to a portion of our business, we must comply with and are affected by laws and regulations relating to the award, administration and performance of government contracts in the U.S. and other countries. Government contract laws and regulations affect how we do business with our customers and impose certain risks and costs on our business. A violation of specific laws and regulations, by us, our employees, others working on our behalf, a supplier or a venture partner, could harm our reputation and result in the imposition of fines and penalties, the termination of our contracts, suspension or debarment from bidding on or being awarded contracts, loss of our ability to export products or services and civil or criminal investigations or proceedings. In some instances a government agency may terminate any of our government contracts and subcontracts either at its convenience or for default based on our performance. A termination arising out of our default may expose us to liability including for excess costs incurred by the customer in procuring undelivered services and solutions from another source and such termination may have a material adverse effect on our ability to compete for future contracts and orders. In addition, on those contracts for which we are teamed with others and are not the prime contractor, the government could terminate a prime contract under which we are a subcontractor, notwithstanding the quality of our services as a subcontractor. In the case of termination for default, the government could make claims to reduce the contract value or recover its procurement costs and could assess other special penalties. Government agencies routinely audit and investigate government contractors. These agencies review a contractor’s performance under its contracts, its cost structure, its business systems and compliance with applicable laws, regulations and standards. Certain government agencies have the ability to decrease or withhold certain payments when it deems systems subject to its review to be inadequate. Additionally, any costs found to be misclassified may be subject to repayment. If an audit or investigation uncovers improper or illegal activities, we may be subject to civil or criminal penalties and administrative sanctions, including reductions of the value of contracts, contract modifications or terminations, forfeiture of profits, suspension of payments, penalties, fines and suspension, or prohibition from doing business with the government. In addition, we could suffer serious reputational harm if allegations of impropriety were made against us. Similar government oversight exists in most other countries where we conduct business.

The U.S. government may terminate, cancel, modify or curtail our contracts at any time and, if we do not replace them, we may be unable to achieve or sustain revenue growth and may suffer a decline in revenues and profitability.

Certain of the U.S. government programs in which we participate as a contractor or subcontractor may extend for several years and include one or more base years and one or more option years. Under some contracts, the government generally has the right not to exercise options to extend or expand our contracts and may otherwise terminate, cancel, modify or curtail our contracts at its convenience. Any decision by a government agency not to exercise contract options or to terminate, cancel, modify or curtail any major programs or contracts would adversely affect our revenues, revenue growth and profitability. We may experience and continue to experience periodic performance issues under certain of our contracts. Depending on the nature and value of the contract, a performance issue or termination for default could cause our actual results to differ from those anticipated and could harm our reputation and our operating results and financial condition.

If our products are defective or are used in defective systems, we may be subject to warranty, product recalls or product liability claims.

If our products are defectively manufactured, contain defective components or are used in defective or malfunctioning systems, we could be subject to warranty and product liability claims and product recalls, safety alerts or advisory notices. While we have product liability insurance coverage, it may not be adequate to satisfy claims made against us. We also may be unable to obtain insurance in the future at satisfactory rates or in adequate amounts. Warranty and product liability claims or product recalls, regardless of their ultimate outcome, could have an adverse effect on our business, financial condition and reputation, and on our ability to attract and retain customers. In addition, we may determine that it is in our best interest to accept product returns in circumstances where we are not contractually obligated to do so to maintain good relations with our customers. Accepting product returns may adversely impact our results of operations and financial condition.

Cyber attacks or other data security incidents that disrupt our operations or result in the breach or other compromise of proprietary or confidential information about our company, our workforce, our customers, or other third parties could disrupt our business, harm our reputation, cause us to lose customers, and expose us to costly regulatory enforcement and litigation.

We may manage, store, transmit and otherwise process various proprietary information and sensitive personal or confidential data. In addition, our cloud computing businesses routinely processes, stores, and transmits data, including sensitive and personally identifiable information, for our customers. We may experience breaches or other compromises of the information technology systems we use for these purposes, as criminal or other actors may be able to penetrate our network security and misappropriate or compromise our information or that of third parties, create system disruptions or cause shutdowns. There are numerous and evolving risks to cybersecurity and privacy, including criminal hackers, hacktivists, state-sponsored intrusions, industrial espionage, employee malfeasance, and human or technological error. Computer hackers and others routinely attempt to breach the security of technology products, services and systems, and to fraudulently induce employees, customers, and other third parties to disclose information or unwittingly provide access to systems or data. The risk of such attacks includes attempted breaches not only of our own products, services and systems, but also those of customers, contractors, business partners, vendors and other third parties. Our products, services and systems may be used in critical company, customer, government or other third-party operations, or involve the storage, processing and transmission of sensitive data, including valuable intellectual property, classified information, other proprietary or confidential data, regulated data, and personal information of employees, customers and others. Successful breaches, employee malfeasance, or human or technological error could result in, for example, unauthorized access to, disclosure, modification, misuse, loss, or destruction of company, customer, government or other third party data or systems; theft of sensitive, regulated, classified or confidential data including personal information and intellectual property; the loss of access to critical data or systems through ransomware, destructive attacks or other means; and business delays, service or system disruptions or denials of service. Further, hardware and operating system software and applications that we produce or procure from third parties may contain defects in design or manufacture, including "bugs" and other problems that could unexpectedly interfere with the operation of such systems.

The costs to address product defects or any of the foregoing security problems and security vulnerabilities before or after a cyber incident could be significant. Remediation efforts may not be successful and could result in interruptions, delays, or cessation of service, and loss of existing or potential customers that may impede our sales, manufacturing, distribution, or other critical functions. We could lose existing or potential customers for outsourcing services or other information technology solutions in connection with any actual or perceived security vulnerabilities in our products. In addition, breaches of our security measures and the unapproved dissemination of proprietary information or sensitive or confidential data about our or our customers or other third parties could expose us, our customers, or other third parties affected to a risk of loss or misuse of this information, result in regulatory enforcement, litigation and potential liability, damage our brand and reputation, or otherwise harm our business. Further, we rely in certain limited capacities on third-party data management providers and other vendors whose possible security problems and security vulnerabilities may have similar detrimental effects on us.

We are subject to laws, rules, and regulations in the United States and other countries relating to the collection, use, transmission, processing and security of user and other data. Our ability to execute transactions and to possess, process, transmit and use personal information and data in conducting our business subjects us to legislative and regulatory burdens that, among other things, may require us to notify regulators and customers, employees, or other individuals of a data security breach, including in the European Union and the European Economic Area where the General Data Protection Regulation, or GDPR, took effect in May 2018. We have incurred, and will continue to incur, significant expenses to comply with mandatory privacy and security standards and protocols imposed by law, regulation, industry standards, or contractual obligations, but despite such expenditures may face regulatory and other legal actions in the event of a data breach or perceived or actual non-compliance with such requirements. The GDPR imposes significant new obligations and compliance with these obligations depends in part on how particular regulators apply and interpret them. If we fail to comply with the GDPR, or if regulators assert we have failed to comply with the GDPR, it may lead to regulatory enforcement actions, which can result in monetary penalties of up to 4% of worldwide revenue, private lawsuits, or reputational damage.

Open source development and licensing practices may limit the value of our SCSS software assets. If open source programmers do not continue to develop and enhance open source technologies, we may be unable to develop new technologies, adequately enhance our existing technologies or meet customer requirements for innovation, quality and price.

Our SCSS offerings, including Linux-based products, are built primarily from software components licensed under various open source licenses. While some components are developed by our employees, we obtain many components from software developed and released by contributors to independent open source software development projects. Open source licenses grant licensees broad permissions to use, copy, modify and redistribute the software. Certain open source licenses, such as the GNU General Public License, impose significant limits on our ability to license derivative works under more restrictive terms and generally require us to disclose the source code of such works. The inclusion of software components governed by such licenses in our offerings limits our ability to use traditional proprietary software licensing models for those offerings. As a result, while we may have substantial copyright interests in our software technologies, open source development and licensing practices may have the effect of limiting the value of our software copyright assets. If open source programmers fail to adequately further develop and enhance open source technologies, we would have to rely on other parties to develop and enhance our offerings or we would need to develop and enhance our offerings with our own resources. We cannot predict whether further developments and enhancements to these technologies would be available from reliable alternative sources. Moreover, if third-party software programmers fail to adequately further develop and enhance open source technologies, the development and adoption of these technologies could be stifled and our offerings could become less competitive. Delays in developing, completing or delivering new or enhanced offerings could result in delayed or reduced revenue for those offerings and could also adversely affect customer acceptance of those offerings.

Because of the characteristics of open source software, there are few technology barriers to entry into the open source market by new competitors and it may be relatively easy for competitors, some of which may have greater resources than we have, to enter our markets and compete with us.

One of the characteristics of open source software is that anyone may modify and redistribute the existing open source software and use it to compete with us. Such competition can develop without the degree of overhead and lead time required by traditional proprietary software companies. It is possible for competitors with greater resources than ours to develop their own open source solutions or acquire a smaller business that has developed open source offerings that compete with our offerings, potentially reducing the demand for, and putting price pressure on, our offerings. In addition, some competitors make their open source software available for free download and use on an ad hoc basis or may position their open source software as a loss leader. We cannot guarantee that we will be able to compete successfully against current and future competitors or that competitive pressure and/or the availability of open source software will not result in price reductions, reduced operating margins and loss of market share. Additionally, any failure by us to provide high-quality technical support, or the perception that we do not provide high-quality technical support, could harm our reputation and negatively impact our ability to sell subscriptions for our open source offerings to existing and prospective customers. If we are unable to differentiate our open source offerings from those of our competitors or compete effectively with other open source offerings, our business, financial condition, operation results and cash flows could be adversely affected.

In our SCSS, we regularly contribute software source code under open source licenses and have made other technology we developed available under other open licenses, and we include open source software in our products. For example, we have contributed certain technology related to our products to the Open Compute Project Foundation, a non-profit entity that shares and develops such information with the technology community, under the Open Web Foundation License. As a result of our open source contributions and the use of open source in our products, we may license or be required to license or disclose code and/or innovations that turn out to be material to our business and may also be exposed to increased litigation risk. As a result of making certain of our technology available to third parties, the value of our brands and other intangible assets may be diminished and competitors may be able to more effectively mimic our products, services, and methods of operations which could have an adverse effect on our business and financial results. Likewise, if the protection of our proprietary rights is inadequate to prevent unauthorized use or appropriation by third parties, the value of our brands and other intangible assets may be diminished and competitors may be able to more effectively mimic our products, services, and methods of operations. Any of these events could have an adverse effect on our business and financial results.

We could be prevented from selling or developing our software if the GNU General Public License and similar licenses under which our technologies are developed and licensed are not enforceable or are modified so as to become incompatible with other open source licenses.

A number of our SCSS offerings have been developed and licensed under the GNU General Public License and similar open source licenses. These licenses state that any program licensed under them may be liberally copied, modified and distributed. It is possible that a court would hold these licenses to be unenforceable or that someone could assert a claim for proprietary rights in a program developed and distributed under them. Additionally, if any of the open source components of our offerings may not be liberally copied, modified or distributed, then our ability to distribute or develop all or a portion of our offerings could be adversely impacted. In addition, licensors of open source software employed in our offerings may, from time to time, modify the terms of their license agreements in such a manner that those license terms may become incompatible with other open source licenses in our offerings or our end user license agreement, and thus could, among other consequences, prevent us from distributing the software code subject to the modified license.

Our indemnification obligations to our customers and suppliers for product defects, intellectual property infringement and other matters could require us to pay substantial damages.

A number of our product sales and product purchase agreements provide that we will defend, indemnify and hold harmless our customers and suppliers from damages and costs which may arise from various matters including, without limitation, product warranty claims or claims for injury or damage resulting from defects in, or usage of, our products or the products of our suppliers. In addition, we currently have in effect a number of agreements in which we agree to defend, indemnify and hold harmless our customers and suppliers from damages and costs which may arise from the infringement or alleged infringement by our products of third-party patents, trademarks or other intellectual property rights. We periodically have to respond to claims and may have to litigate indemnification obligations in the future.

Indemnification obligations could require us to expend significant amounts of money to defend claims and/or to pay damages or settlement amounts. We maintain insurance to protect against certain claims associated with the use of our products; however, our insurance may not cover all or any part of a claim asserted against us. Our insurance does not cover intellectual property infringement in most instances. A claim brought against us that is in excess of, or excluded from, our insurance coverage could adversely impact our business, results of operations and financial condition.

We may need to raise additional funds, which may not be available on acceptable terms or at all.

We may need to raise additional funds, which we may seek to obtain through, among other things, public or private equity offerings and debt financings. Our future capital requirements will depend on many factors, including, without limitation, our levels of net sales, our levels of inventory, the timing and extent of expenditures to support research and development activities, the expansion of manufacturing and test capacity and the continued market acceptance of our products. Additional funds may not be available on terms acceptable to us, or at all. If we issue equity or convertible debt securities to raise additional funds, our existing shareholders may experience dilution and the new equity or debt securities may have rights, preferences, and privileges senior to those of our then existing shareholders. If we incur additional debt, it may increase our leverage relative to our earnings or to our equity capitalization, as well as impose financial and operating covenants that could restrict the operations of our business. In addition, our existing indebtedness may limit our ability to obtain additional financing in the future, as discussed in greater detail below under "—Risks Relating to our Debt—Our indebtedness could impair our financial condition and harm our ability to operate our business."

In fiscal 2018, 2017 and 2016, we spent $25.7 million, $18.7 million and $13.8 million, respectively, on capital expenditures, which we used, among other things, to expand manufacturing and test capacity as well as research and development. We plan to continue to make capital expenditures in the future. If our expected returns on these investments are not achieved, it could adversely impact our business, results of operations and financial condition.

If adequate capital is not available when needed, we may be required to modify our business model and operations to reduce spending. This could cause us to be unable to execute our business plan, take advantage of future opportunities or respond to competitive pressures or customer requirements. It may also cause us to delay, scale back or eliminate some or all of our research and development programs, or to reduce or cease operations, which could adversely impact our business, results of operations and financial condition.

We have in the past and may in the future make acquisitions of companies and/or technologies which involve numerous risks. If we are not successful in integrating the technologies, operations and personnel of acquired businesses or fail to realize the anticipated benefits of an acquisition, our business, results of operations and financial condition may be adversely affected.

As part of our business and growth strategy, we have in the past and may in the future acquire or make significant investments in businesses, products or technologies, such as our recent acquisition of Penguin Computing, in an effort to complement our existing product offering, expand our market coverage, increase our engineering workforce or enhance our technological capabilities. Any acquisitions or investments would expose us to the risks commonly encountered in acquisitions of businesses or technologies. Such risks include, among others:

- problems integrating the purchased operations, technologies, products or personnel;
- unanticipated costs or expenses associated with an acquisition or investment, including write-offs of goodwill or other intangible assets;
- negative effects on profitability resulting from an acquisition or investment;
- adverse effects on existing business relationships with suppliers and customers;
- risks associated with entering markets in which we have little or no prior experience and markets with complex government regulations;
- loss of key employees of the acquired business; and
- litigation arising from an acquired company's operations.

Problems encountered in connection with an acquisition could divert the attention of management, utilize scarce corporate resources and otherwise harm our business. If we make any future acquisitions, we could issue ordinary shares that would dilute our existing shareholders' percentage ownership, incur substantial additional debt, expend cash and reduce our cash reserves or assume additional liabilities. Furthermore, acquisitions may require material charges and could result in adverse tax consequences, substantial depreciation, deferred compensation charges, liabilities under earn-out provisions, the amortization of amounts related to deferred compensation and identifiable purchased intangible assets or impairment of goodwill or other intangibles, any of which could negatively impact our business, results of operations and financial condition. We are unable to predict whether or when any prospective acquisition candidate will become available or the likelihood that any acquisition will be completed. We may expend significant resources and management time pursuing an acquisition that we are unable to consummate. Even if we do find suitable acquisition opportunities, we may not be able to consummate the acquisitions on commercially acceptable terms or at all, or may not realize the anticipated benefits of any acquisitions we do undertake. Our investments in private companies are subject to risk of loss of investment capital. These investments are inherently risky because the markets for the technologies or products they may have under development are typically in the early stages and may never materialize. We could lose our entire investment in these companies.

In connection with the sale of our storage business, we agreed to indemnify SanDisk against specified losses.

In August 2013, we completed the sale of substantially all of the business unit which was focused on solid state drives, which we referred to as the Storage Business, to SanDisk (now a part of Western Digital) for approximately $304 million in cash, subject to certain escrows and holdbacks. The sale agreement for the Storage Business, or the Sale Agreement, contained certain indemnification obligations that are typical for transactions of this nature, including, among others, for losses arising from breaches of our representations and warranties relating to the sale, as well as for taxes arising with respect to pre-closing tax periods. These indemnification obligations are subject to a number of limitations, including certain deductibles and caps and limited time periods for making indemnification claims. At the closing of the sale, $30.5 million of the purchase price was placed into a third party escrow to secure certain of our indemnification obligations. On August 21, 2014, SanDisk made a claim against us under the indemnification provisions of the Sale Agreement in connection with a lawsuit filed by Netlist, Inc., or Netlist, against SanDisk alleging that certain products of the Storage Business that we sold to SanDisk, infringe various Netlist patents, which SanDisk in turn alleges would, if true, constitute a breach of representations and warranties under the Sale Agreement. Under the Sale Agreement, our indemnification obligation in respect of intellectual property matters, including those claimed by SanDisk, is subject to a deductible of approximately $1.8 million and a cap of $60.9 million. The SanDisk claim included what purported to be an estimate of SanDisk's alleged indemnifiable losses that is greater than the cap in the Sale Agreement for intellectual property matters.

On December 4, 2014, we entered into an agreement with SanDisk to release the entire balance of the third party escrow, however, the release of the escrow amount by SanDisk does not relieve us of our indemnification obligations to SanDisk, and SanDisk has not amended or reduced the amount of its indemnification claim.

We believe that the allegations giving rise to the indemnification claim are without merit and we intend to dispute SanDisk's claim for indemnification. In addition, there may be other grounds for us to dispute the indemnification claim and/or the amounts of any indemnifiable losses of SanDisk. While we believe that the infringement claims are without merit, we can provide no assurance that SanDisk will be successful in defending the infringement claims or that we will otherwise be successful in disputing the indemnification claim and/or the amount of indemnifiable losses. In addition to the infringement claim described above, we continue to have an obligation to indemnify SanDisk for certain specified matters, including tax obligations for pre-closing tax periods, some of which indemnification obligations are capped at certain amounts and survive for periods of time set forth in the Sale Agreement. An indemnity claim brought against us by SanDisk, including the claim described above, could have a material adverse effect on our business, results of operations and financial condition.

Our future success is dependent on our ability to retain key personnel, including our executive officers, and to attract qualified personnel. If we lose the services of these individuals or are unable to attract new talent, our business may be adversely affected.

Our future operating results depend in significant part upon the continued contributions of our key senior management and technical personnel, many of whom would be difficult to replace. We are particularly dependent on the continued service of Ajay Shah, our Chairman, President and Chief Executive Officer, and Jack Pacheco, our Executive Vice President, Chief Operating Officer and Chief Financial Officer. Our future operating results also depend in significant part upon our ability to attract, train and retain qualified management, manufacturing and quality assurance, engineering, design, finance, marketing, sales and support personnel. We are continually recruiting such personnel in various parts of the world. However, competition for such personnel can be strong and we can provide no assurance that we will be successful in attracting or retaining such personnel now or in the future. In addition, particularly in the high-technology industry, the value of stock options, restricted share units (RSUs), grants or other share-based compensation is an important element in the retention of employees. Declines in the value of our ordinary shares could adversely affect our ability to retain employees and we may have to take additional steps to make the equity component of our compensation packages more attractive to attract and retain employees. These steps could result in dilution to shareholders.

In Brazil in particular, there is limited availability of labor with the technical skills required for our operations. As a result, we rely heavily on our ability to train personnel or relocate individuals from outside of the country. Relocation from a foreign country is expensive. To keep pace with our anticipated growth in Brazil, we anticipate the need to increase the number of our technical personnel. Additionally, to meet the obligations associated with certain tax incentives, we are required to invest in research and development activities which could require an increase in engineering and other technical personnel. To the extent that competitors enter or expand in the local market, our labor force could be targeted, which could result in the loss of personnel and/or the increase in wages to retain personnel.

The loss of any key employee, the failure of any key employee to adequately perform in his or her current position, our inability to attract, train and retain skilled employees as needed or the inability of our key employees to expand, train and manage our employee base as needed, could have a material adverse effect on our business, results of operations and financial condition.

We rely, in part, on third-party sales representatives to assist in selling our products, and the failure of these representatives to perform as expected could reduce our future sales.

Sales of our products to some of our OEM customers are accomplished, in part, through the efforts of third-party sales representatives. We are unable to predict the extent to which these third-party sales representatives will be successful in marketing and selling our products. Moreover, many of these third-party sales representatives also market and sell competing products and may more aggressively pursue sales of our competitors’ products. Our third-party sales representatives may terminate their relationships with us at any time on short or no notice. Our future performance may also depend, in part, on our ability to attract and retain additional third-party sales representatives that will be able to market and support our products effectively, especially in markets in which we have not previously sold our products. If we cannot retain our current third-party sales representatives or recruit additional or replacement third-party sales representatives or if these sales representatives are not effective, it could have a material adverse effect on our business, results of operations and financial condition.

If we are unable to protect our intellectual property, our operating results may be adversely affected.

Our success is dependent, in part, upon protecting our intellectual property rights. We rely on a combination of trade secrets, know-how, trademarks, copyright and, to a lesser extent, patents. We do not own or apply for patents in respect of the majority of our products. The absence of patent protection for most of our products means that we cannot prevent our competitors from reverse-engineering and duplicating our products.

We believe that our continued success depends largely on the technical expertise we have developed in manufacturing and designing products, and we rely on confidential proprietary information, including trade secrets and know-how to develop and maintain our competitive position. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate or surpass our technological achievements, thus eroding our competitive position in our market. We seek to protect our confidential proprietary information, in part, by confidentiality and non-disclosure agreements and invention assignment agreements with our employees, consultants, advisors, contractors and collaborators. These agreements are designed to protect our proprietary information, however, we cannot be certain that such agreements have been entered into with all relevant parties, and we cannot be certain that our trade secrets and other confidential proprietary information will not be disclosed or that competitors will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. For example, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. We also seek to preserve the integrity and confidentiality of our confidential proprietary information by maintaining physical security of our premises and physical and electronic security of our information technology systems, but it is possible that these security measures could be breached. If any of our confidential proprietary information were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position.

It is possible that our efforts to protect our intellectual property rights may not:

- prevent our competitors from independently developing similar products, duplicating our products or from designing around the patents owned by us;
- prevent third-party patents from having an adverse effect on our ability to do business;
- prevent disputes with third parties regarding ownership of our intellectual property rights;
- prevent the challenge, invalidation or circumvention of our existing patents;
- result in issued patents or registered trademarks from any of our pending applications; or
- result in patents that lead to commercially viable products or provide competitive advantages for our products.

If any of our issued patents are found to be invalid or if any of our patent applications are rejected, our ability to exclude competitors from making, using or selling the same or similar products as us could be compromised. In addition, because we conduct a substantial portion of our operations and sell a large percentage of our products outside the United States, we have exposure to intellectual property risks from operating in foreign countries, many of which have laws that may not adequately protect our intellectual property rights.

Activities in the area of intellectual property rights, including litigation and various patent processes can cause us to incur substantial expenses. We are currently involved in contested proceedings, which may result in decisions against us.

The markets in which we compete are characterized by frequent claims alleging misappropriation of trade secrets or infringement of patents, trademarks, copyrights or other intellectual property rights of others. From time to time, third parties may assert against us or our customers alleged infringement of such intellectual property rights on technologies that are important to our business. We can provide no assurance that third parties will not in the future pursue claims against us or our customers with respect to the alleged infringement of intellectual property rights. In addition, litigation or other legal and technical processes may be necessary to protect our intellectual property rights, to determine the validity and scope of the proprietary rights of others or to defend against third party claims of infringement and/or invalidity. Litigation and other legal and administrative processes, whether as plaintiff, defendant, or otherwise, could result in substantial costs and diversion of resources and management attention and could have a material adverse effect on our business, results of operations and financial condition, whether or not such litigation or other processes are ultimately determined in our favor. In the event of an adverse result in, or a settlement of, a litigation matter, we could be required to pay substantial damages or settlement amounts; cease the manufacture, use, import and sale of certain products or components; expend significant resources to develop or acquire rights to use non-infringing technology; and/or discontinue the use of certain processes or obtain licenses and pay one-time fees and/or on-going royalties to use the infringing or allegedly infringing technology. The occurrence of any of the foregoing could result in unexpected expenses or require us to recognize an impairment of our assets, which would reduce the value of our assets and increase our expenses. Alternate technology development or license negotiations would likely result in significant expenses and divert the efforts of our technical and management personnel. We cannot assure that we would be successful in such development or negotiations. Moreover, there could be public announcements of the results of interim proceedings or developments. If securities analysts or investors perceive these announcements or results to be negative, it could have a substantial adverse effect on the price of our ordinary shares.

We are currently involved in patent litigation with Netlist. In our proceeding with Netlist, we filed a complaint against Netlist, alleging infringement of certain claims of one of our patents. Netlist filed certain counterclaims and has sought compensatory damages for the harm it claims to have suffered, as well as an award of treble damages and attorneys' fees.

As we increase our sales, develop more technology and expand our product offerings, the possibility of being involved in more intellectual property contests grows. Increased intellectual property contests could have a material adverse effect on our business, results of operations and financial condition.

We may not have rights to manufacture and sell particular products that we currently offer, or we may be required to pay a royalty to sell certain products.

The memory, storage and compute markets are constantly undergoing rapid technological change and evolving industry standards. From time to time, third parties may claim that we are infringing upon technology to which they have proprietary rights and that we require a license to manufacture and/or sell certain of our products. If we are unable to supply certain products at competitive prices due to royalty payments we are required to make or at all because we were unable to secure a required license, our customers might cancel orders or seek other suppliers to replace us, which could have a material adverse effect on our business, results of operations and financial condition.

Changes in, or interpretations of, tax regulations or rates, or changes in the geographic dispersion of our net sales, or changes in other tax benefits, may adversely affect our income, value-added and other taxes, which may in turn have a material adverse effect on our business, results of operations, and financial condition.

Our future effective tax rates could be unfavorably affected by the resolution of issues arising from tax audits with various tax authorities in the United States and abroad; adjustments to income taxes upon finalization of various tax returns; increases in expenses not deductible for tax purposes, including write-offs of acquired in-process research and development and impairments of goodwill in connection with acquisitions; changes in available tax credits; changes in tax laws or regulations or tax rates; changes in the interpretation or application of tax laws; changes in tax regulations or rates; increases or decreases in the amount of net sales or earnings in countries with particularly high or low statutory tax rates; changes in exemptions from taxes in certain jurisdictions or in connection with certain transactions; or by changes in the valuation of our deferred tax assets and liabilities. In addition, taxable income in any jurisdiction is dependent upon acceptance of our operational practices and intercompany transfer pricing by local tax authorities as being on an arm's length basis. Due to inconsistencies in application of the arm's length standard among taxing authorities, as well as lack of adequate treaty-based protection, transfer pricing challenges by tax authorities could, if successful, substantially increase our income tax expense. While we enjoy and expect to continue to enjoy beneficial tax treatment in certain foreign jurisdictions, most notably Brazil and Malaysia, we are subject to meeting specific conditions in order to receive the beneficial treatment. Additionally, many of the beneficial treatments must be renewed periodically, and our enjoyment thereof is conditioned upon compliance with several legal requirements and is subject to change. See "—Risks Relating to our International Operations—If the tax incentive or tax holiday arrangements from which we benefit in Brazil or Malaysia change or cease to be in effect or applicable in part or in whole, for any reason, or if our assumptions and interpretations regarding tax laws and incentive or holiday arrangements prove to be incorrect, the amount of corporate income, excise, import and contribution taxes we have to pay could increase significantly."

We are subject to tax examination in the United States and in foreign jurisdictions, including in Brazil where we have had several audits and are currently being audited with respect to certain taxes. We regularly assess the likelihood of outcomes resulting from these examinations to determine the adequacy of our provision for taxes and have reserved for potential adjustments that may result from current examinations. We believe such estimates to be reasonable; however, there can be no assurance that the final determination of any examinations will be in the amounts of our estimates.

Any significant variance in the results of an examination as compared to our estimates, any failure to continue to receive any beneficial tax treatment in any of our foreign locations or any increase in our future effective tax rates due to any of the factors set forth above or otherwise could reduce net income and have a material adverse effect on our business, results of operations and financial condition.

If Brazilian administrative tax courts find that we have used an incorrect product code on our imports, then the amount of taxes, interest and penalties that we have to pay on past transactions could have a material adverse effect on our business, results of operations and financial condition.

On February 23, 2012, Brazilian federal tax authorities served our Brazilian operating subsidiary, SMART Brazil, with a tax assessment for approximately R$117.0 million (or $31.2 million) (the First Assessment), alleging that SMART Brazil had incorrectly used an import product classification code for its imports of unmounted ICs for the five calendar years of 2007 through and including 2011. Brazilian federal tax authorities subsequently served a second assessment for an administrative penalty of approximately R$6.0 million (or $1.6 million) (the Second Assessment) for the alleged use of an improper import code. Each assessment is subject to increases for interest and other charges.

In March 2012, SMART Brazil filed defenses to the tax assessments. On May 2, 2013, the first level administrative tax court ruled in favor of the tax authorities and against SMART Brazil for the First Assessment, but did not rule on the Second Assessment for the administrative penalty. SMART Brazil filed an appeal on May 31, 2013 at the second level tax court known as CARF. SMART Brazil's appeal resulted in a unanimous favorable decision rejecting the position of the tax authorities. Subsequently, the tax authorities filed a request for clarification of certain points in the decision published by CARF, and on September 17, 2014, we received a unanimous ruling rejecting the tax authorities request for clarification. On November 7, 2014, the tax authorities notified CARF that they would not be appealing the CARF decision. As a result, the First Assessment has been extinguished.

On February 6, 2018, the first level administrative court unanimously ruled in favor of SMART Brazil with respect to the Second Assessment. Due to the size of the Second Assessment, Brazil law requires that the tax authorities appeal the decision to CARF.

Due to the issuance of these tax assessments, Brazilian federal tax authorities conducted an enrollment of assets of SMART Brazil. Brazilian legislation states that whenever the sum of the debts owed to the Brazilian Revenue Service exceeds 30% of the known equity of a company and R$2.0 million (or $0.5 million), the Brazilian Revenue Service may conduct an enrollment of assets of the company, which is a means of monitoring the company's equity. During this period, the taxpayer must notify the Brazilian Revenue Service of any disposal, encumbrance or transfer of the assets or rights enrolled within five days from the occurrence of the act; if the company does not provide such notice, then the Brazilian Revenue Service may file a tax injunction. The enrollment does not constitute a lien or encumbrance on the assets. The assets covered by the enrollment are typically assets classified as fixed assets or non-current assets and include assets that are subject to any form of registration before a public deed service or equivalent, such as real estate and vehicles. Other assets may be subject to enrollment in the event that the assets described above are not sufficient to satisfy the amount of the tax liability. The enrollment does not create any limitation or prohibition against remitting dividends or making cash payments of interest on equity. As the First Assessment has been extinguished, SMART Brazil has petitioned to have the enrollment cancelled. While the tax authorities have substantially reduced the amount of the enrollment to R$13.9 million (or $3.7 million) as of January 31, 2017, there can be no assurance that the enrollment will be cancelled unless all of the assessments are extinguished.

On December 12, 2013, SMART Brazil received another notice of assessment in the amount of R$3.6 million (or $1.0 million) with respect to the same import-related tax issues and penalties as discussed above for 2012 and 2013 (the Third Assessment). This new assessment does not seek import duties and related taxes on DRAM products and only seeks import duties and related taxes on Flash unmounted components with respect to the months of January 2012 to June 2012. This is because SMART Brazil's imports of DRAM unmounted components were subject to 0%, and after June 2012, SMART Brazil's imports of Flash unmounted components became subject to 0%, import duties and related taxes as a result of PADIS. Even with this 0%, if SMART Brazil is found to have used the incorrect product classification code, SMART Brazil will be subject to an administrative penalty equal to 1% of the value of the imports. SMART Brazil has filed defenses to this assessment. We believe that SMART Brazil used the correct product code on its imports and that the Third Assessment is incorrect.

As a result of the CARF decision in favor of SMART Brazil on the First Assessment and the decision in favor of SMART Brazil at the first level administrative court on the Second Assessment, we believe that the probability of any material charges as a result of the Second Assessment and the Third Assessment is remote. We can provide no assurance that SMART Brazil ultimately will prevail on the remaining tax assessments or the administrative penalties, and no amounts have been accrued in the financial statements for any such assessments or penalties. In addition, in the event that SMART Brazil does not prevail, the amount of the assessments and the penalties and interest could have a material adverse effect on our business, results of operations and financial condition.

Our ability to use our net operating loss carryforwards are limited.

As August 31, 2018, we had U.S. federal and California state net operating loss carryforwards of approximately $131.1 million and $70.0 million, respectively. The federal net operating loss carryforwards will expire, if not utilized, in fiscal 2023 through fiscal 2038, and the California net operating loss carryforwards will expire in fiscal 2019 through fiscal 2038, both in varying amounts, if not utilized. In addition, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, if a corporation undergoes an "ownership change," the corporation's ability to use its pre-change net operating loss carryforwards to offset its post-change taxable income may be limited. In general, an "ownership change" will occur if there is a cumulative change in our ownership by certain "5-percent shareholders" that exceeds 50 percentage points over a rolling three-year period. Similar rules may apply under state tax laws. Our net operating loss carryforwards are subject to limitations per Section 382 of the Code. We have experienced ownership changes in the past, and we may experience ownership changes in the future as a result of future transactions in our ordinary shares, some changes of which may be outside our control. As a result, our ability to use our pre-change net operating loss carryforwards to offset post-change U.S. federal and state taxable income may be subject to additional limitations.

If our goodwill or intangible assets become impaired, we may be required to record a significant charge to earnings.

Under U.S. GAAP, we review our long-lived intangible and tangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Goodwill is required to be tested for impairment at least annually. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill or other intangible assets may not be recoverable include declines in our share price and market capitalization or future cash flow projections. We may be required to record a significant charge to earnings in our financial statements during the period in which any impairment of our goodwill or other intangible assets is determined. Impairment charges could have a material adverse effect on our business, results of operations and financial condition.

We are subject to a variety of federal, state, foreign and international laws and regulatory regimes. Failure to comply with governmental laws and regulations could subject us to, among other things, mandatory product recalls, penalties and investigation and legal expenses which could have an adverse effect on our business, results of operations and financial condition.

Our business is subject to regulation by various U.S. federal and state governmental agencies. Such regulation includes, without limitation, the radio frequency emission regulatory activities of the Federal Communications Commission, the antitrust regulatory activities of the Federal Trade Commission, or FTC, and the Department of Justice, the consumer protection laws of the FTC, the import/export regulatory activities of the Department of Commerce, the product safety regulatory activities of the Consumer Products Safety Commission, the regulatory activities of the Occupational Safety and Health Administration, the environmental regulatory activities of the Environmental Protection Agency, the labor regulatory activities of the Equal Employment Opportunity Commission, the export control regulatory activities of the Department of State, and tax and other regulations by a variety of regulatory authorities in each of the areas in which we conduct business. We are also subject to similar, and in some cases additional, regulation in other countries where we conduct business, including import and export laws and foreign currency control. In certain jurisdictions, such regulatory requirements may be more stringent and complex than in the United States. We are also subject to a variety of U.S. federal and state employment and labor laws and regulations, including, without limitation, the Americans with Disabilities Act, the Federal Fair Labor Standards Act, the Worker Adjustment and Restructuring Notification Act, which requires employers to give affected employees at least 60 days' notice of a plant closing or a mass layoff, and other regulations related to working conditions, wage-hour pay, overtime pay, employee benefits, antidiscrimination and termination of employment.

Like other companies operating or selling internationally, we are subject to the Foreign Corrupt Practices Act, or FCPA, and other laws which generally prohibit improper payments or offers of payments to foreign governments and their officials and political parties by U.S. companies and their intermediaries for the purpose of obtaining or retaining business or otherwise obtaining favorable treatment. We are also subject to similar or even more restrictive anticorruption laws imposed by the governments of other countries where we do business, including the UK Bribery Act, the Malaysian Anticorruption Act and the Brazil Clean Company Act. We make sales and operate in countries known to experience corruption that are rated as high-risk nations. Our business activities in such countries create the risk of unauthorized conduct by one or more of our employees, consultants, customs brokers, freight forwarders, sales agents or distributors that could be in violation of various laws including the FCPA or similar local regulations. In addition, we may be held liable for actions taken by such parties even though such parties are not subject to the FCPA or similar laws. Any determination that we have violated the FCPA or similar laws may result in severe criminal or civil sanctions, and we may be subject to other liabilities that could have a material adverse effect on our business, results of operations and financial condition.

Our Brazilian operations are subject to periodic and regular investigations by labor officials and governmental bodies, including the Brazilian Ministry of Labor and the Brazilian Labor Public Prosecutor’s Office, with respect to our compliance with labor rules and regulations. Although we believe that we comply with all of the laws and regulations applicable to our business and activities performed in Brazil, these investigations could result in fines and proceedings that may materially and adversely affect our business, results of operations and financial condition.

Noncompliance with applicable regulations or requirements could subject us to investigations, sanctions, mandatory product recalls, enforcement actions, disgorgement of profits, disbarment from government projects, fines, damages and civil and criminal penalties or injunctions that could harm our business, results of operations and financial condition. In addition, from time to time we have received, and may receive in the future, correspondence from former employees and parties with whom we have done business with, threatening to bring claims against us alleging that we have violated one or more regulations related to customs, labor and employment, foreign currency control or other laws or regulations. An adverse outcome in any litigation or proceeding related to such matters could require us to pay damages, attorneys’ fees and/or other costs.

If any governmental sanctions were to be imposed, or if we were not to prevail in any civil action or criminal proceeding, our business, results of operations and financial condition could be materially adversely affected. In addition, responding to any litigation or action would likely result in a significant diversion of management’s attention and resources and a significant increase in professional fees

We could incur substantial costs or liabilities as a result of violations of environmental laws.

Our operations and properties are subject to a variety of U.S., foreign government and international environmental laws and regulations governing, among other things, environmental licensing and registries, protection of flora and fauna, air emissions, use of water resources, wastewater discharges, management and disposal of hazardous and non-hazardous materials and wastes, reverse logistics (take-back policy) and remediation of releases of hazardous materials. Our failure to comply with present and future requirements, or the management of known or identification of new or unknown contamination, could cause us to incur substantial costs, including cleanup costs, indemnifications, compensations, fines, suspension of activities and other penalties, investments to upgrade our facilities or change our processes or curtailment of operations. For example, the presence of lead in quantities not believed to be significant have been found in the ground under one of the multi-tenant buildings we lease in Brazil. While we did not cause the contamination, we may be held responsible if remediation is required, although we may be entitled to seek indemnification from responsible parties under Brazilian law and from our lessor under our lease. The identification of presently unidentified environmental conditions, more vigorous enforcement by regulatory agencies, enactment of more stringent laws and regulations or other unanticipated events may arise in the future and give rise to material environmental liabilities and related costs. The occurrence of any of the foregoing could have a material adverse effect on our business, results of operations and financial condition.

Worldwide political conditions and threats of terrorist attacks may adversely affect our operations and demand for our products.

Armed conflicts around the world could have an impact on our sales, our supply chain and our ability to deliver products to our customers. Political and economic instability in some regions of the world could also have a negative impact on our business. More generally, various events could cause consumer confidence and spending to decrease, or could result in increased economic or financial volatility, any of which could result in a decrease in demand for our products.

Additionally, the occurrence or threat of terrorist attacks may in the future adversely affect demand for our products. In addition, such attacks may negatively affect our operations directly or indirectly and such attacks or other armed conflicts may directly impact our physical facilities or those of our suppliers or customers. Such attacks may make travel and the transportation of our products more difficult and more expensive, ultimately having a negative effect on our business.

Any such occurrences could have a material adverse effect on our business, results of operations and financial condition.

Our operations in different parts of the world could be subject to natural disasters, health epidemics and other business disruptions, which could have a material adverse effect on our business, results of operation and financial condition.

Our operations in different parts of the world could be subject to natural disasters, including earthquakes, monsoons, cyclones and floods. For example, our United States headquarters in Newark, California is located near major earthquake fault lines. Our manufacturing facility in Penang, Malaysia is also prone to natural disasters, such as cyclones, monsoons and floods. In the event of a major earthquake, cyclone, monsoon or other natural or manmade disaster, we could experience business interruptions, destruction of facilities and/or loss of life, any of which could materially adversely affect our business.

In addition, our business could be adversely affected by the outbreak of influenza A (H1N1), avian influenza, H7N9, severe acute respiratory syndrome (SARS), Zika, ebola or other pandemics. Any occurrence of these pandemic diseases or other adverse public health developments in Malaysia or elsewhere could severely disrupt our business or the business of our customers and suppliers, which could materially adversely affect our business.

Since a large percentage of our production is done in a small number of facilities, a disruption to operations could have a material adverse effect on our business, results of operations and financial condition.

Risks Relating to our International Operations

Significant changes in the political or economic environments in Brazil or Malaysia could adversely affect our business, results of operations and financial condition.

We have extensive operations in Malaysia and significant operations and sales in Brazil. The governments of these countries frequently intervene in their respective economies and occasionally make significant changes in policies and regulations. The Brazilian government's actions to control inflation and other policies and regulations have often involved, among other measures, increases in interest rates, changes in tax policies, price controls, currency devaluations, capital controls and limits on imports. Our business, results of operations and financial condition, as well as the market price of our securities, may be adversely affected by changes in these and in other countries, to policies or regulations involving or affecting general economic factors, such as:

- interest rates;
- exchange rates and currency controls and restrictions on the movement of capital out of country, such as those which were briefly imposed in 1989 and early 1990 in Brazil;
- currency fluctuations;
- import and export controls;
- inflation;
- liquidity of the domestic capital and lending markets;
- reduction or cancellation of tax incentives to which we are currently entitled;
- other changes to tax and regulatory policies; and
- other political, social and economic developments.

The political environment in Brazil has influenced and continues to influence the performance of the country's economy. The recent economic instability in Brazil has contributed to a reduction in market confidence in the Brazilian economy. The several ongoing investigations on accusations of money laundering and corruption conducted by the Brazilian Federal Public Prosecutor's Office, including "*Operação Lava Jato*" (Operation Car Wash), have had a serious impact on the Brazilian political and economic environment.

In August 2016, the Brazilian Senate approved the removal of then-President Dilma Rousseff from office, following the conclusion of legal and administrative impeachment proceedings, on the grounds of violation of budgetary laws. Michel Temer, who had been serving as acting president since her removal in May 2016, assumed full power for the remaining portion of the presidential term, which ends in 2018. Mr. Temer was recently indicted on allegations of corruption, money laundering and criminal organization.

Moreover, we cannot predict the outcome or future effects of the upcoming elections in Brazil and cannot predict which policies the future president will adopt or modify during his term in office or the effect thereof on Brazilian economy and on our business. Any such new policies or changes in current policies may have a material adverse effect on our business and financial condition.

If the tax incentive or tax holiday arrangements from which we benefit in Brazil or Malaysia change or cease to be in effect or applicable in part or in whole, for any reason, or if our assumptions and interpretations regarding tax laws and incentive or holiday arrangements prove to be incorrect, the amount of corporate income, excise, import and contribution taxes we have to pay could increase significantly.

We have structured our operations in a manner designed to maximize our benefit from various tax incentives and/or tax holidays extended to manufacturers in Brazil and Malaysia to encourage investment and employment. In Brazil, we participate in the following government investment incentive programs, among others:

- *Support Program for the Technological Development of the Semiconductor and Display Industries (PADIS), 2007, extended in 2016.* PADIS is designed to promote the development of the local semiconductor industry. In December 2010 and January 2011, the required agencies of the Brazilian government approved our application for beneficial tax treatment under the PADIS program for DRAM ICs and we began operations under the PADIS rules in February 2011. Subsequently, we received approvals for PADIS benefits for microSD cards and USB Flash drives in June 2012, mobile, or low power DRAM in March 2013, eMMC and Flash Fine-pitch Ball Grid Array, or Flash FBGA, in February 2014, eMCP in June 2014, DDR4 DRAM in July 2016, and for any other mounted components in May 2015. The PADIS benefits include: (i) relief from Brazil's corporate income tax, resulting in a reduction in the Brazilian statutory income tax rate from 34% to 9% on taxable income from the semiconductor IC portion of our operations, (ii) relief from the PIS and COFINS Contributions, the IPI, and Brazil's import tax, on both the import and domestic acquisition of fixed assets, inputs, software and sale of final products eligible for PADIS, and (iii) relief from Brazil's tax on outbound royalties, or CIDE. To realize these benefits, our subsidiary, SMART Brazil, is required to invest a percentage of its gross annual semiconductor sales revenues (reduced by the following: the cost of raw materials covered within the scope of PADIS, applicable sales taxes, the value of products exported out of Brazil and the value of products shipped to the Manaus Free Trade Zone) in research and development activities conducted in Brazil each calendar year. The applicable percentage was 3% for 2015, increasing to 4% for 2016 through 2018, and increasing to 5% for 2019 and beyond. Furthermore, SMART Brazil is not permitted to distribute to shareholders (through dividends, capital reductions or otherwise) the amount of corporate income taxes not paid as a result of the PADIS benefits. Failure to comply with our obligations under the PADIS would result in our being charged the amount of the relieved taxes, plus interest equal to the Central Bank of Brazil's overnight rate, or the SELIC rate, plus a 75% penalty and could also result in the suspension of our participation in PADIS and ultimate termination of PADIS should SMART Brazil fail to repair the infraction within 90 days or should SMART Brazil have PADIS suspended twice in the period of two years. If SMART Brazil's participation in PADIS were terminated, it would be permitted to reapply for the program only after a two-year period.
- *Lei da Informática—Processo Produtivo Básico (PPB/IT Program), 1991.* Brazil's PPB/IT Program, in which we also began to participate in February 2011, is intended to promote local content by allowing qualified PPB/IT Program companies to sell certain IT products with a reduced rate of IPI as compared to the rate that is required to be collected by non-qualified suppliers. The PPB/IT Program provides an incentive for certain customers to purchase from us because our sales will not be subject to the regular level of IPI. In order to receive the intended treatment as a PPB/IT Program supplier, our subsidiary SMART do Brazil is required to invest in research and development activities conducted in Brazil in an amount equal to 4% of its gross annual sales revenues reduced by the following: the cost of raw

materials qualified as products eligible for the PPB/IT Program, including the ICs that are purchased from our other Brazilian subsidiary, SMART Brazil, and that are used to make memory modules; applicable sales taxes; the value of products exported out of Brazil; and the value of products shipped to the Manaus Free Trade Zone. Failure to comply with our obligations under the PPB/IT Program would result in our being charged the amount of the relieved taxes, plus interest equal to the SELIC rate, plus a 75% penalty and could also result in the suspension of our participation in the PPB/IT Program and ultimate termination should SMART do Brazil fail to cure the infraction within 180 days.

Compliance with these programs is measured annually, on a calendar year basis. We believe that we have fulfilled these research and development investment requirements through calendar 2017, however, for certain years the authorities in Brazil have not yet completed the relevant review. For calendar years 2011 to 2016, the authorities have requested additional information in order to review whether certain of our reported research and development investments as required for SMART do Brazil qualify for the PPB/IT Program. We believe that all of our research and development investments do qualify and we are providing the additional information. While we believe that all of our reported investments qualify for the research and development requirements, we cannot provide assurance that the Brazilian authorities will agree with our classification in which case we may be required to make incremental payments to the authorities or to make incremental research and development investments in the future. If we fail to make the additional payments or additional investments if required, we may lose the anticipated benefits of these programs and could be penalized for failing to make the research and development investments when required, or for failing to pay required statutory income taxes or to collect the required IPI upon our sales. In addition, there is a risk that modifications to laws may prohibit, interrupt, limit, terminate early or change the use of these existing tax incentives. Additionally, we cannot provide assurance that we will be able to make the required investments in the future.

In 2013, the EU, later joined by Japan, requested the establishment of a panel within the WTO to determine whether certain measures enacted by the Brazilian government concerning tax incentives and local content requirements in the automotive and several other industries including the IT industry and including PADIS, the PPB/IT Program and Lei do Bem, are inconsistent with WTO rules. On August 30, 2017 the WTO panel released a report in which the panel concluded, among other things, that the tax exemptions, reductions and suspensions granted for the automotive, IT and other industries amount to subsidies that are inconsistent with the principles of the various WTO agreements, and the panel recommended that Brazil withdraw these subsidies. The parties all appealed the report findings and hearings on the appeals were held in June 2018. Government officials in Brazil have expressed their intent to continue to dispute the panel's report and, if necessary, to restructure the incentives to be consistent with the WTO principles in order to continue to support local industry. There can be no assurance, however, that, if needed, the programs will ultimately be restructured and implemented, or if implemented, whether the restructured programs will provide the same level of support as is currently in place. While we cannot predict the outcome of the appeals or the impact of the WTO's report, this recommendation could result in significant adverse changes to the benefits and incentives available to us and our customers in Brazil under PADIS and the IT/PPB Program.

Any suspension, early termination or other adverse change in the local content requirements in Brazil, or our failure to comply with the requirements of the various regulations, could significantly reduce the demand for, and the profit margins on, our products in Brazil, and would have a material adverse effect on our business, results of operations and financial condition.

In addition, we have obtained tax incentives from Malaysia, which provide that certain classes of income we earn in Malaysia are subject to tax holidays. Each tax incentive is separate and distinct from the others and may be granted, withheld, extended, modified, truncated, complied with or terminated independently without any effect on the other incentives. To retain these tax benefits in Malaysia, we must continue to meet certain operating conditions specific to each incentive relating to, among other things, investments in fixed assets, research and development expenditures, minimum operating expenditures, required ratio of staff with degrees in science and technology, local purchasing programs, minimum numbers of patents with local involvement and registration and segregated accounting for the covered products or businesses. If we cannot or elect not to comply with the operating conditions included in any particular tax incentive, we will lose the related tax benefits. In such event, we could be required to refund material tax benefits previously realized by us with respect to that incentive and, depending on the incentive at issue, could likely be required to modify our operational structure and tax strategy. Any such modified structure or strategy may not be as beneficial to us from an income tax expense or operational perspective as the benefits provided under the present tax incentive arrangements. The Malaysian tax incentives are presently scheduled to expire at various dates in calendar 2018. We have received approvals for a continuation of these tax incentives beyond calendar 2018, subject to certain operating conditions. The impact of these tax incentives will be recorded in the period in which they become effective.

Our interpretations and conclusions regarding the tax incentives are not binding on any taxing authority. If our assumptions about tax and other laws are incorrect, if these tax incentives are substantially modified or rescinded or if we fail to meet the conditions of any of the tax incentives, we could suffer material adverse tax and other financial consequences including owing significant amounts of taxes and penalties that would increase our expenses, reduce our profitability and adversely affect our cash flows, results of operations and financial condition.

Our business is subject to the risks generally associated with international business operations.

Sales outside of the United States accounted for 84%, 82% and 80% of our net sales in fiscal 2018, 2017 and 2016, respectively. In addition, a significant portion of our product design and manufacturing is performed at our facilities in Brazil and Malaysia. As a result, our business is and will continue to be subject to the risks generally associated with international business operations in Brazil, Malaysia and other foreign countries, including:

- changes in tax and other laws and regulations, including recent proposals to impose a tax on goods imported into the United States;
- changes in social, political and economic conditions;
- transportation delays;
- power and other utility shutdowns or shortages;
- limitations on foreign investment;
- restrictions on currency convertibility and volatility of foreign exchange markets;
- import-export quotas;
- increased trade regulations or trade wars;
- corruption or adverse political situations in Brazil or other markets;
- changes in local labor conditions;
- difficulties resulting from different employment regulations;
- difficulties in obtaining governmental approvals;
- expropriation and nationalization of our assets in a particular jurisdiction; and
- restrictions on repatriation of cash, dividends or profits.

Some of the foreign countries in which we do business or have operations have been subject to social and political instability in the past, and interruptions in operations could occur in the future. Our net sales, results of operations and financial condition could be adversely affected by any of the foregoing factors.

Our global operations expose us to numerous and sometimes conflicting legal and regulatory requirements, and violation of these regulations could harm our business.

We are subject to numerous, and sometimes conflicting, legal regimes on matters as diverse as anticorruption, import/export controls, content requirements, trade restrictions, tariffs, taxation, sanctions, immigration, internal and disclosure control obligations, securities regulation, anti-competition, data privacy and labor relations. This includes in emerging markets where legal systems may be less developed or familiar to us. Compliance with diverse legal requirements is costly, time consuming and requires significant resources. Violations of one or more of these regulations in the conduct of our business could result in significant fines, criminal sanctions against us or our officers, prohibitions on doing business and damage to our reputation. Violations of these regulations in connection with the performance of our obligations to our customers or suppliers also could result in liability for significant monetary damages, fines and/or criminal prosecution, unfavorable publicity and other reputational damage, restrictions on our ability to process information and allegations by our customers or suppliers that we have not performed our contractual obligations. Due to the varying degrees of development of the legal systems of the countries in which we operate or sell, local laws might be insufficient to protect our rights.

Our operations in foreign countries are more difficult to manage, which may expose us to additional risks that may not exist in the United States, which in turn could have a negative impact on our business, results of operations and financial condition.

A significant portion of our operations is outside of the United States. Additionally, international sales account for a significant portion of our overall sales. In some of the countries in which we operate or sell our products, it is difficult to recruit, employ and retain qualified personnel to manage and oversee our local operations, sales and other activities. The effects of instabilities in the labor market, including strikes, work stoppages, protests and changes in employment regulations, increases in wages and the conditions of collective bargaining agreements could directly affect the development of our activities and those of our customers, which could have a material adverse effect on our results. Further, given our executive officers' lack of physical proximity to our foreign country activities and the inherent limitations of cross-border information flow, our executive officers may at times face extra challenges in their ability to effectively oversee the day-to-day management of our international operations. The challenges facing management to effectively recruit, employ and retain qualified personnel and to otherwise effectively manage our international operations could result in compliance, control or other issues that could have a material negative impact on our business, results of operations and financial condition.

If we were to lose the tax-related benefits of being a Cayman Islands company, our business could be adversely affected.

We are a Cayman Islands company and operate through subsidiaries in a number of countries throughout the world. As a result, income generated in certain non-U.S. subsidiaries is not subject to taxation in the United States. We are subject to changes in tax laws, treaties and regulations or the interpretation or enforcement thereof in the United States, the Cayman Islands and jurisdictions in which we or any of our subsidiaries operate or are resident. In the past, legislative proposals have been introduced in the United States that, if enacted into law, could result in us being considered a U.S. company for tax purposes. This could have the effect of subjecting a larger portion of our worldwide income to U.S. taxation. While no such laws have been enacted to date, there can be no assurance that they will not be enacted in the future.

Unfavorable currency exchange rate fluctuations could cause currency exchange losses, result in our products becoming relatively more expensive to our overseas customers and increase our manufacturing costs, each of which could adversely affect our business and our profitability.

Our international sales and our operations in foreign countries expose us to certain risks associated with fluctuating currency values and exchange rates. Because some of our sales are denominated in U.S. dollars, increases in the value of the U.S. dollar could increase the price of our products so that they become relatively more expensive to customers in a particular country, possibly leading to a reduction in sales and profitability in that country. Some of the sales of our products, including sales in Brazil, are denominated in foreign currencies. Gains and losses on the conversion to U.S. dollars of such revenues and of other associated monetary assets and liabilities, as well as profits and losses incurred in certain countries, may contribute to fluctuations in the value of our assets and our results of operations. We also have costs and expenses that are denominated in foreign currencies, and decreases in the value of the U.S. dollar could result in increases in such costs that could have a significant negative impact on our results of operations. In addition, fluctuating values between the U.S. dollar and other currencies can result in currency gains which are used in the computation of foreign taxes and can increase foreign taxable income. We do not presently purchase financial instruments to hedge foreign exchange risk, but we may do so in the future.

We are a holding company. If enacted, exchange controls may limit our ability to receive dividends and other distributions from our foreign subsidiaries.

We conduct all of our operations through subsidiaries and are dependent on dividends or other intercompany transfers of funds from our subsidiaries to meet our obligations and pay intercompany dividends. If enacted, restrictions on intercompany dividends or other distributions in certain jurisdictions could have a material adverse effect on our ability to transfer funds from certain subsidiaries. Additionally, Brazilian law permits the Brazilian government to impose temporary restrictions on conversions of Brazilian currency into foreign currencies and on remittances to foreign investors of proceeds from their investments in Brazil whenever there is a serious imbalance in Brazil's balance of payments or there are reasons to expect a pending serious imbalance. Aside from the remittance restrictions imposed for approximately six months in 1989 and early 1990, the Brazilian government last imposed remittance restrictions more than 25 years ago. The Brazilian government may take similar measures in the future. Any imposition of restrictions on conversions and remittances could hinder or prevent us from converting Brazilian reais into U.S. dollars or other foreign currencies and remitting abroad dividends, distributions or the proceeds from operations in Brazil.

Inflation and certain measures by the Brazilian government to curb inflation have historically adversely affected the Brazilian economy and Brazilian securities market, and high levels of inflation in the future would adversely affect our business, results of operations and financial condition.

In the past, Brazil has experienced extremely high rates of inflation. Inflation and some of the measures taken by the Brazilian government in an attempt to curb inflation have had significant negative effects on the Brazilian economy generally. Inflation, policies adopted to curb inflationary pressures and uncertainties regarding possible future governmental intervention have contributed to economic uncertainty and heightened volatility in the Brazilian securities market.

Since the introduction of the real in 1994, Brazil's inflation rate has been substantially lower than in previous periods. According to the Extended National Consumer Price Index (Índice Nacional de Preços ao Consumidor Amplo), Brazilian inflation rates were 2.9%, 6.3%, 10.7%, 6.4%, 5.9%, 5.8% and 6.5% in 2017, 2016, 2015, 2014, 2013, 2012 and 2011, respectively. However, the Brazilian government's measures to control inflation have often included maintaining a tight monetary policy with high interest rates, thereby restricting the availability of credit and reducing economic growth. The Central Bank of Brazil has frequently adjusted the interest rate in situations of economic uncertainty and to achieve objectives under the economic policy of the Brazilian government. Inflation, along with government measures to curb inflation and public speculation about possible future government measures, have had significant negative effects on the Brazilian economy and contributed to economic uncertainty in Brazil and heightened volatility in the Brazilian securities market, which may have an adverse effect on us.

If Brazil experiences substantial inflation or deflation in the future, we and our ability to comply with our obligations may be adversely affected. In addition, we may not be able to adjust the prices we charge our customers to offset the impact of inflation on our expenses, leading to an increase in our expenses and a reduction in our net operating margin. This could have a material negative impact on our business, results of operations and financial condition.

Developments and the perception of risk in other countries, such as the 2008-2009 developments in the global financial markets, and particularly in emerging market countries, may adversely affect the perceived value of companies with substantial operations in Brazil, causing the market price of our ordinary shares to decline.

The market value of securities of companies with substantial operations in Brazil is affected to varying degrees by political, economic and market conditions in other countries, including other Latin American and emerging market countries. Developments or economic conditions in other emerging market countries have at times significantly affected the availability of credit to the Brazilian economy and resulted in considerable outflows of funds from Brazil and decreases in the amount of foreign investments in Brazil. Although economic conditions in these countries may differ significantly from economic conditions in Brazil, investors' reactions to developments in these other countries, such as the 2008-2009 developments in the global financial markets, may have an adverse effect on the market value of Brazilian companies or companies with significant operations in Brazil. Since a significant portion of our total assets is located in Brazil, a decrease of the perceived value of companies with substantial operations in Brazil could adversely impact the market price of our ordinary shares.

Risks Relating to our Debt

Our indebtedness could impair our financial condition and harm our ability to operate our business.

Certain of our subsidiaries have incurred indebtedness under a senior secured term loan and revolving credit facility, which we refer to, together with all related loan documents, as amended and restated in August 2017 and as amended thereafter, as the Amended Credit Agreement. The obligations under the Amended Credit Agreement are jointly and severally guaranteed on a senior basis by certain of our subsidiaries and secured by a pledge of the capital stock of, or equity interests in, most of our subsidiaries and by substantially all of our assets and those of our subsidiaries.

Our Brazilian operating subsidiary, SMART Brazil, has incurred additional indebtedness under a credit facility with the Brazilian Development Bank, or BNDES, which we refer to, together with all related loan documents and as amended from time to time, as the BNDES 2013 Credit Agreement. Under the BNDES 2013 Credit Agreement, credit in the amount of R$50.6 million (or $13.5 million) was made available to SMART Brazil for investments in infrastructure, research and development in Brazil and acquisitions of equipment not otherwise available in the Brazilian domestic market.

In December 2014, SMART Brazil entered into a second credit facility with BNDES, which we refer to, together with all related loan documents and as amended from time to time, as the BNDES 2014 Credit Agreement. The BNDES 2013 Credit Agreement and the BNDES 2014 Credit Agreement are collectively referred to as the BNDES Agreements. Under the BNDES 2014 Credit Agreement, a total of R$52.8 million (or $14.1 million) was made available to SMART Brazil for research and development conducted in Brazil related to IC packaging and for acquisitions of equipment not otherwise available in the Brazilian domestic market.

SMART Brazil’s obligations under the BNDES Agreements are guaranteed by Banco Votorantim S/A, or Banco Votorantim. SMART Brazil has entered into an agreement with Banco Votorantim to assure payment to Banco Votorantim in the event that BNDES collects on either of the guarantees.

As of August 31, 2018, the outstanding principal balance under the Amended Credit Agreement, the BNDES 2013 Credit Agreement and the BNDES 2014 Credit Agreement, respectively, was $208.5 million, R$12.9 million (or $3.4 million) and R$26.4 million (or $7.0 million). We have a right to draw an additional $50.0 million under the revolving loan provisions of the Amended Credit Agreement.

Our indebtedness may have important consequences, including, but not limited to, the following:

- increasing our vulnerability to general economic downturns and adverse industry conditions;
- requiring us to dedicate a significant portion of our cash flows from operations to the payment of interest and principal on our debt, which would reduce the funds available to us for our working capital, capital expenditures or other general corporate requirements;
- limiting our flexibility in planning for, or reacting to, changes in our business and industry;
- placing us at a competitive disadvantage compared to our competitors with less indebtedness or more liquidity; and
- limiting our ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions, general corporate purposes or other purposes.

All of our debt under the Amended Credit Agreement and approximately half of the debt under the BNDES 2013 Credit Agreement bears interest at variable rates. If the rates were to increase significantly, our ability to borrow additional funds may be reduced and the risks related to our indebtedness would be exacerbated.

Our Amended Credit Agreement contains restrictions that limit our flexibility in operating our business.

Our Amended Credit Agreement contains restrictive covenants that limit our ability to engage in specified transactions and prohibit us from voluntarily prepaying certain of our other indebtedness. These covenants limit our ability to, among other things:

- incur additional indebtedness;

- pay dividends on, or repurchase or make distributions in respect of, our capital stock or make other restricted payments;
- make certain investments, including limitations on capital expenditures and acquisitions;
- sell or transfer assets;
- enter into or effect sale leaseback transactions;
- enter into swap agreements;
- prepay, repurchase, redeem, otherwise defease or amend the terms of any subordinated indebtedness;
- change fiscal periods;
- create liens;
- enter into contractual obligations that restrict our ability to grant liens on assets or capital stock;
- change the character of our business;
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and
- enter into certain transactions with affiliates.

Under the Amended Credit Agreement, in certain circumstances we also are required to satisfy and maintain specified financial ratios. Our ability to meet those financial ratios could be affected by events beyond our control, and there can be no assurance that we will meet those ratios.

The failure to comply with any of these covenants would cause a default under the Amended Credit Agreement. A default, if not waived, could result in acceleration of the outstanding indebtedness under the Amended Credit Agreement, in which case such indebtedness would become immediately due and payable. If any default occurs, we may not be able to pay our debt or borrow sufficient funds to refinance it. Even if new financing is available, it may not be available on terms that are acceptable to us. Complying with these covenants may cause us to take actions that we otherwise would not take or not take actions that we otherwise would take.

Our ability to generate cash to service our debt depends on many factors beyond our control.

Our ability to make scheduled payments on or to refinance our debt obligations depends on the financial condition and operating performance of our business. This, to a certain extent, is subject to prevailing economic and competitive conditions and to certain financial, business, regulatory and other factors beyond our control. Our business may not generate sufficient cash flows from operations, and future borrowings may not be available to us under the Amended Credit Agreement or the BNDES Agreements in an amount sufficient to enable us to service our debt or to fund our other liquidity needs. If we are unable to meet our debt obligations or fund our other liquidity needs, we may need to restructure or refinance all or a portion of our debt or sell certain of our assets on or before the maturity of our debt. We may not be able to restructure or refinance any of our debt on commercially reasonable terms, if at all, which could cause us to default on our debt obligations and impair our liquidity. Any refinancing of our indebtedness could be at higher interest rates and may require us to comply with more onerous covenants that could further restrict our business operations.

In addition, if our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures, or to sell assets or seek additional capital. These alternative measures may not be available to us, may not be successful and may not permit us to meet our scheduled debt service obligations, which could result in substantial liquidity problems. Our Amended Credit Agreement restricts our ability to dispose of our assets and use the proceeds from the disposition. We may not be able to consummate those dispositions or to obtain the proceeds which we could realize from them, and these proceeds may not be adequate to meet any debt service obligations then due. Any of these circumstances could have a material adverse effect on our business, results of operations and financial condition.

Disruption in the financial markets may adversely impact the availability and cost of credit and cause other disruptions and additional costs at a time when we may need capital to refinance our debt or to fund growth.

Refinancing our existing debt or securing new debt or equity financing may be difficult, expensive, dilutive or impossible. As in the past, future instability in the financial markets may have an adverse effect on the U.S. and/or world economy which could adversely impact our business. If we are not able to obtain the capital required to refinance our existing debt or to fund future growth or if we are required to incur significant expenses and/or dilution to do so, this could have a material adverse effect on our business, results of operations and financial condition and may require us to undertake alternative plans, such as selling assets, reducing or delaying capital investments or downsizing our business.

Risks Relating to Investments in Cayman Islands Companies

We are a Cayman Islands company and, because the rights of shareholders under Cayman Islands law differ from those under U.S. law, shareholders may have difficulty protecting their shareholder rights.

Our corporate affairs are governed by our amended and restated memorandum and articles of association, the Cayman Islands Companies Law (2018 Revision), or the Companies Law, and the common law of the Cayman Islands. The rights of shareholders to take action against the directors, actions by minority shareholders and the fiduciary responsibilities of our directors to us under Cayman Islands law are to a large extent governed by the common law of the Cayman Islands. The common law of the Cayman Islands is derived in part from comparatively limited judicial precedent in the Cayman Islands as well as from English common law, which has persuasive, but not binding, authority on a court in the Cayman Islands. The rights of our shareholders and the fiduciary responsibilities of our directors under Cayman Islands law are not as clearly established as they would be under statutes or judicial precedent in some jurisdictions in the United States. In particular, the Cayman Islands has a less exhaustive body of securities laws as compared to the United States, and some states, such as Delaware, have more fulsome and judicially interpreted bodies of corporate law.

It may be difficult to enforce a judgment of U.S. courts for civil liabilities under U.S. federal securities laws against us in the Cayman Islands.

We are a company incorporated under the laws of the Cayman Islands. The Cayman Islands courts are unlikely:

- to recognize or enforce against us judgments of courts of the United States based on certain civil liability provisions of U.S. securities laws; or
- to impose liabilities against us, in original actions brought in the Cayman Islands, based on certain civil liability provisions of U.S. securities laws that are penal in nature.

Although there is no statutory enforcement in the Cayman Islands of judgments obtained in the United States, the courts of the Cayman Islands will recognize and enforce a foreign money judgment of a foreign court of competent jurisdiction without retrial on the merits based on the principle that a judgment of a competent foreign court imposes upon the judgment debtor an obligation to pay the sum for which judgment has been given provided certain conditions are met. For a foreign judgment to be enforced in the Cayman Islands, such judgment must be final and conclusive and for a liquidated sum, and must not be in respect of taxes or a fine or penalty, inconsistent with a Cayman Islands judgment in respect of the same matter, impeachable on the grounds of fraud or obtained in a manner, and/or be of a kind the enforcement of which is, contrary to natural justice or the public policy of the Cayman Islands (awards of punitive or multiple damages may well be held to be contrary to public policy). A Cayman Islands Court may stay enforcement proceedings if concurrent proceedings are being brought elsewhere.

As a result of all of the above, public shareholders may have more difficulty protecting their interests in the face of actions taken by management, members of the board of directors or controlling shareholders than they would as public shareholders of a U.S. company.

Risks Relating to Our Ordinary Shares

Control by our principal shareholders could adversely affect our other shareholders.

As of August 31, 2018, 43.49% our outstanding ordinary shares are owned by Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Sumeru Fund Cayman, L.P. (investment funds affiliated with Silver Lake Partners and Silver Lake Sumeru, collectively Silver Lake) and their affiliates, including certain of our directors and our Chief Executive Officer. Pursuant to the terms of the Amended and Restated Sponsors Shareholder Agreement dated as of May 30, 2017, or the Sponsor Shareholder Agreement, entered into in connection with the IPO, Silver Lake has the right to nominate members of our board of directors as follows: so long as Silver Lake and their affiliates own, in the aggregate, (i) less than 50% but at least 35% of our ordinary shares outstanding immediately after the IPO, Silver Lake will be entitled to nominate four directors, (ii) less than 35% but at least 20% of our ordinary shares outstanding immediately after the IPO, Silver Lake will be entitled to nominate three directors, (iii) less than 20% but at least 10% of our ordinary shares outstanding immediately after the IPO, Silver Lake will be entitled to nominate two directors, (iv) less than 10% but at least 5% of our ordinary shares outstanding immediately after the IPO, Silver Lake will be entitled to nominate one director, and (v) less than 5% of our ordinary shares outstanding immediately after the IPO, Silver Lake will not be entitled to nominate any directors. The Sponsor Shareholder Agreement further provides that, for so long as Silver Lake collectively owns ordinary shares in an amount equal to or greater than 25% of our ordinary shares outstanding immediately following the IPO, in addition to the approval of our board of directors, the approval of Silver Lake will be required for certain corporate actions such as change in control transactions, acquisitions with a value in excess of $5 million and any material change in the nature of the business conducted by us or our subsidiaries. As a result, based on Silver Lake's ownership of our ordinary shares and the rights in the Sponsor Shareholder Agreement, Silver Lake has the ability to elect the members of our board of directors, and thereby control our management and affairs. Silver Lake will have a continuing ability to control our board of directors and will continue to have significant influence over our affairs for the foreseeable future. This concentrated control will limit the ability of other shareholders to influence corporate matters and, as a result, we may take actions that our other shareholders do not view as beneficial. For example, this concentration of control could have the effect of delaying or preventing a change in control or otherwise discouraging a potential acquirer from attempting to obtain control of us, which in turn could cause the market price of our ordinary shares to decline or prevent our shareholders from realizing a premium over the market price for their ordinary shares. Furthermore, Silver Lake may have interests that are different from, or opposed to, the interests of the public shareholders.

The price of our ordinary shares may be volatile and subject to wide fluctuations.

The market price of the securities of technology companies can be especially volatile. Broad market and industry factors may adversely affect the market price of our ordinary shares regardless of our actual operating performance. The market price of our ordinary shares could be subject to wide fluctuations in response to the risk factors listed in this section and others beyond our control, including, among other things:

- actual or anticipated variations in our operating results;
- overall conditions in our industry;
- events affecting Brazil or the market for our products there;
- addition or loss of a major customer or of significant business at a major customer;
- changes in laws or regulations applicable to our products or our operations;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements of technological innovations by us or other companies operating in our industry;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, divestitures, restructuring initiatives or other events that affect us or companies in our industry;
- additions or departures of key personnel;
- competition from existing products or new products that may emerge;

- the failure of financial analysts to cover our company;
- changes in financial estimates by financial analysts, any failure by us to meet or exceed any of these estimates or changes in the recommendations of any financial analysts that elect to follow our company or our competitors;
- changes in the market valuations of other companies operating in our industry;
- developments in existing litigation or disputes or the filing of new litigation or claims against us;
- disputes or other developments related to proprietary rights, including patents, litigation matters and our ability to obtain intellectual property protection for our technologies;
- announcement of, or expectation of, additional financing efforts;
- future sales of our ordinary shares;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our ordinary shares;
- the expiration of contractual lock-up agreements with us and our executive officers, directors and shareholders; and
- general economic and market conditions.

In addition, the stock market in general has experienced substantial price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of particular companies affected. These broad market and industry factors may materially harm the market price of our ordinary shares, regardless of our operating performance. In the past, following periods of volatility in the market price of certain companies' securities, securities class action litigation has been instituted against these companies. This litigation, if instituted against us, could adversely affect our financial condition or results of operations.

An active trading market for our ordinary shares may not be maintained.

Our ordinary shares are listed on the NASDAQ. However, we can provide no assurance that we will be able to maintain an active trading market for our ordinary shares on NASDAQ or any other exchange in the future. If there is no active market for our ordinary shares, the market price and liquidity of our ordinary shares may be materially and adversely affected. The lack of an active market may reduce the fair market value of our ordinary shares or impair your ability to sell the ordinary shares at the time you may wish to sell them or at a price that you consider reasonable. Investors in our ordinary shares may experience a significant decrease in the value of their shares regardless of our operating performance or prospects.

If financial analysts do not publish research or reports about our business, or publish negative reports about our business, our share price and trading volume could decline.

The trading market for our ordinary shares depends in part on the research and reports that financial analysts publish about us or our business. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our shares or change their opinion of our shares, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

If our estimates or judgments relating to our critical accounting policies are based on assumptions that change or prove to be incorrect, our results of operations could fall below expectations of securities analysts and investors, resulting in a decline in the market price of our ordinary shares.

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, as described in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations," the results of which form the basis for making judgments about the carrying values of assets, liabilities, equity, revenue and expenses that are not readily apparent from other sources. Significant assumptions and estimates used in preparing our consolidated financial statements include those related to revenue recognition, accounts receivable, inventory valuation, income taxes, impairment of long-lived assets and long-lived assets to be disposed, share-based compensation and fair value of ordinary shares. If our assumptions change or if actual circumstances differ from those in our assumptions, our results of operations may be adversely affected and may fall below the expectations of securities analysts and investors, resulting in a decline in the market price of our ordinary shares.

Future sales of our ordinary shares in the public market, or the perception that these sales may occur, could cause our share price to fall.

Sales of substantial amounts of our ordinary shares in the public market, including sales of our ordinary shares by us or our affiliates pursuant to the Shelf Registration Statement, defined below, or otherwise, or the perception that these sales may occur, could cause the market price of our ordinary shares to decline. This could also impair our ability to raise additional capital through the sale of our equity securities. Under our amended and restated memorandum and articles of association, we are authorized to issue up to 200,000,000 ordinary shares, of which 22,479,943 ordinary shares were outstanding as of August 31, 2018. Out of our ordinary shares outstanding as of August 31, 2018, 9,880,055 shares are held by our affiliates and our current directors, executive officers and their respective affiliates, which are eligible for resale in the public markets, subject to Rule 144 under the Securities Act. In addition, on September 20, 2018, we filed a shelf registration statement on Form S-3 with the SEC that was declared effective by the SEC on October 9, 2018 (the Shelf Registration Statement), which permits us to offer up to $150 million of ordinary shares, preferred shares, debt securities, warrants and purchase contracts in one or more offerings and in any combination, including in units from time to time, and which permits Silver Lake to sell up to 9,256,755 of our ordinary shares from time to time. We have also filed registration statements on Form S-8 to register the total number of shares of our common stock that may be issued under the SMART Global Holdings, Inc. 2017 Share Incentive Plan (the SGH Plan), including the equity awards issued to our executive officers and directors, and purchased under the SMART Global Holdings, Inc. 2018 Employee Share Purchase Plan (ESPP). As of August 31, 2018, there are 2,413,573 options outstanding to purchase our ordinary shares, and 720,012 RSUs outstanding under the SGH Plan, and there are 251,965 additional shares available for issuance under the SGH Plan and 350,000 shares available for purchase under the ESPP. These ordinary shares can be freely sold in the public market upon issuance under the SGH Plan or purchase under the ESPP subject to any restrictions on such shares pursuant to the respective plan documents.

In addition, certain of our existing shareholders and holders of options and RSUs, in the event they become exercisable, have the right to demand that we file a registration statement covering the offer and sale of their ordinary shares and shares issuable under such options and RSUs under the Securities Act and to require us to include their securities on a registration statement filed by us. While these holders, other than Silver Lake, waived their right to include their shares in the Shelf Registration Statement, if we file a registration statement in the future for the purpose of selling additional ordinary shares to raise capital and are required to include ordinary shares held by these shareholders pursuant to the exercise of their registration rights, our ability to raise capital may be impaired. In addition, if we conduct an offering under our Shelf Registration Statement, our ability to raise capital in such offering may be impaired.

We cannot predict the size of future sales or issuances of our ordinary shares or the effect, if any, that such future sales and issuances would have on the market price of our ordinary shares.

The requirements of being a public company have and will continue to increase our costs and may disrupt the regular operations of our business.

As a public company, our legal, accounting, reporting and other administrative costs have and will continue to increase.

We also anticipate that we will incur costs associated with corporate governance requirements, including requirements under the Sarbanes-Oxley Act, as well as rules implemented by the SEC and NASDAQ. We expect these rules and regulations to increase our legal and financial compliance costs and make some management and corporate governance activities more time consuming and costly, particularly now that we are no longer an "emerging growth company." These rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. This could have an adverse impact on our ability to recruit and bring on qualified directors.

The additional demands associated with being a public company may disrupt regular operations of our business by diverting the attention of some of our senior management team away from revenue producing activities to management and administrative oversight, adversely affecting our ability to attract and complete business opportunities and increasing the difficulty in both retaining professionals and managing and growing our businesses. Any of these effects could harm our business, financial condition and results of operations.

While we were an "emerging growth company" under the JOBS Act, our independent registered public accounting firm was not required to attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act. We are no longer an emerging growth company as of the beginning of our fiscal 2018, and our independent registered public accounting firm is required to attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act as of August 31, 2018. In addition, in connection with the implementation of the necessary procedures and practices related to internal control over financial reporting, we may identify deficiencies that we may not be able to remediate in time to meet the deadline imposed by the Sarbanes-Oxley Act for compliance with the requirements of Section 404. Failure to comply with Section 404 could subject us to regulatory scrutiny and sanctions, impair our ability to raise revenue, cause investors to lose confidence in the accuracy and completeness of our financial reports and negatively affect the price of our ordinary shares.

Effective April 3, 2018, we were no longer a "controlled company" within the meaning of NASDAQ corporate governance rules, however, we continue to qualify for, and may rely on, exemptions from certain corporate governance requirements that would otherwise provide protection to our shareholders during a one-year transition period. Our reliance on such exemptions may afford less protection to holders of our ordinary shares.

The NASDAQ corporate governance rules require listed companies to have, among other things, a majority of independent board members and independent director oversight of executive compensation, nomination of directors and corporate governance matters, however, we have historically relied on the "controlled company" exemption under the NASDAQ corporate governance rules. A "controlled company" under the NASDAQ corporate governance rules is a company of which more than 50% of the voting power is held by an individual, group or another company. Until April 3, 2018, Silver Lake controlled a majority of the voting power of our outstanding ordinary shares, making us a "controlled company" within the meaning of the NASDAQ corporate governance rules. As a controlled company, we elected not to comply with certain of the NASDAQ corporate governance standards, including the requirement that a majority of directors on our board of directors are independent directors and the requirement that our compensation committee and our nominating and corporate governance committee consist entirely of independent directors. However, we continue to qualify for, and may rely on, exemptions from certain corporate governance standards that would otherwise provide protection to our shareholders during a one-year transition period that ends April 3, 2019. Accordingly, our shareholders will not have the same protection afforded to shareholders of companies that are subject to all of the NASDAQ corporate governance standards, and the ability of our independent directors to influence our business policies and affairs may be reduced, during this transition period.

The NASDAQ corporate governance rules require that we (i) have at least one independent director on each of our governance and nominating committee and compensation committee by the date we ceased to qualify as a "controlled company", (ii) have a majority of independent directors on each of our governance and nominating committee and compensation committee within 90 days of the date we ceased to qualify as a "controlled company", and (iii) have a fully independent governance and nominating committee and compensation committee within one year of the date we ceased to qualify as a "controlled company". We are also required to have a majority independent board of directors within one year of the date we ceased to qualify as a "controlled company". Our board of directors has determined that two of the three members of our governance and nominating committee, all of the members of our compensation committee, all of the members of our audit committee and four of the nine members of our board of directors are independent for purposes of the NASDAQ corporate governance standards.

We no longer qualify as an "emerging growth company" and will be required to comply with certain provisions of the Sarbanes-Oxley Act and can no longer take advantage of reduced disclosure requirements.

For as long as we remained an emerging growth company, we could take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in its periodic reports and proxy statements, and exemptions from the requirements of holding a non-binding advisory vote on executive compensation. We no longer qualify for such status, and as we are no longer an emerging growth company, we expect to incur additional expenses and devote substantial management effort toward ensuring compliance with those requirements applicable to companies that are not emerging growth companies.

Anti-takeover provisions in our organizational documents may discourage our acquisition by a third party, which could limit shareholders' opportunity to sell their ordinary shares at a premium.

Our amended and restated memorandum and articles of association include provisions that could limit the ability of others to acquire control of us, modify our structure or cause us to engage in change of control transactions. These provisions include, among other things:

- a classified board of directors with staggered three-year terms;
- restrictions on the ability of our shareholders to call meetings or make shareholder proposals;
- our amended and restated memorandum and articles of association may only be amended by a vote of shareholders representing at least 75% of the outstanding ordinary shares or by a unanimous written consent;
- so long as Silver Lake collectively owns at least 40% of the number of our outstanding ordinary shares, directors may be removed with or without cause, the size our board may be increased and vacancies on the board may be filled upon the affirmative vote of a majority of our outstanding ordinary shares; however, at any time when Silver Lake owns less than 40% of our outstanding ordinary shares, shareholders will not be permitted to increase the size of our board, fill vacancies on our board or remove directors without cause; and
- the ability of our board of directors, without action by our shareholders, to issue 30,000,000 preferred shares and to issue additional ordinary shares that could have the effect of impeding the success of an attempt to acquire us or otherwise effect a change in control.

These provisions could deter, delay or prevent a third party from acquiring control of us in a tender offer or similar transactions, even if such transaction would benefit our shareholders. Even in the absence of a takeover attempt, the existence of these provisions may adversely affect the prevailing market price of our ordinary shares if they are viewed as discouraging future takeover attempts.

We do not anticipate paying any cash dividends in the foreseeable future.

We currently intend to retain our future earnings, if any, for the foreseeable future, to repay indebtedness and to fund the development and growth of our business. We do not intend to pay any dividends to holders of our ordinary shares. In addition, our Amended Credit Agreement contains restrictions on our ability to pay dividends. As a result, capital appreciation in the price of our ordinary shares, if any, will be your only source of gain on an investment in our ordinary shares.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties

We have facilities in Newark, California; Fremont, California; Atibaia, Brazil; Penang, Malaysia; New Taipei City, Taiwan; Gilbert, Arizona; Tewksbury, Massachusetts; Irvine, California; East Kilbride, Scotland; and Seongnam-City, South Korea.

Location	Facility size (Sq. Feet)	Leased or Owned	Lease Expiration	Capabilities
Newark, CA	79,480	Leased	April 2021	U.S. Headquarters Procurement R&D Manufacturing Sales Supply Chain Services
Fremont, CA	86,306	Leased	May 2023	Procurement R&D Manufacturing Sales
Atibaia, Brazil	87,088 65,926	Leased	October 2022 October 2027	Procurement R&D Manufacturing Sales
Penang, Malaysia*	86,730	Owned	N/A	Procurement R&D Manufacturing Sales Supply Chain Services
New Taipei City, Taiwan	14,788	Leased	November 2019	Procurement R&D Sales
Gilbert, AZ	9,750	Leased	February 2019	Procurement R&D Sales
Tewksbury, MA	7,666	Leased	September 2023	R&D
Irvine, CA	4,394	Leased	August 2022	Procurement R&D Sales
East Kilbride, Scotland	3,300	Leased	July 2019	Supply Chain Services
Seongnam-City, South Korea	12,622	Leased	July 2018	R&D

* Our Penang facility is situated on leased land with a term expiring in 2070.

We also lease a number of smaller design, planning and sales facilities worldwide.

Item 3. Legal Proceedings

We are currently involved in, and may in the future be involved in, legal proceedings, claims and government investigations in the ordinary course of business. We are involved in litigation, and may in the future be involved in litigation, with third parties asserting, among other things, infringement of their intellectual property rights. We are currently involved in several proceedings, including the following:

Indemnification Claims by SanDisk

In August 2013, the Company completed the sale (the Sale) of substantially all of the business unit which was focused on solid state drives, to SanDisk Corporation (now a part of Western Digital). In connection with the Sale the sale agreement (Sale Agreement) contained certain indemnification obligations, including, among others, for losses arising from breaches of representations and warranties relating to the Sale. These indemnification obligations are subject to a number of limitations, including certain deductibles and caps and limited time periods for making indemnification claims. At the closing of the Sale, $30.5 million of the purchase price was placed into a third party escrow to secure certain of the Company’s indemnification obligations. The escrow was due to terminate on

August 22, 2014 in the event that SanDisk did not timely submit a claim for indemnification. On August 21, 2014, SanDisk made a claim against the Company under the indemnification provisions of the Sale Agreement in connection with a lawsuit filed by Netlist, Inc. (Netlist) against SanDisk alleging that certain products sold in the Sale infringe various Netlist patents, which SanDisk in turn alleges would, if true, constitute a breach of representations and warranties under the Sale Agreement. Under the Sale Agreement, the Company's indemnification obligation in respect of intellectual property matters, such as those claimed by SanDisk, is subject to a deductible of approximately $1.8 million and a cap of $60.9 million. As required in the Sale Agreement, the SanDisk claim purported to include a preliminary good faith estimate of SanDisk's alleged indemnifiable losses, which estimate was greater than the Sale Agreement cap for intellectual property matters. The Company believes that the allegations giving rise to the indemnification claim are without merit and the Company intends to dispute SanDisk's claim for indemnification. In addition, there may be other grounds for the Company to dispute the indemnification claim and/or the amounts of any indemnifiable losses of SanDisk. On December 4, 2014, SanDisk and the Company agreed to release from escrow the funds held in connection with this indemnification claim, however, the agreement to release the funds from escrow does not relieve the Company of its indemnification obligations to SanDisk, and SanDisk has not amended or reduced the amount of its indemnification claim.

Netlist

On September 10, 2012, SMART Modular filed a complaint in the Eastern District of California (the EDCA) against Netlist alleging infringement of certain claims of SMART Modular's U.S. Patent No. 8,250,295 (the '295 patent) and seeking, among other things, a preliminary injunction. Netlist filed certain counterclaims alleging, among other things, attempted monopolization, collusion, unfair competition, fraud on the U.S. Patent and Trademark Office (the USPTO) and sham litigation, and asserting that the '295 patent is invalid. The counterclaims do not specify the amount of damages sought. Netlist also filed a request for reexamination of the '295 patent in the USPTO. On May 30, 2013, the court denied SMART Modular's motion for a preliminary injunction and granted a stay in the proceedings pending the outcome of the reexamination. In September 2016, the EDCA lifted the stay. After several filings and decisions at the USPTO and the Patent Trial and Appeals Board (the PTAB) from 2013 through 2017, in December 2017, the PTAB issued a decision declaring the original claims of SMART Modular's '295 patent as well as certain of the newly added claims, to be invalid. The Company has appealed the decision of the PTAB to the Federal Circuit Court of Appeals. In March 2018, SMART Modular and Netlist entered into a stipulation staying the court proceedings pending the outcome of the appeal and the completion of the reexamination of SMART Modular's '295 patent.

In July 2013, Netlist filed a lawsuit in the Central District of California against SMART Modular alleging claims very similar to Netlist's counterclaims set forth in the EDCA case. Netlist later amended its complaint to add additional parties, including SMART Worldwide. Netlist has sought compensatory damages for the harm it claims to have suffered, as well as an award of treble damages and attorneys' fees. The claims against SMART Modular and SMART Worldwide were transferred to the EDCA.

The Company believes that there are valid defenses to all of the claims and counterclaims made by Netlist and that the claims are without merit. The Company intends to vigorously fight the claims and counterclaims. The Company believes that the likelihood of any material charge resulting from these claims is remote.

Import Duty Tax assessment in Brazil

On February 23, 2012, SMART Brazil was served with a notice of a tax assessment for approximately R$117 million (or $31.2 million) (the First Assessment). The First Assessment was from the federal tax authorities of Brazil and related to four taxes in connection with importation processes. The tax authorities claimed that SMART Brazil categorized its imports of unmounted integrated circuits in the format of wafers under an incorrect product classification code, which carries an import duty of 0%. The authorities alleged that a different classification code should have been used that would require an 8% import duty and the authorities were seeking to recover these duties, as well as other related taxes, for the five calendar years of 2007 through and including 2011. Subsequent to the initial assessment, SMART Brazil received a second notice of an additional administrative penalty of approximately R$6.0 million (or $1.9 million) directly related to the same issue and which has been imposed exclusively for the alleged usage of an inappropriate import tax code (the Second Assessment).

In March 2012, SMART Brazil filed defenses to the First Assessment and the Second Assessment. On May 2, 2013, the first level administrative tax court issued a ruling in favor of the tax assessor and against SMART Brazil on the First Assessment. On May 31, 2013, SMART Brazil filed an appeal to the second level tax court known as CARF. The appeal was heard on November 26, 2013 and the Company received a unanimous favorable ruling rejecting the position of the tax authorities. This ruling was published by the tax authorities and made official in February 2014. Subsequently, the tax authorities filed a request for clarification and on September 17, 2014, the Company received a unanimous ruling rejecting the request from the tax authorities for clarification. On November 7, 2014, the tax authorities notified CARF that they would not be appealing the CARF decision, and the First Assessment has been extinguished. On February 6, 2018, the first level administrative court unanimously ruled in favor of SMART Brazil with respect to the Second Assessment. Due to the size of the Second Assessment, Brazil law requires that the tax authorities appeal the decision to CARF and the appeal process is underway.

On December 12, 2013, SMART Brazil received another notice of assessment in the amount of R$3.6 million (or $1.0 million) with respect to the same import-related tax issues and penalties discussed above for 2012 and 2013 (the Third Assessment). The Third Assessment does not seek import duties and related taxes on Dynamic Random Access Memory ("DRAM") products and only seeks import duties and related taxes on Flash unmounted components with respect to the months of January 2012 to June 2012. This is because SMART Brazil's imports of DRAM unmounted components were subject to 0%, and, after June 2012, SMART Brazil's imports of Flash unmounted components became subject to 0%, import duties and related taxes, both as a result of PADIS. Even with this 0%, if SMART Brazil is found to have used the incorrect product classification code, SMART Brazil will be subject to an administrative penalty equal to 1% of the value of the imports. SMART Brazil has filed defenses to the Third Assessment. The Company believes that SMART Brazil used the correct product code on its imports and that the Third Assessment is incorrect. SMART Brazil intends to vigorously fight this matter. Although SMART Brazil did not receive the Third Assessment until December 12, 2013, the Third Assessment was issued before the CARF decision in favor of SMART Brazil on the First Assessment as discussed above was published.

The amounts claimed by the tax authorities on the Second Assessment and on the Third Assessment are subject to increases for interest and other charges, which resulted in a combined assessment balance of approximately R$15.1 million (or $4.0 million) and R$14.4 million (or $4.6 million) as of August 31, 2018 and August 25, 2017, respectively.

As a result of the CARF decision in favor of SMART Brazil on the First Assessment and the first level administrative court decision in favor of SMART Brazil on the Second Assessment, the Company believes that the probability of any material charges as a result of the Second Assessment and the Third Assessment is remote and the Company does not expect the resolution of these disputed assessments to have a material impact on its consolidated financial position, results of operations or cash flows. While the Company believes that the Second Assessment and the Third Assessment are incorrect, there can be no assurance that SMART Brazil will prevail in the disputes.

Item 4. Mine Safety Disclosures.

Not applicable.

Part II.

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

Market Information for Ordinary Shares

On May 24, 2017, our ordinary shares began trading on the NASDAQ Global Select Market under the symbol "SGH". Prior to that date, there was no public trading market for our common stock. Shares sold in our initial public offering, or IPO, were priced at $11.00 per share on May 23, 2017.

The following table sets forth for the indicated periods the high and low sales prices of our ordinary shares as reported by the NASDAQ Global Select Market.

	High	Low
Year Ended August 31, 2018		
Fourth quarter	$ 50.61	$ 29.29
Third quarter	$ 54.45	$ 33.80
Second quarter	$ 38.96	$ 28.09
First quarter	$ 40.65	$ 18.00

Holders

As of August 31, 2018 there were 99 registered holders of record of our ordinary shares (not including beneficial holders of our ordinary shares in street names).

Dividends

We have not paid any cash dividends on our ordinary shares, and we do not currently intend to pay any cash dividends on our ordinary shares in the foreseeable future. We currently intend to retain all available funds and any future earnings to support operations and to finance the growth and development of our business. Any future determination to pay dividends will be made at the discretion of our board of directors subject to applicable laws and will depend upon, among other factors, our results of operations, financial condition, contractual restrictions and capital requirements. Our future ability to pay cash dividends on our capital stock may also be limited by the terms of any future debt or preferred securities or future credit facility.

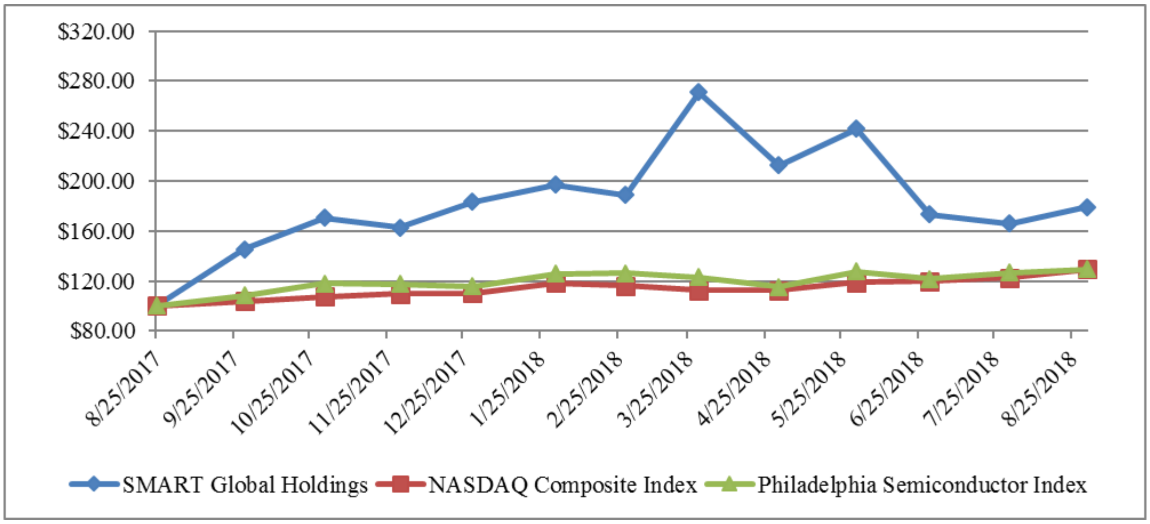
Unregistered Sales of Equity Securities

None.

Stock Performance Graph

This performance graph shall not be deemed "soliciting material" or to be "filed" with the Securities and Exchange Commission, or the SEC, for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any of our filings under the Securities Act of 1933, as amended, or the Securities Act, except as shall be expressly set forth by specific reference in such filing.

The following performance graph shows the cumulative total stockholders return of an investment of $100 in cash on August 25, 2017 through August 31, 2018, in our common stock, the NASDAQ Composite Index and Philadelphia Semiconductor Index and assuming that all dividends were reinvested. The stock price performance on the following graph is not necessarily indicative of future price performance of our stock.



Item 6. Selected Financial Data

The following tables present our historical selected consolidated financial data. The selected consolidated statement of operations data for the years ended August 31, 2018, August 25, 2017 and August 26, 2016, and the selected consolidated balance sheet data as of August 31, 2018 and August 25, 2017 are derived from our audited consolidated financial statements that are included elsewhere in this report. The selected statement of operations data for the year ended August 28, 2015, and the selected consolidated balance sheet data as of August 26, 2016 and August 28, 2015 are derived from our audited consolidated balance sheet as of such date and is not included in this report. Our historical results are not necessarily indicative of the results that may be expected in the future.

We maintain our books and records in U.S. dollars and prepare our consolidated financial statements in accordance with U.S. GAAP.

This financial information should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements, including the notes thereto, included elsewhere in this report.

	Fiscal Year Ended			
	August 31, 2018	August 25, 2017	August 26, 2016	August 28, 2015
	(in thousands, other than per share data)			
Consolidated Statement of Operations Data:				
Net sales	$1,288,821	$ 761,291	$ 534,423	$ 643,469
Cost of sales[1][2]	997,235	599,041	427,491	512,032
Gross profit	291,586	162,250	106,932	131,437
Operating expenses:				
Research and development[1][2]	39,824	38,160	38,116	43,741
Selling, general, and administrative[1][2]	84,541	66,759	57,495	89,233
Change in estimated fair value of acquisition-related contingent consideration	(3,000)	—	—	—
Management advisory fees	—	3,000	4,001	4,030
Restructuring charge	—	457	1,135	1,143
Total operating expenses	121,365	108,376	100,747	138,147
Income (loss) from operations	170,221	53,874	6,185	(6,710)
Interest expense, net	(19,144)	(29,204)	(25,575)	(27,560)
Other income (expense), net	(13,299)	(22,551)	1,874	(5,532)
Total other expense	(32,443)	(51,755)	(23,701)	(33,092)
Income (loss) before income taxes	137,778	2,119	(17,516)	(39,802)
Provision for income taxes	18,315	9,914	2,444	6,649
Net income (loss)	$ 119,463	$ (7,795)	$ (19,960)	$ (46,451)
Earnings per share:				
Basic	$ 5.42	$ (0.49)	$ (1.44)	$ (3.36)
Diluted	$ 5.17	$ (0.49)	$ (1.44)	$ (3.36)
Shares used in computing earnings per share:				
Basic	22,051	15,785	13,841	13,833
Diluted	23,119	15,785	13,841	13,833

(1) Includes share-based compensation expense as follows:

Cost of sales	$ 1,335	$ 636	$ 461	$ 771
Research and development	1,460	655	725	844
Selling, general and administrative	7,763	4,073	2,686	4,517

(2) Includes amortization of intangible assets expense as follows:

Cost of sales	$ 7	$ —	$ —	$ —
Research and development	987	4,897	4,897	6,160
Selling, general and administrative	5,136	7,042	8,471	24,669

	Fiscal Year Ended			
	August 31, 2018	August 25, 2017	August 26, 2016	August 28, 2015
	(dollars in thousands)			
Other Financial Data:				
Adjusted EBITDA(1)	$ 195,540	$ 99,387	$ 51,760	$ 55,762
Gross billings to customers(2)	$2,302,214	$1,625,547	$1,925,047	$2,147,437
Days sales outstanding (DSO)(3)	38	41	27	31
Inventory turns(4)	9	12	18	15
Days payable outstanding (DPO)(5)	40	47	40	51

(1) We define Adjusted EBITDA as our net income (loss) plus net interest expense, income tax expense, depreciation and amortization expense, share-based compensation, acquisition-related expenses, restructuring charges, amortization of non-cash debt discount related to warrants, non-cash charges in connection with refinancing, and other infrequent or unusual items. We have provided a reconciliation below of Adjusted EBITDA to net income (loss), the most directly comparable U.S. GAAP financial measure.

We have included Adjusted EBITDA in this report because it is a key measure used by our management and board of directors to understand and evaluate our core operating performance and trends, to prepare and approve our annual budget and to develop short-term and long-term operational and compensation plans. In particular, the exclusion of certain non-cash, non-recurring or infrequent expenses in calculating Adjusted EBITDA can provide useful measures for period-to-period comparisons of our core business. Accordingly, we believe that Adjusted EBITDA provides useful information to investors and others in understanding and evaluating our operating results in the same manner as our management and board of directors.

Adjusted EBITDA has limitations as an analytical tool, and you should not consider this measure in isolation or as a substitute for analysis of our results as reported under U.S. GAAP. Some of these limitations are:

- Adjusted EBITDA does not consider the cost of equity-based compensation, which is an ongoing expense for us;
- Adjusted EBITDA does not reflect past cash capital expenditures and future requirements for replacements or for new capital expenditures;
- Adjusted EBITDA does not reflect tax payments that may represent a reduction in cash available to us; and
- other companies, including companies in our industry, may calculate Adjusted EBITDA differently, which reduces its usefulness as a comparative measure.

Because of these limitations, you should consider Adjusted EBITDA along with other financial performance measures, including various cash flow metrics, net income (loss) and our other U.S. GAAP results. A reconciliation of Adjusted EBITDA to net income (loss) is provided below:

	Fiscal Year Ended			
	August 31, 2018	**August 25, 2017**	**August 26, 2016**	**August 28, 2015**
	(in thousands)			
Net loss	$ 119,463	$ (7,795)	$ (19,960)	$ (46,451)
Share-based compensation expense	10,558	5,364	3,872	6,132
Amortization of intangible assets	6,130	11,939	13,368	30,829
Interest expense, net	19,144	29,204	25,575	27,560
Provision for income tax	18,315	9,914	2,444	6,649
Depreciation	20,052	21,300	18,111	19,315
S-1 related costs	812	—	—	—
Investment advisory fees	—	540	—	—
Restructuring	—	457	1,135	1,143
Obsolete inventory related to restructuring	—	372	—	—
Management advisory fees	—	3,000	4,001	4,030
Debt extension costs*	—	1,745	—	—
Loss on early repayment of debt**	—	6,743	—	—
Loss on extinguishment of debt***	—	16,579	—	—
Purchase accounting adjustment****	631	—	—	—
Acquisition-related expenses****	3,435	25	1,611	123
Contingent consideration fair value adjustment****	(3,000)	—	—	—
Valuation adjustment related to prepaid state value-added taxes	—	—	908	—
Misappropriated product shipment	—	—	695	—
In-process research and development charge	—	—	—	1,582
Write-off of public offering expenses	—	—	—	4,388
Storage sale-related legal costs	—	—	—	987
Insurance settlement related to a fiscal 2013 claim	—	—	—	(525)
Adjusted EBITDA	$ 195,540	$ 99,387	$ 51,760	$ 55,762

* Debt extension costs consist of $1.7 million associated with the amendment of our senior secured term loan and revolving credit facility in November 2016.

** Loss on early payment of term loan for principal amount of $61.1 million in June 2017 related to IPO.

*** Consists of $15.2 million loss on extinguishment of long-term debt for principal payment of $151.0 million in August 2017 and a $1.4 million loss on a February 2017 extinguishment.

**** Amounts in fiscal 2018 resulted from the Penguin Computing acquisition in June 2018.

(2) Gross billings to customers consists of product net sales and our gross billings for services. We provide procurement, logistics, inventory management, kitting or packaging services for certain customers. We account for sales from these services on an agency basis (that is, we recognize the fees associated with serving as an agent with no associated cost of sales). We recognize revenue for these arrangements as service revenue, which is determined as a fee for services based on material procurement costs. See Note 1(d) to our consolidated financial statements.

(3) We calculate days sales outstanding as (i) accounts receivable outstanding as of the period end divided by (ii) gross billings to customers for the period divided by the number of days in the period.

(4) We calculate inventory turns as (i) cost of sales plus cost of purchased materials—service for the period, on an annualized basis (i.e., multiplied by four and then divided by the number of quarters in the period) divided by (ii) inventory as of the period end.

(5) We calculate days payables outstanding as (i) accounts payable outstanding as of the period end divided by (ii) (x) cost of sales plus cost of purchased materials—service for the period divided by (y) the number of days in the period.

	As of			
	August 31, 2018	August 25, 2017	August 26, 2016	August 28, 2015
	(in thousands)			
Consolidated Balance Sheet Data:				
Cash and cash equivalents	$ 31,375	$ 22,436	$ 58,634	$ 68,094
Working capital	226,264	107,115	90,095	98,074
Total assets	672,762	480,028	458,655	564,707
Long-term debt	184,190	154,450	225,587	234,617
Total shareholders' equity (deficit)	187,128	82,396	(1,237)	8,639

Item 7. 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 the condensed consolidated financial statements and the notes to those statements included elsewhere in this Annual Report on Form 10-K. This discussion contains forward looking statements that involve risks and uncertainties. Our actual results could differ materially from those contained in these forward-looking statements due to a number of factors, including those discussed below and elsewhere in this report. See also "Cautionary Note Regarding Forward-Looking Statements" at the beginning of this report.

We use a 52- to 53-week fiscal year ending on the last Friday in August. Unless the context indicates otherwise, whenever we refer in this report to a particular year, with respect to ourselves, we mean the fiscal year ending in that particular calendar year. Financial information for two of our subsidiaries SMART Brazil and SMART do Brazil is included in our consolidated financial statements on a one-month lag because their fiscal years begin August 1 and end July 31.

Overview

We are a global leader in specialty memory solutions, serving the electronics industry for over 25 years. We have a leading market position worldwide, as measured by revenue, in specialty memory where we work closely with OEM customers to develop solutions, which incorporate customer-specific requirements. Our products are designed-in by OEMs in the networking, enterprise storage, telecom, industrial and other such vertical markets. In addition, as part of our global business, we have established a leading market position, as measured by market share, in Brazil as the largest in-country manufacturer of memory for desktops, notebooks and servers, as well as mobile memory for smartphones. As a result of our acquisition of Penguin Computing, Inc., or Penguin, in June 2018 and the creation of a new business unit, SMART Specialty Compute & Storage Solutions, or SCSS, we have expanded our serviceable markets into areas requiring specialized computing platforms in artificial intelligence and machine learning, advanced modeling and high performance computing serving a broad base of enterprise and government customers. Additionally, in the fourth quarter of fiscal 2018, we began a new business in Brazil to focus on battery assembly for smartphones which we expect will contribute to revenue in fiscal 2019. We believe our customers rely on us as a strategic supplier due to our application-specific products, quality and technical support, our global footprint and, in Brazil, our ability to provide locally manufactured products. We also provide customized, integrated supply chain services to certain OEM customers to assist them in the management and execution of their procurement processes.

Our business was originally founded in 1988 as SMART Modular, which became a publicly traded company in 1995. In 1999, SMART Modular was acquired by Solectron and operated as its subsidiary. In 2002, we acquired a memory module manufacturing company in Brazil to expand our global footprint and our manufacturing capabilities. In 2004, a group of private equity investors acquired our business from Solectron, and we began to operate our business as SMART Worldwide. SMART Worldwide became a publicly traded company in 2006 and operated independently until it was acquired by investment funds affiliated with Silver Lake Partners and Silver Lake Sumeru (collectively Silver Lake) in August 2011 (the Acquisition).

In May 2017, we completed our IPO in which we issued and sold 6,095,000 ordinary shares, including 795,000 ordinary shares sold pursuant to the full exercise of the underwriters' over-allotment option, at a price of $11.00 per share. We received aggregate proceeds of $63.5 million from the sale of ordinary shares, net of underwriters' discounts and commissions, but before deducting offering expenses of approximately $2.7 million. In June 2017, we used the net proceeds to make a mandatory prepayment of $61.1 million aggregate principal amount of our outstanding term loans under the Amended Credit Agreement.

In our specialty memory solutions business, we focus on design and manufacture of application-specific products, technical support and value-added testing services that differ from the core focus of standard memory module providers. We collaborate closely with our global OEM customers throughout their design process and across multiple projects to create solutions for demanding applications with differentiated requirements, such as specific form factors, higher density, lower power, specific firmware or greater durability and reliability compared to standard solutions. We target opportunities where we believe we can be a primary supplier of longer-lifecycle solutions to OEM customers for diverse and growing end markets within the networking, communications, storage, industrial, medical and automotive industries. In this business, we offer an extensive portfolio of over 2,000 products, which includes all generations of DRAM, as well as embedded and removable Flash, enterprise memory and hybrid volatile and non-volatile memory solutions. We also offer customized, integrated supply chain services to enable our customers to manage supply chain planning and execution, which reduces costs and increases productivity. Our supply chain services are based on our proprietary software platform that we developed and integrated with our customers' respective procurement management systems as well as our suppliers' distribution management systems.

With our SCSS business, we have expanded our serviceable markets into areas requiring specialized computing platforms in artificial intelligence, or AI, and machine learning, advanced modeling and high performance computing. Through SCSS, we design, manufacture and sell specialty compute and storage systems to a broad base of enterprise and government customers and government contractors. SCSS also offers a comprehensive portfolio of hardware and software products including solutions based on the Open Compute Project, or OCP. Penguin Computing products include Linux-based servers, software, integrated turn-key clusters, enterprise-grade storage, and bare metal high performance computing, or HPC, all available in hardware or cloud-based solutions via Penguin Computing® On-Demand™ (POD™).

Since 2002, when we commenced our operations in Brazil, we have invested over $210 million to build and improve our advanced manufacturing facilities and have assembled and trained a staff of over 620 employees, who comprise many of the leading semiconductor technology professionals in the country. In Brazil, we process imported wafers and cut, package and test them to create memory components used to manufacture modules and other memory and Flash-based products. We have a strategic, long-term relationship with a global memory wafer supplier that has provided us with a stable source of competitively priced wafers for the Brazilian market and provides our supplier with access to that market through our in-country infrastructure and capabilities.

Our business in Brazil has historically focused on DRAM components and modules for desktops, notebooks and servers, where local content and tax regulations provide substantial financial incentives to our customers to procure locally manufactured memory products, particularly when they are made with locally processed components. We have leveraged our experience and success in these markets to expand into mobile memory, primarily for smartphones, which include eMMC and eMCP products, where additional local content requirements and tax incentives have been introduced. In fiscal 2018, 2017 and 2016, these mobile memory products accounted for 68%, 67% and 65%, respectively, of our net sales in Brazil. Based on industry reports of expected unit sales for mobile phones in Brazil, taking into account our average selling price of approximately $28.17 per eMCP for mobile memory during the full fiscal year 2018, we believe that the total addressable market for locally produced mobile memory for mobile phones in Brazil will reach approximately $765 million by 2020. We have also demonstrated our ability to service the smartphone market in Brazil as we are now qualified at seven of the top ten mobile vendors in Brazil representing, according to industry data, over 94% of the mobile phones sold in Brazil in calendar 2017. With local content requirements for various IT products increasing, we believe that our local manufacturing capabilities provide a valuable and differentiated offering to our OEM customers in Brazil. We also believe that our long-term relationships with many of these customers as the largest supplier of locally manufactured memory products provides us with visibility for our Brazilian business.

We began participating in Brazil's PPB/IT Program in February 2011. The PPB/IT Program is intended to promote local content by allowing qualified PPB/IT Program companies to sell certain IT products with a reduced rate of IPI as compared to the rate that is required to be collected by non-qualified suppliers. The PPB/IT Program provides an incentive for certain customers to purchase from us because our sales will not be subject to the regular level of IPI. In order to receive the intended treatment as a PPB/IT Program supplier, our subsidiary SMART do Brazil is required to invest in research and development activities conducted in Brazil in an amount equal to 4% of its gross annual sales revenues reduced by the following: the cost of raw materials qualified as products eligible for the PPB/IT Program, including the ICs that are purchased from our other Brazilian subsidiary, SMART Brazil, and that are used to make memory modules; applicable sales taxes; the value of products exported out of Brazil; and the value of products shipped to the Manaus Free Trade Zone. In August 2014, the government of Brazil enacted legislation extending the PPB/IT Program until 2029 and maintaining the required research and development investment with respect to DRAM modules at 3.00% of adjusted sales through 2029, repealing the previously approved increases to 3.75% in 2015 and 3.50% in 2016 through 2019.

In 2013, the EU, later joined by Japan, requested the establishment of a panel within the WTO to determine whether certain measures enacted by the Brazilian government concerning tax incentives and local content requirements for the automotive and several other industries including the IT industry and including PADIS, the PPB/IT Program and Lei do Bem, are inconsistent with WTO rules. On August 30, 2017 the WTO panel released a report in which the panel concluded, among other things, that the tax exemptions, reductions and suspensions granted for the automotive, IT and other industries amount to subsidies that are inconsistent with the principles of the various WTO agreements, and the panel recommended that Brazil withdraw these subsidies. The parties all appealed to the report's findings and hearings on the appeals were held in June 2018. Government officials in Brazil have expressed their intent to continue to dispute the panel's report and, if necessary, to restructure the incentives to be consistent with the WTO principles in order to continue to support local industry. There can be no assurance, however, that, if needed, the programs will ultimately be restructured and implemented or, if implemented, whether the restructured programs will provide the same level of support as is currently in place. While we cannot predict the outcome of the appeals or the impact of the WTO's report, this recommendation could result in significant adverse changes to the local content rules and incentives available to us and our customers in Brazil. Any suspension, early termination or other adverse change in the local content requirements could significantly reduce the demand for, and the profit margins on, our products in Brazil, and would have a material adverse effect on our business, results of operations and financial condition.

A major corruption scandal involving Brazil's largest energy company, Petrobras, began to unfold in 2014, and by 2015 contributed to a significant decrease in the value of the Brazilian real, which in turn led to a substantial downturn in the Brazilian economy and a substantial rise in unemployment. Our net sales in Brazil decreased from $407.4 million in fiscal 2014 to $245.5 million in fiscal 2016. While economic conditions in Brazil remain challenging, net sales in Brazil increased to $798.3 million in fiscal 2018.

We generated net sales of $1,288.8 million, $761.3 million and $534.4 million in fiscal 2018, 2017 and 2016, respectively, with only 4% of the fiscal 2018 revenue being attributable to the Penguin acquisition which occurred in the fourth quarter. Our net sales grew 69% in fiscal 2018 over fiscal 2017 and increased 42% in fiscal 2017 over fiscal 2016. Our net income (loss) was $119.5 million, ($7.8) million and $20.0 million in fiscal 2018, 2017 and 2016, respectively. Our income from operations was $170.2 million, $53.9 and $6.2 million in fiscal 2018, 2017 and 2016, respectively.

Our global, diversified customer base includes over 450 end customers, such as Cisco, Samsung, HPE, Dell and LG. Our top ten end customers, five of which have been our end customers for over a decade, accounted for 84% of our net sales, including sales to contract manufacturers or ODMs at the direction of such end customers, in fiscal 2018. Of our end customers, Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; Cisco accounted for 12%, 15% and 19% of net sales in fiscal 2018, 2017 and 2016, respectively; Lenovo accounted for 11%, 11% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; and Dell accounted for 10% of net sales in fiscal 2018. Direct sales to Samsung accounted for 34%, 19% and 13% of net sales in fiscal 2018, 2017 and 2016, respectively; direct sales to Flex accounted for 13%, 14% and 17% of net sales in fiscal 2018, 2017 and 2016, respectively; and direct sales to Hon Hai accounted for 13% and 11% of net sales in fiscal 2017 and 2016, respectively. During these periods, no other customers accounted for more than 10% of our net sales. Of the $1,288.8 million of net sales in fiscal 2018, 62% were generated in Brazil, 18% were generated in Asia, 18% were generated in North America and 2% were generated in Europe. Of the $761.3 million of net sales in fiscal 2017, 52% were generated in Brazil, 23% were generated in Asia, 21% were generated in North America and 4% were generated in Europe. For further geographic information regarding our net sales and property and equipment, net, see Note 11 to our consolidated financial statements.

Components of Operating Results

Net Sales

We generate product revenues predominantly from sales of our solutions, which include memory components and modules and specialty compute and storage products, to OEMs, as well as end users that compete in the computing, networking, communications, storage, aerospace, defense, mobile and industrial markets. Sales of our products are made primarily pursuant to purchase orders and are not based on long-term supply agreements. We generate service revenue by providing procurement, logistics, inventory management, temporary warehousing, kitting and packaging services. Our net sales are substantially dependent upon demand in the end markets for our customers' products and fluctuations in end-user demand can have a rapid and material effect on our net sales. Furthermore, sales to relatively few customers have accounted for, and we expect for the foreseeable future will continue to account for, a significant percentage of our net sales.

Cost of Sales

The most significant components of cost of sales are materials, fixed manufacturing costs, labor, depreciation, freight and customs charges. Increases in capital expenditures may increase our future cost of sales due to higher levels of depreciation expense. Cost of sales also includes any inventory write-downs. We have in the past, and may in the future, write down inventory for a variety of reasons, including obsolescence, excess quantities and declines in market value below our cost. A significant percentage of our cost of sales consists of the cost of DRAM and Flash components and wafers. While we have historically received competitive pricing and have had consistent sources of supply for these supplies, we do not have agreements that provide us with fixed pricing or guarantees of supply. Increases in DRAM pricing typically improve our margins, at least in the short term and particularly in our operations in Brazil, as we consume previously purchased inventory. However, declines in DRAM pricing often require us to reduce our prices even as we consume higher priced DRAM inventory, thereby reducing our margins.

Gross Profit

Gross profit and gross margin has been and will continue to be affected by a variety of factors, including the average sales prices of our products, manufacturing and overhead costs, the mix of products sold and our ability to leverage our existing infrastructure as we continue to grow. We expect our gross margins to fluctuate over time depending on the factors described above.

Operating Expenses

Our operating expenses consist of research and development expense, selling, general and administrative expense and management advisory fees. Personnel costs are the most significant component of operating expenses.

Research and development expense. Research and development expense consists primarily of personnel costs, consulting costs, allocated overhead and other costs to support our development activities. To date, we have expensed all research and development costs as incurred. We expect research and development expense to increase in absolute dollars as we continue to invest in our research and product development efforts to enhance our product capabilities and access new customer markets, although such expense may fluctuate as a percentage of total net sales. In order to qualify for certain tax incentives under PADIS and PPB/IT Program in Brazil, we are required to expend a minimum amount on research and development in Brazil.

Selling, general and administrative expense. Sales and marketing expense consists primarily of personnel costs, sales commission costs and allocated overhead. We expense sales commission costs as incurred. Sales and marketing expense also includes costs for recruiting and training channel partners, market development programs, promotional and other marketing activities, travel, office equipment and outside consulting costs. We expect sales and marketing expense to increase in absolute dollars as we expand our sales and marketing headcount in all markets and expand our international operations, although such expense may fluctuate as a percentage of net sales.

General and administrative expense consists primarily of personnel costs, facilities and non-manufacturing equipment costs, allowances for bad debt and other support costs, including utilities, insurance and professional fees. We have experienced and will continue to experience increased general and administrative expenses as a result of being a publicly-traded company, including significant increased legal and accounting costs related to compliance with rules and regulations implemented by the SEC and NASDAQ, as well as additional insurance, investor relations and other costs associated with being a public company.

Interest Expense, Net

Interest expense, net consists primarily of interest expense on our debt obligations.

Other Income (Expense), Net

Other income (expense), net includes gains and losses from foreign currency transactions and other non-operating items.

Provision for (Benefit from) Income Taxes

We record income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in our financial statements or tax returns. In estimating future tax consequences, we generally consider all expected future events other than enactments or changes in the tax law or rates. We provide valuation allowances when necessary to reduce deferred tax assets to the amount expected to be realized.

We recognize a tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. We then measure the tax benefits recognized in the financial statements from such positions based on the largest benefit that has a greater than 50% likelihood of being realized upon settlement. In the event that we recognize any unrecognized tax benefits, the effective tax rate will be affected. If recognized, approximately $1.6 million of unrecognized tax benefit would impact the effective tax rate at August 31, 2018. Although we believe our estimates are reasonable, we cannot assure that the final tax outcome of these matters will be the same as these estimates. We update these estimates quarterly based on factors such as changes in facts or circumstances, changes in tax law, new audit activity and effectively settled issues.

We follow specific and detailed guidelines in each tax jurisdiction regarding the recoverability of any tax assets recorded on the balance sheet and provide necessary valuation allowances as required. Future realization of deferred tax assets ultimately depends on the existence of sufficient taxable income of the appropriate character (for example, ordinary income or capital gain) within the carryback or carryforward periods available under the tax law. We regularly review our deferred tax assets for recoverability based on historical taxable income, projected future taxable income, the expected timing of the reversals of existing temporary differences and tax planning strategies. Our judgments regarding future profitability may change due to many factors, including future market conditions and our ability to successfully execute our business plans and/or tax planning strategies. Should there be a change in our ability to recover our deferred tax assets, our tax provision would increase or decrease in the period in which the assessment is changed.

Results of Operations

The following is a summary of our results of operations for the periods presented. The period-to-period comparison of results is not necessarily indicative of results for future periods.

	Fiscal Year Ended					
	August 31, 2018	% of sales*	August 25, 2017	% of sales*	August 26, 2016	% of sales*
Consolidated Statement of Operations Data:						
Net sales	$1,288,821	100%	$761,291	100%	$534,423	100%
Cost of sales (1)(2)	997,235	77%	599,041	79%	427,491	80%
Gross profit	291,586	23%	162,250	21%	106,932	20%
Operating expenses:						
Research and development (1) (2)	39,824	3%	38,160	5%	38,116	7%
Selling, general and administrative (1) (2)	84,541	7%	66,759	9%	57,495	11%
Change in estimated fair value of acquisition-related contingent consideration	(3,000)	0%	—	0%	—	0%
Management advisory fees	—	0%	3,000	0%	4,001	1%
Restructuring	—	0%	457	0%	1,135	0%
Total operating expenses	121,365	9%	108,376	14%	100,747	19%
Income from operations	170,221	13%	53,874	7%	6,185	1%
Other income (expense):						
Interest expense, net	(19,144)	(1%)	(29,204)	(4%)	(25,575)	(5%)
Other income (expense), net	(13,299)	(1%)	(22,551)	-3%	1,874	0%
Total other expense	(32,443)	(3%)	(51,755)	(7%)	(23,701)	(4%)
Income (loss) before income taxes	137,778	11%	2,119	0%	(17,516)	(3%)
Provision for income taxes	18,315	1%	9,914	1%	2,444	0%
Net income (loss)	$ 119,463	9%	$ (7,795)	(1%)	$ (19,960)	(4%)
Earnings per share:						
Basic	$ 5.42		$ (0.49)		$ (1.44)	
Diluted	$ 5.17		$ (0.49)		$ (1.44)	
Shares used in computing earnings per share:						
Basic	22,051		15,785		13,841	
Diluted	23,119		15,785		13,841	

* Summations may not compute precisely due to rounding.

(1) Includes share-based compensation expense as follows:			
Cost of sales	$ 1,335	$ 636	$ 461
Research and development	1,460	655	725
Selling, general and administrative	7,763	4,073	2,686
(2) Includes amortization of intangible assets expense as follows:			
Cost of sales	$ 7	$ —	$ —
Research and development	987	4,897	4,897
Selling, general and administrative	5,136	7,042	8,471

Comparison of the Years Ended August 31, 2018 and August 25, 2017

	Fiscal Year Ended		Change	
	August 31, 2018	August 25, 2017	Amount	%
	(in thousands, except percentages)			
Net sales	$1,288,821	$ 761,291	$ 527,530	69.3%
Cost of sales [(1)]	997,235	599,041	398,194	66.5%
Gross profit	$ 291,586	$ 162,250	$ 129,336	79.7%
Gross margin	22.6%	21.3%		

(1) Includes share-based compensation expense of $1.3 million and $0.6 million in fiscal 2018 and 2017, respectively.

Net Sales, Cost of Sales and Gross Margin

Net sales increased by $527.5 million, or 69.3%, during fiscal 2018 compared to the prior fiscal year. The increase was primarily due to a 104% increase in sales of mobile memory products in Brazil in fiscal 2018 which was driven in part by new product introductions of higher density eMCP products, a 43% increase in the average selling prices of mobile memory products resulting from increasing mobile density, and an increase in local content requirements from 30% to 50% for mobile memory products for smartphones effective January 1, 2018. Strategic investments to increase production capacity in prior periods helped enable us to meet the increased demand in the Brazil mobile memory market. Our Brazil PC DRAM sales also increased as consumer IC and server demand grew, leading to 94% higher sales, and product mix also positively impacted our average selling prices of modules as they increased 61%. Our Specialty DRAM and Flash sales also increased due to strength in the server, networking and communication markets, leading to 17% and 33% higher sales, respectively, and increases of 60% and 49% in the average selling prices, respectively. The new SCSS business also added $52.5 million of revenue in fiscal 2018.

Cost of sales increased by $398.2 million, or 66.5%, during fiscal 2018 compared to the prior fiscal year, primarily due to an increase of 74% in the cost of materials for the higher level of sales, as well as higher production costs related to the increased revenue and additional costs for the new SCSS business. Included in the cost of sales increase was a favorable foreign exchange impact of $2.0 million due to locally sourced cost of sales in Brazil.

Gross margin increased to 22.6% during fiscal 2018, compared to 21.3% for fiscal 2017, primarily due to higher Brazil mobile memory and specialty DRAM revenue while cost of sales associated with higher density memory modules increased at a lower rate.

Operating Expenses

	Fiscal Year Ended		Change	
	August 31, 2018	August 25, 2017	Amount	%
	(in thousands, except percentages)			
Operating expenses:				
Research and development [(1)] [(2)]	$ 39,824	$ 38,160	$ 1,664	4.4%
Selling, general and administrative [(1)] [(2)]	84,541	66,759	17,782	26.6%
Change in estimated fair value of acquisition-related contingent consideration	(3,000)	—	(3,000)	(100.0%)
Management advisory fees	—	3,000	(3,000)	(100.0%)
Restructuring	—	457	(457)	(100.0%)
Total operating expenses	$ 121,365	$ 108,376	$ 12,989	12.0%

(1) Includes share-based compensation expense as follows:

Research and development	$ 1,460	$ 655	$ 805	122.9%
Selling, general and administrative	7,763	4,073	3,690	90.6%
Total	$ 9,223	$ 4,728	$ 4,495	95.1%

(2) Includes amortization of intangible assets expense as follows:

Research and development	$ 987	$ 4,897	$ (3,910)	(79.8%)
Selling, general and administrative	5,136	7,042	(1,906)	(27.1%)
Total	$ 6,123	$ 11,939	$ (5,816)	(48.7%)

Research and Development Expense

Research and development, or R&D, expense increased by $1.7 million in fiscal 2018 compared to the prior fiscal year mainly due to higher costs from our new SCSS business, as well as higher outside services and personnel-related expenses, partially offset by lower intangible amortization expense as some intangible assets became fully amortized. Included in the R&D expense increase was a favorable foreign exchange impact of $0.7 million.

Selling, General and Administrative Expense

Selling, general and administrative, or SG&A, expense increased by $17.8 million, or 26.6%, during fiscal 2018, which was our first full year as a public company, compared to the prior fiscal year. The increase was primarily due to higher expenses from our new SCSS business (including $3.4 million acquisition-related expenses), as well as personnel-related, professional and shareholder services expenses, aggregating $19.7 million, partially offset by a $1.9 million net decrease in intangible amortization expense as some intangible assets became fully amortized. Included in the SG&A expense increase was a favorable foreign exchange impact of $0.7 million.

Other Income (Expense)

	Fiscal Year Ended		Change	
	August 31, 2018	August 25, 2017	Amount	%
	(in thousands, except percentages)			
Other income (expense):				
Interest expense, net	$ (19,144)	$ (29,204)	$ 10,060	(34.4%)
Other income (expense), net	(13,299)	(22,551)	9,252	(41.0%)
Total other expense	$ (32,443)	$ (51,755)	$ 19,312	(37.3%)

Interest expense, net decreased $10.1 million, or 34.4%, during fiscal 2018 compared to the prior fiscal year primarily due to $4.7 million lower interest expense resulting from lower principal balances after our 2017 refinancing, as well as $5.1 million lower warrant amortization (i.e., fiscal 2017 expense). Other income (expense), net decreased by $9.3 million primarily due to the non-recurrence of a $23.3 million debt extinguishment loss in fiscal 2017, partially offset by a $13.5 million currency loss mainly in Brazil.

Provision for Income Taxes

	Fiscal Year Ended		Change	
	August 31, 2018	August 25, 2017	Amount	%
	(in thousands, except percentages)			
Provision for income taxes	$ 18,315	$ 9,914	$ 8,401	84.7%

Provision for income taxes increased by $8.4 million, or 84.7% during fiscal 2018 compared to the prior fiscal year primarily due to higher income in non-U.S. jurisdictions subject to tax.

Our Malaysian subsidiary was approved for income tax holidays for the operations of its Pioneer business and Global Supply Chain (GSC) business. We have received approvals for a continuation of these tax incentives beyond calendar 2018, subject to certain operating conditions. The impact of these tax incentives will be recorded in the period in which they become effective. In general, these future tax holidays will have tax rates greater than our prior approved tax holidays, thus our effective income tax rate in the future may be higher depending on a combination of our overall and jurisdictional profitability.

Comparison of the Years Ended August 25, 2017 and August 26, 2016

	Fiscal Year Ended		Change	
	August 25, 2017	August 26, 2016	Amount	%
	(in thousands, except percentages)			
Net sales	$ 761,291	$ 534,423	$ 226,868	42.5%
Cost of sales (1)	599,041	427,491	171,550	40.1%
Gross profit	$ 162,250	$ 106,932	$ 55,318	51.7%
Gross margin	21.3%	20.0%		

(1) Includes share-based compensation expense of $0.6 million and $0.5 million in fiscal 2017 and 2016, respectively.

Net Sales, Cost of Sales and Gross Margin

Net sales increased by $226.9 million, or 42.5%, during fiscal 2017 compared to the prior fiscal year. The increase was primarily due to a 67% increase in sales of mobile memory products in Brazil in fiscal 2017, which was driven in part by new product introductions of higher density eMCP products, the increase in local content requirements to 50% for mobile memory products for smartphones effective January 1, 2017, and a 36% increase in the average selling prices of mobile memory products in Brazil during fiscal 2017 due to density changes. Strategic investments to increase production capacity in prior periods helped enable us to meet the increased demand in the Brazil mobile memory market. Our Brazil PC DRAM and our specialty DRAM sales also increased and were positively impacted by overall strength in the worldwide DRAM market, leading to 53% and 44% higher sales and 6% and 24% increases in the average selling prices during fiscal 2017, respectively, compared to the prior fiscal year, as well as strength in the server, networking, communications and storage markets.

Cost of sales increased by $171.6 million, or 40.1%, during fiscal 2017 compared to the prior fiscal year, primarily due to an increase of 43% in the cost of materials for the higher level of sales, as well as higher depreciation in Brazil due to the technology transition from third generation double-data-rate (“DDR3”) Fine-pitch Ball Grid Array (“FBGA”) packaging to fourth generation double-data-rate (“DDR4”) flip chip and higher production costs related to the increased revenue. Included in the cost of sales increase was an unfavorable foreign exchange impact of $5.4 million due to locally sourced cost of sales in Brazil.

Gross margin increased to 21.3% during fiscal 2017, compared to 20.0% for fiscal 2016, primarily due to higher Brazil mobile memory and specialty DRAM revenue while cost of sales associated with higher density memory modules increased at a lower rate.

Operating Expenses

	Fiscal Year Ended		Change	
	August 25, 2017	August 26, 2016	Amount	%
	(in thousands, except percentages)			
Operating expenses:				
Research and development (1) (2)	$ 38,160	$ 38,116	$ 44	0.1%
Selling, general and administrative (1) (2)	66,759	57,495	9,264	16.1%
Management advisory fees	3,000	4,001	(1,001)	(25.0%)
Restructuring	457	1,135	(678)	(59.7%)
Total operating expenses	$ 108,376	$ 100,747	$ 7,629	7.6%
(1) Includes share-based compensation expense as follows:				
Research and development	$ 655	$ 725	$ (70)	(9.7%)
Selling, general and administrative	4,073	2,686	1,387	51.6%
Total	$ 4,728	$ 3,411	$ 1,317	38.6%
(2) Includes amortization of intangible assets expense as follows:				
Research and development	$ 4,897	$ 4,897	$ —	0.0%
Selling, general and administrative	7,042	8,471	(1,429)	(16.9%)
Total	$ 11,939	$ 13,368	$ (1,429)	(10.7%)

Research and Development Expense

Research and development, or R&D, expense was essentially flat in fiscal 2017 compared to the prior fiscal year as higher personnel-related expenses were offset by lower outside services. Included in the R&D expense increase was an unfavorable foreign exchange impact of $1.5 million.

Selling, General and Administrative Expense

Selling, general and administrative, or SG&A, expense increased by $9.3 million, or 16.1%, during fiscal 2017 compared to the prior fiscal year. The increase was primarily due to personnel-related, facilities, professional and shareholder services expenses, aggregating $9.0 million, as well as $1.7 million in debt extension costs, partially offset by a $1.4 million decrease in intangible amortization expense as some intangible assets became fully amortized. Included in the SG&A expense increase was an unfavorable foreign exchange impact of $1.6 million.

Other Income (Expense)

	Fiscal Year Ended		Change	
	August 25, 2017	August 26, 2016	Amount	%
	(in thousands, except percentages)			
Other income (expense):				
Interest expense, net	$ (29,204)	$ (25,575)	$ (3,629)	14.2%
Other income (expense), net	(22,551)	1,874	(24,425)	(1303.4%)
Total other expense	$ (51,755)	$ (23,701)	$ (28,054)	118.4%

Interest expense, net increased $3.6 million, or 14.2%, during fiscal 2017 compared to the prior fiscal year primarily due to additional debt discount amortization and interest expense related to our debt extension. Other income (expense), net decreased by $24.4 million primarily due to a $15.2 million loss on extinguishment of our long-term debt, a $6.7 million loss on early debt repayment, a $1.4 million loss on a February 2017 debt extinguishment, and an $0.8 million currency loss (mainly in Brazil).

Provision for Income Taxes

	Fiscal Year Ended		Change	
	August 25, 2017	August 26, 2016	Amount	%
	(in thousands, except percentages)			
Provision for income taxes	$ 9,914	$ 2,444	$ 7,470	305.6%

Provision for income taxes increased by $7.5 million, or 305.6% during fiscal 2017 compared to the prior fiscal year primarily due to higher income in non-U.S. jurisdictions subject to tax.

Liquidity and Capital Resources

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
		(in thousands)	
Cash provided by (used in) operating activities	$ 67,907	$ (933)	$ 15,050
Cash used in investing activities	(67,749)	(18,027)	(13,369)
Cash provided by (used in) financing activities	7,944	(16,975)	(10,914)
Effect of exchange rate changes on cash and cash equivalents	837	(263)	(227)
Net increase (decrease) in cash and cash equivalents	$ 8,939	$ (36,198)	$ (9,460)

At August 31, 2018, we had cash and cash equivalents of $31.4 million, of which approximately $21.7 million was held outside of the United States.

On May 30, 2017, we completed our IPO and raised proceeds, net of underwriting commissions and discounts and other offering costs, of approximately $60.8 million. On June 2, 2017, we used the net proceeds to make a mandatory prepayment of $61.1 million aggregate principal amount of our outstanding term loans under the Amended Credit Agreement.

In June 2018, we acquired Penguin for a purchase price of approximately $45 million and assumed approximately $32.3 million of Penguin's outstanding indebtedness. We financed the acquisition with net proceeds from the $60 million Incremental Amendment as defined below.

We expect that our existing cash and cash equivalents, line of credit and cash generated by operating activities will be sufficient to fund our operations for at least the next twelve months. Our principal uses of cash and capital resources are debt service requirements as described below, capital expenditures, R&D expenditures and working capital requirements. We expect that future capital expenditures will focus on expanding capacity of our Brazilian operations, expanding our R&D activities, manufacturing equipment upgrades and/or acquisitions and IT infrastructure and software upgrades. Cash and cash equivalents consist of funds held in demand deposit accounts and money market funds. We do not enter into investments for trading or speculative purposes.

Operating Activities

During fiscal 2018, cash provided by operating activities was $67.9 million. The primary factors affecting our cash flows during this period were a $119.5 million net income and $34.7 million of non-cash related expenses, partially offset by an $86.3 million change in our net operating assets and liabilities. The $86.3 million change in net operating assets and liabilities consisted of increases of $55.3 million in accounts receivable, $42.4 million in inventory, and $8.7 million in prepaid expenses and other assets, offset by increases of $17.5 million in accounts payable and $2.6 million in accrued expenses and other liabilities. The increase in accounts receivable was due to lower purchases under our Receivables Purchasing Agreement (terminated at the end of fiscal 2017), while the increase in inventory was due to both higher sales forecast and higher cost of materials resulting from increased DRAM prices.

During fiscal 2017, cash used in operating activities was $0.9 million. The primary factors affecting our cash flows during this period were a $61.2 million change in our net operating assets and liabilities and a $7.8 million net loss, partially offset by $68.1 million of non-cash related expenses. The $61.2 million change in net operating assets and liabilities consisted of increases of $40.4 million in accounts receivable and $21.9 million in inventory, and a decrease of $10.6 million in accounts payable, offset by an increase of $11.7 million in accrued expenses and other liabilities. The increase in accounts receivable was due to lower purchases under our Receivables Purchasing Agreement, while the increase in inventory was due to both higher sales forecast and higher cost of materials resulting from increased DRAM prices.

Investing Activities

Net cash used in investing activities during fiscal 2018 was $67.7 million consisting primarily of $42.3 million for the Penguin acquisition, net of cash acquired, and $25.7 million used for purchases of property and equipment. Net cash used in investing activities during fiscal 2017 was $18.0 million consisting primarily of $18.7 million used for purchases of property and equipment, offset by $0.7 million of proceeds from sale of property and equipment.

Financing Activities

Net cash provided by financing activities during fiscal 2018 was $7.9 million, consisting primarily of $59.4 million of net proceeds from issuance of long-term debt (due to the Incremental Amendment) and $7.5 million of proceeds from option exercises, offset by $24.3 million of long-term debt payments, $32.3 million of Penguin's line of credit assumed from the acquisition, $1.6 million payment of IPO costs and $0.8 million in fees paid for revolving line of credit financing. Net cash used in financing activities during fiscal 2017 was $17.0 million, consisting of a $151.9 million payment for extinguishment of long-term debt and debt extension, $61.1 million early payment on term loans, $19.7 million long-term debt payments for both the Amended Credit Agreement and the BNDES Credit Agreements, as well as $3.2 million in fees paid for revolving line of credit financing, offset by $157.0 million of proceeds from issuance of long-term debt and $62.4 million of proceeds from our IPO.

Contractual Obligations

Our contractual obligations as of August 31, 2018 are set forth below:

	Payments due by Period				
	1 year	2-3 years	4-5 years	After 5 years	Total
			(in millions)		
Amended Credit Agreement Debt*	$ 22.5	$ 45.0	$ 141.0	$ —	$ 208.5
Interest expense in connection with the Amended Credit Agreement	17.4	28.9	11.0	—	57.3
BNDES Credit Agreements	6.9	3.5	—	—	10.4
Interest expense in connection with the BNDES Credit Agreements	0.3	0.1	—	—	0.4
Operating leases	3.8	6.6	3.9	4.1	18.4
Non-cancellable product purchase commitments	110.9	—	—	—	110.9
Total contractual obligations	$ 161.8	$ 84.1	$ 155.9	$ 4.1	$ 405.9

* The borrowers were granted, subsequent to year-end, a holiday from the obligation to make repayments of principal in fiscal 2019.

As of August 31, 2018, we had gross unrecognized tax benefits of $16.8 million which includes penalties and interest. Approximately $1.6 million has been recorded as a noncurrent liability. At this time, we are unable to make a reasonably reliable estimate of the timing of payments in individual years in connection with these tax liabilities; therefore, such amounts are not included in the above contractual obligation table.

Senior Secured Credit Agreement

On August 9, 2017, SMART Worldwide, SMART Modular Technologies (Global), Inc., or Global, and SMART Modular entered into a Second Amended and Restated Credit Agreement (together with all related documents, as amended from time to time including as amended by the Incremental Amendment as defined below, the Amended Credit Agreement) with certain lenders which amended and restated that certain Amended and Restated Credit Agreement dated as of November 5, 2016 (the ARCA), which had amended and restated that certain Credit Agreement dated as of August 26, 2011 (the Original Credit Agreement). The Company's subsidiaries named as borrowers in the Amended Credit Agreement and certain other subsidiaries that entered into a guarantee with respect to the Amended Credit Agreement including Penguin, are collectively referred to as the Loan Parties and together with SMART Malaysia, the Credit Group. The Amended Credit Agreement provides for $165 million of initial term loans (the Initial Term Loans) with a maturity date of August 9, 2022, and $50 million of revolving loans with a maturity date of February 9, 2021 (the Initial Revolver Maturity Date) which revolving loan maturity date automatically extends to February 9, 2022 if the total leverage ratio of the Credit Group is less than 3.0:1.0 on the Initial Revolver Maturity Date. SMART Global Holding is not a party to the Amended Credit Agreement.

On June 8, 2018, SMART Worldwide, Global and SMART Modular entered into an Incremental Facility Agreement (the Incremental Amendment) which provided for incremental term loans under the Amended Credit Agreement in the aggregate amount of $60 million (the Incremental Term Loans) which Incremental Term Loans are on substantially identical terms as the Initial Term Loans. Pursuant to the Incremental Amendment, the borrowers agreed to pay the structuring advisor a $0.6 million fee pursuant to a separate agreement.

The Amended Credit Agreement is jointly and severally guaranteed on a senior basis by certain subsidiaries of Global (excluding, among other subsidiaries, SMART Malaysia). In addition, the Amended Credit Agreement is secured by a pledge of the capital stock of, or equity interests in, most of the subsidiaries of SMART Worldwide (including, without limitation, SMART Malaysia and Penguin) and by substantially all of the assets of the subsidiaries of SMART Worldwide, excluding the assets of SMART Malaysia and certain other subsidiaries.

Covenants. The Amended Credit Agreement contains various representations and warranties and affirmative and negative covenants that are usual and customary for loans of this nature including, among other things, limitations on the Credit Group's ability to engage in certain transactions, incur debt, pay dividends, and make investments. The Amended Credit Agreement also requires that the Credit Group maintain a Secured Leverage Ratio not in excess of 3.5:1.0 as of the end of each fiscal quarter (commencing with the fiscal quarter ending November 24, 2017) and puts restrictions on the Credit Group's ability to retain cash proceeds from the sale of certain assets with net proceeds in excess of $2 million, subject to customary six-month reinvestment rights. The Incremental Amendment prohibited the Credit Group from increasing the borrowings under the Penguin Credit Facility, as defined below, after the Penguin acquisition and required the Credit Group to maintain a minimum amount of liquidity until the Credit Group repaid the Penguin Credit Facility which the Credit Group was required to do within 60 days (or such longer period as agreed to by the Administrative Agent) after the Penguin acquisition. The Incremental Amendment also required the Credit Group to pledge as collateral, all of the capital stock of and substantially all of the assets of Penguin within 60 days after the closing of the Penguin acquisition.

Interest and Interest Rates. Loans under the Amended Credit Agreement accrue interest at a rate per annum equal to an applicable margin plus, at the borrowers' option, either a LIBOR rate, or a base rate. The applicable margin for term loans with respect to LIBOR borrowings is 6.25% and with respect to base rate borrowings is 5.25%. The interest rate on the Initial Term Loans was 8.6%, 7.57% and 8.25% as of August 31, 2018, August 25, 2017 and August 26, 2016, respectively. The interest rate on the Incremental Term Loans was 8.58% as of August 31, 2018.

The applicable margin for revolving loans adjusts every quarter based on the Secured Leverage Ratio for the most recent fiscal quarter with the applicable margin for revolving loans with respect to LIBOR borrowings ranging from 3.75% to 4.00% and the applicable margin for revolving loans with respect to base rate borrowings ranging from 2.75% to 3.00%. Prior to November 5, 2016, the effective date of the ARCA, the applicable margin was adjusted based on the Secured Net Leverage Ratio.

Interest on base rate loans is payable on the last day of each calendar quarter. Interest on LIBOR-based loans is payable every one, two, three, six, nine or twelve months after the date of each borrowing, dependent on the particular interest rate period selected with respect to such borrowing.

Principal Payments. The Amended Credit Agreement requires quarterly repayments of principal under the Initial Term Loans equal to 2.5% of $165 million, or $4.1 million per fiscal quarter and, commencing on November 30, 2018, quarterly repayments of principal under the Incremental Term Loans equal to 2.5% of $60 million, or $1.5 million per fiscal quarter. During fiscal 2018 and 2017, the borrowers made scheduled principal payments of $16.5 million and $11.6 million, respectively.

Prepayments. The borrowers have the right at any time to make optional prepayments of the principal amounts outstanding under the Amended Credit Agreement provided that prepayments of principal which are voluntary or are made in connection with certain transactions will be subject to prepayment premiums of 3%, 2% and 1% during the first, second and third years, respectively, after the effective date of the Amended Credit Agreement; provided that such prepayment premiums were not applicable to prepayments of the Incremental Term Loans during the two months following the closing of the Penguin acquisition.

The Amended Credit Agreement also requires certain mandatory prepayments of principal whereby the borrowers must prepay outstanding loans, subject to certain exceptions, which include, among other things:

- 75% of excess cash flow on a semi-annual basis if the total leverage ratio is greater than 1.5:1.0, (ii) 50% of excess cash flow on a semi-annual basis if the total leverage ratio is greater than 1.0:1.0 but less than or equal to 1.5:1.0 and (iii) 25% of excess cash flow on an annual basis if the secured leverage ratio is less than or equal to 1.0:1.0., which amounts will be reduced by any permitted voluntary prepayments of principal made in the applicable fiscal year;
- 100% of the net proceeds of certain asset sales or other dispositions of property of Global or any of its restricted subsidiaries, subject to limited rights to reinvest the proceeds within six months; and
- 100% of the net cash proceeds of incurrence of certain debt by Global or any of its restricted subsidiaries, other than proceeds from certain debt to be incurred under the Amended Credit Agreement.

No mandatory prepayments were required for fiscal 2018 or 2017.

On November 29, 2016, the Credit Group received all required approvals from the lenders and entered into Amendment No. 4 to the Credit Agreement (Amendment 4) dated as of November 5, 2016 (the Amendment 4 Effective Date) which, among other things, adopted the ARCA. Pursuant to Amendment 4, the borrowers agreed to pay the Administrative Agent a fee in the amount of $1 million pursuant to a separate agreement and to pay a fee in the form of an additional term loan, in the amount of $5 million for the ratable account of the term lenders party to Amendment 4. Additionally, SMART Global Holdings was obligated to make an aggregate equity investment of at least $9.9 million in cash in Global, and SMART Global Holdings was obligated to issue 3,467,571 warrants (the Lender Warrants) to purchase 20% on a pro forma basis, of the then outstanding ordinary shares of SMART Global Holdings, to the term lenders party to Amendment 4, which Lender Warrants were exercisable at $0.03 per share, with 1,541,143 warrants totaling 10% of SMART Global Holdings' then outstanding shares (the First Tranche Warrants) exercisable immediately and 1,926,428 warrants to purchase an additional 10% of SMART Global Holdings' then outstanding shares (the Second Tranche Warrants), exercisable only if there were balances outstanding under the original term loans at the one year anniversary of the Amendment 4 Effective Date. The relative fair value of the Lender Warrants and the fees payable to the lenders in connection with the ARCA were recorded as debt discount and resulted in additional interest expense over the then amended term of the loan using the effective interest method following debt modification accounting.

Under the terms of the ARCA, the maturity date of the term loans and the revolving loans was extended from August 26, 2017 to August 26, 2019. If there were balances still outstanding on the original term loans at the one year anniversary of the Amendment 4 Effective Date, the borrowers would have been obligated to pay an additional fee to the term lenders of $5 million in cash. In addition, the ARCA increased the quarterly scheduled principal payments of term loans to $3.9 million per quarter to be paid on the last day of each fiscal quarter starting November 25, 2016. Under the ARCA, early mandatory repayments of principle were applied in the reverse order of maturity.

On June 2, 2017, SMART Global Holdings contributed $61.0 million from the proceeds of the IPO, to Global which proceeds Global in turn used to pay down the original term loans as required under the ARCA, resulted in a $6.7 million loss on early repayment of long-term debt. As of August 9, 2017, prior to the one year anniversary of the Amendment 4 Effective Date, the Credit Group entered into the Amended Credit Agreement with new term loans in the aggregate principal amount of $165 million with different lenders and the Second Tranche Warrants were terminated. The proceeds from the Amended Credit Agreement were used to fully repay and refinance the term loans under the ARCA in the principal amount of $151.0 million, which resulted in a write off of $15.2 million of original issue discount and debt issuance costs as an extinguishment loss.

Term loans under the Amended Credit Agreement were issued at a discount of 2.0% of the then outstanding principal amount of $165 million, for a discount of $3.3 million. The Company incurred $8.7 million debt issuance costs upon entering into the Amended Credit Agreement, of which $5.3 million was attributable to the term loans and recorded as a direct reduction to the face amount of the term loans, and $3.4 million was allocated to the revolving line of credit and recorded as a separate asset on the balance sheet. Debt issuance costs and debt discount related to term loans are being amortized to interest expense based on the effective interest rate method over the life of the term loans. Those fees allocated to the revolving line of credit are being amortized to interest expense ratably over the life of the revolving line of credit.

As of August 31, 2018, the outstanding principal balance of all term loans under the Amended Credit Agreement was $208.5 million and there were no outstanding revolving loans. As of August 25, 2017, the outstanding principal balance of term loans under the credit agreement then in effect was $165.0 million and there were no outstanding revolving loans.

On October 2, 2018, after the date of the balance sheet, SMART Worldwide, Global and SMART Modular entered into the Second Amendment to the Amended Credit Agreement (the Second Amendment) which did not become effective until October 25, 2018. As a result of the Second Amendment, the borrowers were granted a holiday from the obligation to make repayments of principal under the Initial Term Loans and the Incremental Term Loans at any time with respect to fiscal 2019. In addition, the borrowers were granted a holiday from the obligation to repay any loans as a result of excess cash flow that would otherwise be due with respect to any period of fiscal 2019.

Penguin Credit Agreement

On June 8, 2018 in connection with the Penguin acquisition, the Company assumed the outstanding balances due under a certain credit agreement dated January 8, 2018 between Penguin and Wells Fargo Capital Finance, LLC (the Penguin Credit Facility) which had an outstanding balance of $32.3 million as of June 8, 2018. In addition, on June 8, 2018, SMART Global Holdings entered into a guarantee with Wells Fargo Capital Finance, LLC (WFCF) whereby SMART Global Holdings guaranteed the repayment and full performance of Penguin under the Penguin Credit Facility. As required under the Incremental Amendment, the Company paid off the outstanding balance under the Penguin Credit Facility in August 2018.

BNDES Credit Agreements

In December 2013, SMART Brazil, entered into a credit facility with the Brazilian Development Bank, or BNDES (such loan the BNDES 2013 Credit Agreement). Under the BNDES 2013 Credit Agreement, a total of R$50.6 million (or $13.5 million) was made available to SMART Brazil for investments in infrastructure, research and development conducted in Brazil and acquisitions of equipment not otherwise available in the Brazilian domestic market. SMART Brazil's obligations under the BNDES 2013 Credit Agreement were guaranteed by Banco Itaú BBA S.A., or Itaú Bank, which guarantee was in turn secured by a guarantee from SMART Brazil and SMART do Brazil and a commitment by SMART Brazil to maintain minimum cash balances with Itaú Bank equal to 11.85% of the maximum aggregate balance of principal, interest and fees outstanding under the BNDES 2013 Credit Agreement. As of August 31, 2018, the committed amount was R$6.0 million (or $1.6 million), which is shown on the Company's consolidated balance sheets as restricted cash in other noncurrent assets.

Approximately half of the available debt under the BNDES 2013 Credit Agreement accrues interest at a fixed rate while the other half accrues interest at a floating rate. The facility under the BNDES 2013 Credit Agreement is a term loan fully amortizing in 48 equal monthly installments beginning on August 15, 2015 with the final principal payment being due on July 15, 2019.

As of August 31, 2018, SMART Brazil's outstanding debt under the BNDES 2013 Credit Agreement was R$12.9 million (or $3.4 million), of which R$6.3 million (or $1.7 million) accrues interest at the fixed rate of 3.5% and R$6.6 million (or $1.7 million) of the debt accrues interest at the floating rate of 0.5% above the TJLP rate published by the Central Bank of Brazil, or BZTJLP (5.0%), combined corresponding to an overall effective interest rate of 5.5% per annum. As of August 25, 2017, SMART Brazil's outstanding debt under the BNDES 2013 Credit Agreement was R$25.6 million (or $8.2 million), of which R$12.6 million (or $4.0 million) accrues interest at the fixed rate of 3.5% and R$13.0 million (or $4.2 million) of the debt accrues interest at the floating rate of 0.5% above the TJLP rate published by the Central Bank of Brazil, or BZTJLP (5.0%), combined corresponding to an overall effective interest rate of 5.5% per annum.

In December 2014, SMART Brazil, entered into a second credit facility with BNDES, referred to as the BNDES 2014 Credit Agreement. The BNDES 2013 Credit Agreement and the BNDES 2014 Credit Agreement are collectively referred to as the BNDES Agreements. Under the BNDES 2014 Credit Agreement, a total of R$52.8 million (or $14.1 million) was made available to SMART Brazil for research and development conducted in Brazil related to integrated circuit (IC) packaging and for acquisitions of equipment not otherwise available in the Brazilian domestic market.

SMART Brazil's obligations under the BNDES 2014 Credit Agreement were also guaranteed by Itaú Bank, which guarantee was in turn secured by a guarantee from SMART Brazil and SMART do Brazil and a commitment by SMART Brazil to maintain minimum cash balances with Itaú Bank equal to 30.31% of the maximum aggregate balance of principal, interest and fees outstanding under the BNDES 2014 Credit Agreement, or approximately R$16.0 million (or $4.3 million) of required cash balances, which is shown on the Company's consolidated balance sheets as restricted cash in other noncurrent assets.

The available debt under the BNDES 2014 Credit Agreement accrues interest at a fixed rate of 4% per annum. The BNDES 2014 Credit Agreement is a term loan fully amortizing in 48 equal monthly installments beginning on August 15, 2016 with the final principal payment being due on July 15, 2020.

In July 2018, SMART Brazil entered into guarantee arrangements with Banco Votorantim S.A. which bank in turn replaced the guarantees of the BNDES Agreements previously issued by Itaú Bank. Itaú Bank approved the guarantee arrangements and returned R$22.0 million (or $5.9 million) of committed balances to SMART Brazil in the first quarter of fiscal 2019.

As of August 31, 2018 and August 25, 2017, SMART Brazil's outstanding debt under the BNDES 2014 Credit Agreement was R$26.4 million (or $7.0 million) and R$39.6 million (or $12.6 million), respectively.

While the BNDES Agreements do not include any financial covenants, they contain affirmative and negative covenants customary for loans of this nature, including, among other things, an obligation to comply with all laws and regulations; a right for BNDES to terminate the loan in the event of a change of effective control; and a prohibition against the disposition or encumbrance, without BNDES consent, of intellectual property developed with the funds from the loans. The BNDES 2013 Credit Agreement includes an obligation to draw down the entire loan within specified periods of time or pay unused commitment fees of 0.1%. The BNDES 2014 Credit Agreement required a loan fee of 0.3% of the total face amount of the loan facility.

The future minimum principal payments under the Amended Credit Agreement and the BNDES Agreements as of August 31, 2018 are (in thousands):

Fiscal year ending August:	Amended Credit Agreement*	BNDES	Total
2019	$ 22,500	$ 6,937	$ 29,437
2020	22,500	3,515	26,015
2021	22,500	—	22,500
2022	141,000	—	141,000
	$ 208,500	$ 10,452	$ 218,952

* The borrowers were granted, subsequent to year-end, a holiday from the obligation to make repayments of principal in fiscal 2019.

Management Agreement

Under the Management Agreement, we recorded quarterly fees of $1.0 million plus out-of-pocket expenses. The Management Agreement was terminated upon the completion of our IPO on May 30, 2017. As of August 31, 2018, there are no amounts due and payable under the Management Agreement.

Off-Balance Sheet Arrangements

As of August 31, 2018 and August 25, 2017, we did not have any off-balance sheet arrangements or relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which are typically established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Critical Accounting Policies

We believe the following critical accounting policies are the most significant to the presentation of our financial statements and they at times require the most difficult, subjective and complex estimates.

Revenue Recognition

Our product revenues are predominantly derived from the sale of solutions, including memory modules, Flash memory cards and solid state storage products, which we design and manufacture. We recognize revenue when persuasive evidence of an arrangement exists, product delivery has occurred, the sales price is fixed or determinable and collectability is reasonably assured. Product revenue typically is recognized at the time of shipment or when the customer takes title to the goods. Amounts billed to customers related to shipping and handling are classified as sales, while costs incurred by us for shipping and handling are classified as cost of sales. Sales taxes collected from customers and remitted to governmental authorities are accounted for on a net basis and, therefore, are excluded from revenue.

Our service revenues are derived from procurement, logistics, inventory management, temporary warehousing, kitting and packaging services. The terms of our contracts vary, but we generally recognize service revenue upon the completion of the contracted services. Our service revenue is accounted for on an agency basis. Service revenue for these arrangements is typically based on material procurement costs plus a fee for the services provided. We determine whether to report revenue on a net or gross basis depending on a number of factors, including whether we are the primary obligor in the arrangement, have general inventory risk, have the ability to set the price, have the ability to determine who the suppliers are, can physically change the product or have credit risk. Under some service arrangements, we retain inventory risk. All inventories held under service arrangements are included in the inventories reported on the consolidated balance sheet.

A small portion of our product sales include extended warranty and on-site services, professional services, software and related support. We allocate consideration to each deliverable in an arrangement based on relative selling price. We determine selling price using vendor specific objective evidence (VSOE) if it exists, or otherwise we use best estimated selling price, determined as our best estimate of the price at which we would transact if we sold the deliverable regularly on a stand-alone basis. Our determination of best estimated selling price primarily involves the cost to produce the deliverable plus the anticipated margin.

Extended warranty and on-site services are deferred and recognized ratably over the contractual period. These service contracts are typically one to three years in length. Professional consulting services revenue is recognized as the service is performed. Software support is recognized ratably over the support period. Subscription revenue for access to our high performance computing environment is recognized based on usage.

The following is a summary of our gross billings to customers and net sales for services and products (in thousands):

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Service revenue, net	$ 42,978	$ 36,843	$ 44,453
Cost of purchased materials - service [(1)]	1,013,393	864,256	1,390,624
Gross billings for services	1,056,371	901,099	1,435,077
Product net sales	1,245,843	724,448	489,970
Gross billings to customers	$2,302,214	$1,625,547	$1,925,047
Product net sales	$1,245,843	$ 724,448	$ 489,970
Service revenue, net	42,978	36,843	44,453
Net sales	$1,288,821	$ 761,291	$ 534,423

(1) Represents cost of sales associated with service revenue reported on a net basis.

Inventory Valuation

At each balance sheet date, we evaluate our ending inventories for excess quantities and obsolescence. This evaluation includes analysis of sales levels by product family. Among other factors, we consider historical demand and forecasted demand in relation to the inventory on hand, competitiveness of product offerings, market conditions and product life cycles when determining obsolescence and net realizable value. We adjust the carrying values to approximate the lower of our manufacturing cost or net realizable value. Inventory cost is determined on a specific identification basis and includes material, labor and manufacturing overhead. From time to time, our customers may request that we purchase and maintain significant inventory of raw materials for specific programs. Such inventory purchases are evaluated for excess quantities and potential obsolescence and could result in a provision at the time of purchase or subsequent to purchase. Inventory levels may fluctuate based on inventory held under service arrangements. Our provisions for excess and obsolete inventory are also impacted by our arrangements with our customers and/or suppliers, including our ability or inability to re-sell such inventory to them. If actual market conditions or our customers' product demands are less favorable than those projected or if our customers or suppliers are unwilling or unable to comply with any arrangements related to their purchase or sale of inventory, additional provisions may be required and would have a negative impact on our gross margins in that period. We have had material inventory write-downs in the past for reasons such as obsolescence, excess quantities and declines in market value below our costs, and we may be required to do so from time to time in the future. Our inventory write-downs were $5.2 million, $2.8 million and $1.8 million for fiscal 2018, 2017 and 2016, respectively.

Income Taxes

We use the asset and liability method of accounting for income taxes. Deferred tax assets and liabilities are recognized for the future consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis and net operating loss and credit carryforwards. When necessary, a valuation allowance is recorded or reduced to value tax assets to amounts expected to be realized. The effect of changes in tax rates is recognized in the period in which the rate change occurs.

The calculation of our tax liabilities involves accounting for uncertainties in the application of complex tax rules, regulations and practices. We recognize benefits for uncertain tax positions based on a two-step process. The first step is to evaluate the tax position for recognition of a benefit (or the absence of a liability) by determining if the weight of available evidence indicates that it is more likely than not that the position taken will be sustained upon audit, including resolution of related appeals or litigation processes, if any. If it is not, in our judgment, more likely than not that the position will be sustained, then we do not recognize any benefit for the position. If it is more likely than not that the position will be sustained, a second step in the process is required to estimate how much of the benefit we will ultimately receive. This second step requires that we estimate and measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. It is inherently difficult and subjective to estimate such amounts. We reevaluate these uncertain tax positions on a quarterly basis. The total amount of unrecognized tax benefits that would affect the effective tax rate, if recognized, is $1.6 million as of August 31, 2018. This evaluation is based on a number of factors including, but not limited to, changes in facts or circumstances, changes in tax law, new facts, correspondence with tax authorities during the course of an audit, effective settlement of audit issues and commencement of new audit activity. Such a change in recognition or measurement could result in the recognition of a tax benefit or an additional charge to the tax provision in the period.

Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed

We review our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the future undiscounted cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets.

Share-Based Compensation

We recognize compensation costs related to share-based awards granted to employees based on the estimated fair value of the awards on the date of grant. We estimate the grant date fair value, and the resulting share-based compensation expense, using the Black-Scholes option-pricing model. The grant date fair value of the share-based awards is generally recognized on a straight-line basis over the requisite service period, which is generally the vesting period of the respective awards.

We have used the Black-Scholes valuation model to assist us in determining the fair value of share-based awards. The Black-Scholes model requires the use of subjective and highly complex assumptions which determine the fair value of share-based awards. The fair value of each option grant is estimated on the date of grant using the Black-Scholes option pricing model that uses the assumptions noted in the following table. The expected volatility is based on the historical volatilities of the common stock of comparable publicly traded companies. The expected term of options granted represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and the historical exercise patterns. The risk-free interest rate for the expected term of the option is based on the average U.S. Treasury yield curve at the end of the quarter in which the option was granted.

We used the following assumptions to value options granted under the SGH Plan during fiscal 2018, 2017 and 2016:

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Stock options:			
Expected term (years)	6.25	6.25	6.25
Expected volatility	39.00% - 46.27%	45.88% - 55.75%	49.46% - 54.38%
Risk-free interest rate	2.15% - 2.82%	1.89% - 2.03%	1.36% - 1.82%
Expected dividends	—	—	—

The following table sets forth our total share-based compensation expense during fiscal 2018, 2017 and 2016 (in thousands):

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Stock-based compensation expense by category (in thousands):			
Cost of sales	$ 1,335	$ 636	$ 461
Research and development	1,460	655	725
Selling, general and administrative	7,763	4,073	2,686
Total	$ 10,558	$ 5,364	$ 3,872

Fair value of ordinary shares. The fair value of the ordinary shares underlying our share options for each of our equity plans has historically been determined by our board of directors. Prior to our IPO, since there was no public market for our ordinary shares and in the absence of recent arm's length cash sales transactions of our ordinary shares with independent third parties, our board of directors has determined the fair value of our ordinary shares by considering at the time of grant a number of objective and subjective factors, including the following: the value of tangible and intangible assets of our company, the present value of anticipated future cash flows of our company, the market value of stock or equity interests in similar corporations and other entities engaged in businesses substantially similar to those engaged in by our company, our current financial condition and anticipated expenses, our need for additional capital, current and potential strategic relationships and competitive developments and periodic valuations from an independent third-party valuation firm.

The valuations used the income, guideline and transaction approaches based on our expected future cash flows and applied a discount for lack of marketability. The guideline approach measures value on a minority interest basis; the transaction and income approaches measure value on a controlling basis. This approach is outlined in the American Institute of Certified Public Accountants Practice Aid, "Valuation of Privately-Held- Company Equity Securities Issued as Compensation" as the probability weighted expected return method. Enterprise values were calculated based on three exit scenarios, including an initial public offering, merger or acquisition, or M&A, and continuing to operate on a standalone basis. Each value was weighted equally together to arrive at an indicated enterprise value. In estimating the value of equities, management estimated a term for each of the initial public offering, M&A and continuing to operate on a stand-alone basis scenarios.

Since our IPO, the fair value of our ordinary shares is determined by reference to the closing sales price of a share of our ordinary shares on the grant date (or if there is no closing price as of such date, the last preceding date for which a closing sales price is quoted).

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Our exposure to market rate risk includes risk of foreign currency exchange rate fluctuations, changes in interest rates and translation risk.

Foreign Exchange Risks

We are subject to inherent risks attributed to operating in a global economy. Our international sales and our operations in foreign countries subject us to risks associated with fluctuating currency values and exchange rates. Because a portion of our sales are denominated in United States dollars, increases in the value of the United States dollar could increase the price of our products so that they become relatively more expensive to customers in a particular country, possibly leading to a reduction in sales and profitability in that country. A significant portion of the sales of our products are denominated in reais. In addition, we have certain costs that are denominated in foreign currencies, and decreases in the value of the U.S. dollar could result in increases in such costs that could have a material adverse effect on our results of operations. We do not currently purchase financial instruments to hedge foreign exchange risk, but may do so in the future.

As a result of our international operations, we generate a portion of our net sales and incur a portion of our expenses in currencies other than the U.S. dollar, particularly the reais. Approximately 62%, 52% and 46% of our net sales during fiscal 2018, 2017 and 2016, respectively, originated in reais. We present our combined financial statements in U.S. dollars, and we must translate the assets, liabilities, net sales and expenses of a substantial portion of our foreign operations into U.S. dollars at applicable exchange rates. Consequently, increases or decreases in the value of the U.S. dollar may affect the value of these items with respect to our non-U.S. dollar businesses in our combined financial statements, even if their value has not changed in their local currency. Our customer pricing and material cost of sales are based on U.S. dollars, as is the global market for memory products. Accordingly, the impact of currency fluctuations to our consolidated statement of operations is primarily to our other costs of sales (i.e., non-material components) and our operating expenses as those items are typically denominated in local currency. Our consolidated statement of operations is also impacted by foreign currency gains and losses recorded in Other Income (Expense) arising from transactions denominated in a currency other than the functional currency of the respective subsidiary. These translations could significantly affect the comparability of our results between financial periods or result in significant changes to the carrying value of our assets, liabilities and equity. As a result, changes in foreign currency exchange rates impact our reported results.

During fiscal 2018, 2017 and 2016, we recorded ($13.2) million, $0.3 million and $1.1 million, respectively, of foreign exchange gains (losses).

Interest Rate Risk

We are subject to interest rate risk in connection with our long-term and short-term debt, including the $208.5 million aggregate balance under the term loan under the Amended Credit Agreement, R$12.9 million (or $3.4 million) balance under the BNDES 2013 Credit Agreement and R$26.4 million (or $7.0 million) balance under the BNDES 2014 Credit Agreement, in each case as of August 31, 2018. Although we did not have any revolving balances outstanding as of August 31, 2018, the revolving facility under the Amended Credit Agreement provides for borrowings of up to $50 million that would also bear interest at variable rates. Assuming that we will satisfy the financial covenants required to borrow and that the Amended Credit Agreement is fully drawn and other variables are held constant, each 1.0% increase in interest rates on our variable rate borrowings would result in an increase in annual interest expense and a decrease in our cash flow and income before taxes of $2.6 million per year.

Item 8. Financial Statements and Supplementary Data

The financial statements and supplemental financial information required by this item are presented beginning on page F-1 in Part IV, Item 15 of this annual report on Form 10-K and are incorporated herein by reference, and the supplementary data required by this item is included in Note 15, *Selected Quarterly Information,* in our notes to consolidated financial statements.

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

An evaluation was performed under the supervision and with the participation of our Company's management, including the Chief Executive Officer, or CEO, and Chief Financial Officer, or CFO, of the effectiveness of the design and operation of the Company's disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e)) under the Securities Exchange Act of 1934 as amended. Based on that evaluation, the Company's management, including the CEO and CFO, concluded that as of August 31, 2018, the Company's disclosure controls and procedures were effective to ensure the information required to be disclosed by an issuer in the reports that it files or submits under the Securities Exchange Act of 1934 is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f). Under the supervision and with the participation of our management, including our CEO and CFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control— Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on our evaluation under the 2013 Framework, management concluded that our internal control over financial reporting was effective as of August 31, 2018.

On June 8, 2018, we completed the acquisition of Penguin Computing, Inc. (or Penguin) by entering into an Agreement and Plan of Merger to acquire 100% ownership of Penguin. For further discussion of the Penguin acquisition, refer to Item 8: "Financial Statements, Note 2: Business Combinations." The Securities and Exchange Commission permits companies to exclude acquisitions from their assessment of internal control over financial reporting during the first year of an acquisition, and our management has elected to exclude Penguin from our assessment as of August 31, 2018. Penguin constituted 13% and 4% of our consolidated total assets and net sales as of and for the year ended August 31, 2018, respectively.

The effectiveness of our internal control over financial reporting as of August 31, 2018 has been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report that is included in this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There has been no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fourth quarter of fiscal 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of SMART Global Holdings, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of SMART Global Holdings, Inc. and subsidiaries (the "Company") as of August 31, 2018, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of August 31, 2018, based on criteria established in Internal Control — Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended August 31, 2018 of the Company and our report dated October 29, 2018, expressed an unqualified opinion on those financial statements.

As described in Management's Report on Internal Control Over Financial Reporting, management excluded from its assessment the internal control over financial reporting at Penguin Computing, Inc., which was acquired on June 8, 2018 and whose financial statements constitute 13% of assets and 4% of net sales of the consolidated financial statement amounts as of and for the year ended August 31, 2018. Accordingly, our audit did not include the internal control over financial reporting at Penguin Computing, Inc.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP
San Jose, California
October 29, 2018

Item 9B. Other Information

None.

Part III.

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item is incorporated by reference to our Proxy Statement for our next Annual General Meeting to be filed with the SEC within 120 days after the close of the year ended August 31, 2018.

Code of Conduct

The Company has adopted a code of business ethics and conduct (the "Code of Conduct") that applies to all employees, officers and directors, including the principal executive officer, principal financial officer and principal accounting officer. The Code of Conduct is available on the Company's website at www.smartm.com on the Investor Relations page. The Company intends to post on its website all disclosures that are required by law or NASDAQ listing rules regarding any amendment to, or a waiver of, any provision of the Code of Conduct for the principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions.

Item 11. Executive Compensation

The information required by this item is incorporated by reference to our Proxy Statement for our next Annual General Meeting to be filed with the SEC within 120 days after the close of the year ended August 31, 2018.

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

The information required by this item is incorporated by reference to our Proxy Statement for our next Annual General Meeting to be filed with the SEC within 120 days after the close of the year ended August 31, 2018.

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

The information required by this item is incorporated by reference to our Proxy Statement for our next Annual General Meeting to be filed with the SEC within 120 days after the close of the year ended August 31, 2018.

Item 14. Principal Accounting Fees and Services

The information required by this item is incorporated by reference to our Proxy Statement for our next Annual General Meeting to be filed with the SEC within 120 days after the close of the year ended August 31, 2018.

PART IV.

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as a part of this report:

(1) Financial Statements.

The following Consolidated Financial Statements are filed as part of this report under Item 8 "Financial Statements and Supplementary Data."

(2) Exhibits. Exhibits are listed on the Exhibit Index at the end of this report.

Item 16. Form 10-K Summary

Not applicable.

INDEX TO FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of SMART Global Holdings, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of SMART Global Holdings, Inc. and subsidiaries (the "Company") as of August 31, 2018 and August 25, 2017, the related consolidated statements of operations, comprehensive income (loss), shareholders' equity (deficit), and cash flows for each of the three years in the period ended August 31, 2018, (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of August 31, 2018 and August 25, 2017, and the results of its operations and its cash flows for each of the three years in the period ended August 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of August 31, 2018, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated October 29, 2018, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

San Jose, California
October 29, 2018

We have served as the Company's auditor since 2014.

SMART Global Holdings, Inc.
and Subsidiaries

Consolidated Balance Sheets

(In thousands, except per share data)

		August 31, 2018		August 25, 2017
Assets				
Current assets:				
Cash and cash equivalents	$	31,375	$	22,436
Accounts receivable, net of allowances of $225 and $314 as of August 31, 2018 and August 25, 2017, respectively		237,212		183,303
Inventories		221,419		127,135
Prepaid expenses and other current assets		32,043		14,115
Total current assets		522,049		346,989
Property and equipment, net		56,615		55,182
Other noncurrent assets		22,449		26,728
Intangible assets, net		26,255		5,107
Goodwill		45,394		46,022
Total assets	$	672,762	$	480,028
Liabilities and Shareholders' Equity				
Current liabilities:				
Accounts payable	$	223,186	$	189,717
Accrued liabilities		45,190		27,316
Current portion of long-term debt		27,409		22,841
Total current liabilities		295,785		239,874
Long-term debt		184,190		154,450
Other long-term liabilities		5,659		3,308
Total liabilities	$	485,634	$	397,632
Commitments and contingencies (see Note 10)				
Shareholders' equity:				
Ordinary shares, $0.03 par value. Authorized 200,000 shares; issued and outstanding 22,480 and 21,666 as of August 31, 2018 and August 25, 2017, respectively		678		653
Additional paid-in capital		250,191		232,162
Accumulated other comprehensive loss		(175,995)		(143,210)
Retained earnings		112,254		(7,209)
Total shareholders' equity		187,128		82,396
Total liabilities and shareholders' equity	$	672,762	$	480,028

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

SMART Global Holdings, Inc.
and Subsidiaries

Consolidated Statements of Operations

(In thousands, except per share data)

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Net sales [1]	$ 1,288,821	$ 761,291	$ 534,423
Cost of sales	997,235	599,041	427,491
Gross profit	291,586	162,250	106,932
Operating expenses:			
Research and development	39,824	38,160	38,116
Selling, general, and administrative	84,541	66,759	57,495
Change in estimated fair value of acquisition-related contingent consideration	(3,000)	—	—
Management advisory fees	—	3,000	4,001
Restructuring charge	—	457	1,135
Total operating expenses	121,365	108,376	100,747
Income from operations	170,221	53,874	6,185
Interest expense, net	(19,144)	(29,204)	(25,575)
Other income (expense), net	(13,299)	(22,551)	1,874
Total other expense	(32,443)	(51,755)	(23,701)
Income (loss) before income taxes	137,778	2,119	(17,516)
Provision for income taxes	18,315	9,914	2,444
Net income (loss)	$ 119,463	$ (7,795)	$ (19,960)
Earnings per share:			
Basic	$ 5.42	$ (0.49)	$ (1.44)
Diluted	$ 5.17	$ (0.49)	$ (1.44)
Shares used in computing earnings per share:			
Basic	22,051	15,785	13,841
Diluted	23,119	15,785	13,841

(1) Includes sales to affiliates of $133,552, $73,455 and $38,817 in fiscal 2018, 2017 and 2016, respectively (see Note 3).

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

SMART Global Holdings, Inc.
and Subsidiaries

Consolidated Statements of Comprehensive Income (Loss)

(In thousands)

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Net income (loss)	$ 119,463	$ (7,795)	$ (19,960)
Other comprehensive income (loss):			
Foreign currency translation	(32,785)	4,313	6,203
Comprehensive income (loss)	$ 86,678	$ (3,482)	$ (13,757)

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

SMART Global Holdings, Inc.
and Subsidiaries

Consolidated Statements of Shareholders' Equity (Deficit)

(Dollars and shares in thousands)

	Ordinary shares		Additional paid-in capital	Accumulated other comprehensive loss	Retained earnings (accumulated deficit)	Total shareholders' equity (deficit)
	Shares	Amount				
Balances as of August 28, 2015	13,836	$ 415	$141,404	$ (153,726)	$ 20,546	$ 8,639
Stock-based compensation expense	—	—	3,872	—	—	3,872
Issuance of ordinary shares from exercises	43	1	132	—	—	133
Issuance of ordinary shares from release of restricted stock units	1	—	—	—	—	—
Repurchase of ordinary shares	(11)	—	(124)	—	—	(124)
Foreign currency translation	—	—	—	6,203	—	6,203
Net loss	—	—	—	—	(19,960)	(19,960)
Balances as of August 26, 2016	13,869	416	145,284	(147,523)	586	(1,237)
Stock-based compensation expense	—	—	5,364	—	—	5,364
Issuance of ordinary shares from exercises	152	4	402	—	—	406
Issuance of ordinary shares from release of restricted stock units	117	4	(4)	—	—	—
Withholding tax on restricted stock units	(46)	—	(763)	—	—	(763)
Issuance of ordinary shares from initial public offering (IPO), net of issuance costs	6,095	183	60,584	—	—	60,767
Issuance of ordinary shares from exercise of warrants	1,537	46	(46)	—	—	—
Surrendered shares	(58)	—	—	—	—	—
Warrants issued in connection with debt	—	—	21,341	—	—	21,341
Foreign currency translation	—	—	—	4,313	—	4,313
Net loss	—	—	—	—	(7,795)	(7,795)
Balances as of August 25, 2017	21,666	653	232,162	(143,210)	(7,209)	82,396
Stock-based compensation expense	—	—	10,558	—	—	10,558
Issuance of ordinary shares from exercises	702	22	7,474	—	—	7,496
Issuance of ordinary shares from release of restricted stock units	112	3	(3)	—	—	—
Foreign currency translation	—	—	—	(32,785)	—	(32,785)
Net income	—	—	—	—	119,463	119,463
Balances as of August 31, 2018	22,480	$ 678	$250,191	$ (175,995)	$ 112,254	$ 187,128

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

SMART Global Holdings, Inc.
and Subsidiaries

Consolidated Statements of Cash Flows

(In thousands)

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Cash flows from operating activities:			
Net income (loss)	$ 119,463	$ (7,795)	$ (19,960)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	26,182	33,238	31,480
Share-based compensation	10,558	5,364	3,872
Provision for doubtful accounts receivable	(86)	(51)	18
Deferred income tax benefit	(2,820)	(2,389)	(1,417)
(Gain) loss on disposal of property and equipment	691	352	(55)
Loss on extinguishment of debt	—	16,580	—
Loss on early repayment of debt	—	6,744	—
Amortization of debt discounts and issuance costs	2,972	8,231	4,696
Write-off of other assets	250	—	—
Change in fair value of contingent consideration	(3,000)	—	—
Changes in operating assets and liabilities:			
Accounts receivable	(55,297)	(40,426)	44,922
Inventories	(42,435)	(21,851)	31,326
Prepaid expenses and other assets	(8,736)	(58)	11,007
Accounts payable	17,548	(10,608)	(86,588)
Accrued expenses and other liabilities	2,617	11,736	(4,251)
Net cash provided by (used in) operating activities	67,907	(933)	15,050
Cash flows from investing activities:			
Capital expenditures and deposits on equipment	(25,738)	(18,678)	(13,844)
Restricted cash	—	—	194
Proceeds from sale of property and equipment	305	651	281
Acquisition of business, net of cash acquired	(42,316)	—	—
Net cash used in investing activities	(67,749)	(18,027)	(13,369)
Cash flows from financing activities:			
Issuance of ordinary shares from initial public offering (IPO), net of underwriting commissions	—	63,507	—
Payment of costs related to IPO	(1,591)	(1,149)	—
Proceeds from issuance of long-term debt, net of costs paid	59,365	156,962	5,771
Fees paid for revolving line of credit financing	(768)	(3,167)	—
Payment for extinguishment of long-term debt	—	(151,946)	—
Early debt payment for long-term debt	—	(61,127)	—
Long-term debt payments	(24,269)	(19,698)	(16,694)
Proceeds from borrowings under revolving line of credit	429,395	457,750	279,200
Repayments of borrowings under revolving line of credit	(461,684)	(457,750)	(279,200)
Proceeds from issuance of ordinary shares from share option exercises	7,496	406	133
Tax payments due upon issuance of ordinary shares for release of restricted stock units	—	(763)	—
Repurchase of ordinary shares	—	—	(124)
Net cash provided by (used in) financing activities	7,944	(16,975)	(10,914)
Effect of exchange rate changes on cash and cash equivalents	837	(263)	(227)
Net increase (decrease) in cash and cash equivalents	8,939	(36,198)	(9,460)
Cash and cash equivalents at beginning of period	22,436	58,634	68,094
Cash and cash equivalents at end of period	$ 31,375	$ 22,436	$ 58,634
Supplemental disclosures of cash flow information:			
Cash paid during the year:			
Cash paid for interest	$ 15,291	$ 21,458	$ 22,413
Cash paid for income taxes, net of refunds	21,832	8,095	5,300
Noncash activities information:			
Fair value of warrants issued	—	21,341	—
Capital expenditures included in accounts payable at period end	724	153	552
IPO costs included in accounts payable and accrued liabilities at period end	—	1,591	—
Unpaid debt fees related to term loan and revolver	178	768	—
Acquisition consideration held back to satisfy potential indemnification claims	3,479	—	—
Fair value of contingent consideration for acquisition of business	3,000	—	—

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

(1) Overview, Basis of Presentation and Significant Accounting Policies

(a) Overview

On August 26, 2011, SMART Global Holdings, Inc., formerly known as Saleen Holdings, Inc., a Cayman Islands exempted company (SMART Global Holdings, and together with its subsidiaries, the Company), consummated a transaction with SMART Worldwide Holdings, Inc., formerly known as SMART Modular Technologies (WWH), Inc. (SMART Worldwide), pursuant to an Agreement and Plan of Merger (the Merger Agreement) whereby, through a series of transactions, SMART Global Holdings acquired substantially all of the equity interests of SMART Worldwide with SMART Worldwide surviving as an indirect wholly owned subsidiary of SMART Global Holdings (the Acquisition). SMART Global Holdings is an entity that was formed by investment funds affiliated with Silver Lake Partners and Silver Lake Sumeru (collectively Silver Lake). As a result of the Acquisition, since there was a change of control resulting in Silver Lake as the controlling shareholder group, the Company applied the acquisition method of accounting and established a new basis of accounting.

The Company, through its subsidiaries, provides data compute and storage products and solutions sold primarily to original equipment manufacturers (OEMs) as well as end customers for enterprise applications. The Company offers these solutions to customers worldwide and also offers custom supply chain services including procurement, logistics, inventory management, temporary warehousing, kitting and packaging services.

SMART Global Holding is domiciled in the Cayman Islands and has U.S. headquarters in Newark, California. The Company has operations in the United States, Brazil, Malaysia, Taiwan, Hong Kong, Scotland, Singapore and South Korea.

(b) Basis of Presentation

The accompanying consolidated financial statements comprise SMART Global Holdings and its wholly owned subsidiaries. Intercompany transactions have been eliminated in the consolidated financial statements.

The Company uses a 52- to 53-week fiscal year ending on the last Friday in August. Fiscal 2018, 2017 and 2016 ended on August 31, 2018, August 25, 2017 and August 26, 2016, respectively, and included 53, 52, 52 weeks, respectively.

All financial information for two of the Company’s subsidiaries, SMART Modular Technologies Indústria de Componentes Eletrônicos Ltda. (SMART Brazil) and SMART Modular Technologies do Brasil Indústria e Comércio de Componentes Ltda. (SMART do Brazil), is included in the Company’s consolidated financial statements on a one-month lag because their fiscal years begin August 1 and end July 31.

(c) 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 and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods presented. Actual results could differ from the estimates made by management. Significant items subject to such estimates and assumptions include the useful lives of long-lived assets, the valuation of deferred tax assets, inventory and contingent consideration in business acquisitions, share-based compensation, the estimated net realizable value of Brazilian tax credits, income tax uncertainties and other contingencies.

(d) Revenue Recognition

Product revenue is recognized when there is persuasive evidence of an arrangement, product delivery has occurred, the sales price is fixed or determinable, and collectability is reasonably assured. Product revenue typically is recognized at the time of shipment or when the customer takes title to the goods. All amounts billed to a customer related to shipping and handling are classified as revenue, while all costs incurred by the Company for shipping and handling are classified as cost of sales. Sales taxes collected from customers and remitted to governmental authorities are accounted for on a net basis and, therefore, are excluded from net sales in the consolidated statements of operations.

In addition, the Company has classes of transactions with customers that are accounted for on an agency basis (i.e., the Company recognizes as revenue the amount billed less the material procurement costs of products serviced as an agent with the cost of providing these services embedded with the cost of sales). The Company provides procurement, logistics, inventory management, temporary warehousing, kitting and packaging services for these customers. Revenue from these arrangements is recognized as service revenue and is determined by a fee for services based on material procurement costs. The Company recognizes service revenue upon the completion of the services, typically upon shipment of the product. There are no obligations subsequent to shipment of the product under the agency arrangements.

A small portion of our product sales include extended warranty and on-site services, professional services, software and related support. We allocate consideration to each deliverable in an arrangement based on relative selling price. We determine selling price using vendor specific objective evidence (VSOE) if it exists, or otherwise we use best estimated selling price, determined as our best estimate of the price at which we would transact if we sold the deliverable regularly on a stand alone basis. Our determination of best estimated selling price primarily involves the cost to produce the deliverable plus the anticipated margin.

Extended warranty and on-site services are deferred and recognized ratably over the contractual period. These service contracts are typically one to three years in length. Professional consulting services revenue is recognized as the service is performed. Software support is recognized ratably over the support period. Subscription revenue for access to the Company's high performance computing environment is recognized based on usage.

The following is a summary of the Company's gross billings to customers and net sales for services and products (in thousands):

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Service revenue, net	$ 42,978	$ 36,843	$ 44,453
Cost of purchased materials - service [(1)]	1,013,393	864,256	1,390,624
Gross billings for services	1,056,371	901,099	1,435,077
Product net sales	1,245,843	724,448	489,970
Gross billings to customers	$2,302,214	$1,625,547	$1,925,047
Product net sales	$1,245,843	$ 724,448	$ 489,970
Service revenue, net	42,978	36,843	44,453
Net sales	$1,288,821	$ 761,291	$ 534,423

(1) Represents cost of sales associated with service revenue reported on a net basis.

(e) Cash and Cash Equivalents

All highly liquid investments with maturities of 90 days or less from original dates of purchase are carried at cost, which approximates fair value, and are considered to be cash. Cash and cash equivalents include cash on hand, cash deposited in checking and saving accounts, money market accounts, and securities with maturities of less than 90 days at the time of purchase.

(f) Allowance for Doubtful Accounts

The Company evaluates the collectability of accounts receivable based on a combination of factors. In cases where the Company is aware of circumstances that may impair a specific customer's ability to meet its financial obligations, the Company records a specific allowance against amounts due and, thereby, reduces the net recognized receivable to the amount management reasonably believes will be collected. For all other customers, the Company recognizes allowances for doubtful accounts based on a combination of factors including the length of time the receivables are outstanding, industry and geographic concentrations, the current business environment and historical experience.

The changes in the accounts receivable allowances and sales returns during fiscal 2018, 2017 and 2016 are as follows (in thousands):

	Total
Balance as of August 28, 2015	$ 347
Charged to costs and other	215
Deductions	(334)
Balance as of August 26, 2016	228
Charged to costs and other	652
Deductions	(566)
Balance as of August 25, 2017	314
Charged to costs and other	220
Addition from business acquisition (see Note 2)	82
Deductions	(391)
Balance as of August 31, 2018	$ 225

(g) Sales of Receivables

Designated subsidiaries of the Company may, from time to time, sell certain of their receivables to third parties. Sales of receivables are recognized at the point in which the receivables sold are transferred beyond the reach of the Company and its creditors, the purchaser has the right to pledge or exchange the receivables and the subsidiaries have surrendered control over the transferred receivables. See Note 4 for further details.

(h) Inventories

Inventories are valued at the lower of actual cost or market value. Inventory value is determined on a specific identification basis for material and an allocation of labor and manufacturing overhead. At each balance sheet date, the Company evaluates the ending inventories for excess quantities and obsolescence. This evaluation includes an analysis of sales levels by product family and considers historical demand and forecasted demand in relation to the inventory on hand, competitiveness of product offerings, market conditions and product life cycles. The Company adjusts carrying value to the lower of its cost or market value. Inventory write-downs are not reversed and create a new cost basis.

(i) Prepaid State Value-Added Taxes (ICMS)

Since 2004, the Sao Paulo State tax authorities have granted SMART Brazil a tax benefit to defer and eventually eliminate the payment of ICMS levied on certain imports from independent suppliers. This benefit, known as an ICMS Special Regime, is subject to renewal every two years. When the then current ICMS Special Regime expired on March 31, 2010, SMART Brazil timely applied for a renewal of the benefit, however, the renewal was not granted until August 4, 2010.

On June 22, 2010, the Sao Paulo authorities published a regulation allowing companies that applied for a timely renewal of an ICMS Special Regime to continue utilizing the benefit until a final conclusion on the renewal request was rendered. As a result of this publication, SMART Brazil was temporarily allowed to utilize the benefit while it waited for its renewal. From April 1, 2010, when the ICMS benefit lapsed, through June 22, 2010 when the regulation referred to above was published, SMART Brazil was required to pay the

ICMS taxes on imports, which payments result in ICMS credits that may be used to offset ICMS obligations generated from sales by SMART Brazil of its products; however, the vast majority of SMART Brazil's sales in Sao Paulo were either subject to a lower ICMS rate or were made to customers that were entitled to other ICMS benefits that enabled them to eliminate the ICMS levied on their purchases of products from SMART Brazil. As a result, from April 1, 2010 through June 22, 2010, SMART Brazil did not have sufficient ICMS collections against which to apply the credits and the credit balance increased significantly.

Effective February 1, 2011, in connection with its participation in a Brazilian government incentive program known as Support Program for the Technological Development of the Semiconductor and Display Industries Laws, or PADIS, SMART Brazil spun off the module manufacturing operations into SMART do Brazil, a separate subsidiary of the Company. In connection with this spin off, SMART do Brazil applied for a tax benefit from the State of Sao Paulo in order to obtain a deferral of state ICMS. This tax benefit is referred to as State PPB, or CAT 14. The CAT 14 approval was not obtained until July 21, 2011, and from February 1, 2011 until the CAT 14 approval was granted, SMART do Brazil did not have sufficient ICMS collections against which to apply the credits accrued upon payment of the ICMS on SMART do Brazil's imports and inputs locally acquired, and therefore, it generated additional excess ICMS credits.

As of August 31, 2018, the total ICMS tax credits reported on the Company's accompanying consolidated balance sheet are R$45.3 million (or $12.1 million), of which (i) R$16.6 million (or $4.4 million) are fully vested ICMS credits, classified as prepaid and other current assets and R$25.4 million (or $6.8 million) are fully vested ICMS credits, classified as other noncurrent assets, and (ii) R$3.3 million (or $0.9 million) are ICMS credits subject to vesting in 48 equal monthly amounts, classified as prepaid expenses and other current assets (R$0.6 million or $0.2 million), and other noncurrent assets (R$2.7 million or $0.7 million). As of August 25, 2017, the total ICMS tax credits reported on the Company's accompanying consolidated balance sheet are R$40.9 million (or $13.1 million), of which (i) R$38.4 million (or $12.3 million) are fully vested ICMS credits, classified as other noncurrent assets, and (ii) R$2.5 million (or $0.8 million) are ICMS credits subject to vesting in 48 equal monthly amounts, classified as prepaid expenses and other current assets (R$1.9 million or $0.6 million), and other noncurrent assets (R$0.6 million or $0.2 million). It is expected that the excess ICMS credits will continue to be recovered in fiscal 2019 through fiscal 2022. The Company updates its forecast of the recoverability of the ICMS credits quarterly, considering the following key variables in Brazil: timing of government approvals of automated credit utilization, the total amount of sales, the product mix and the inter and intra state mix of sales. If these estimates or the mix of products or regions vary, it could take longer or shorter than expected to recover the accumulated ICMS credits, resulting in a reclassification of ICMS credits from current to noncurrent, or vice versa.

In April and June 2016, the Company filed cases with the State of Sao Paulo tax authorities to seek approval to sell these excess ICMS credits. In December 2017, the Company obtained approval to sell R$31.6 million (or $8.4 million) of its ICMS credits. Once approved, sale of ICMS credits usually take several months to complete and typically incur a discount to the face amount of the credits sold, as well as fees for the arrangers of these sales which together aggregate 10% to 15% of the face amount of the credits being sold. Once the sale is complete, the tax authorities usually approve the transfer of credits in monthly installments and the proceeds resulting from the sale of the aforementioned credits shall be received by the Company accordingly. The Company has recorded valuation adjustments for the estimated discount and fees that the Company will need to offer in order to sell ICMS credits to other companies.

(j) Property and Equipment

Property and equipment are recorded at cost. Depreciation and amortization are computed based on the shorter of the estimated useful lives or the related lease terms, using the straight-line method. Estimated useful lives are presented below:

	Period
Asset:	
Manufacturing equipment	2 to 5 years
Office furniture, software, computers and equipment	2 to 5 years
Leasehold improvements*	2 to 60 years

* Includes the land lease for the Penang facility with a term expiring in 2070.

(k) Goodwill

The Company performs a goodwill impairment test annually during the fourth quarter of its fiscal year and more frequently if events or circumstances indicate that impairment may have occurred. Such events or circumstances may, among others, include significant adverse changes in the general business climate. As of August 31, 2018 and August 25, 2017, the carrying value of goodwill on the Company's consolidated balance sheet was $45.4 million and $46.0 million, respectively.

When conducting the annual impairment test for goodwill, the Company compares the estimated fair value of a reporting unit containing goodwill to its carrying value. If the fair value of the reporting unit is determined to be more than its carrying value, no goodwill impairment is recognized. The excess of the fair value of the reporting unit over the fair value of assets less liabilities is the implied value of goodwill and is used to determine the amount of impairment.

All of the $45.4 million carrying value of goodwill on the Company's consolidated balance sheet as of August 31, 2018 is associated with the Company's three reporting units (Specialty Memory, Brazil and Penguin). No impairment of goodwill was recognized through August 31, 2018.

The changes in the carrying amount of goodwill during fiscal 2018 and 2017 are as follows (in thousands):

	Total
Balance as of August 26, 2016	$ 44,976
Translation adjustments	1,046
Balance as of August 25, 2017	46,022
Addition from business acquisition (see Note 2)	4,575
Translation adjustments	(5,203)
Balance as of August 31, 2018	$ 45,394

(l) Intangible Assets, Net

The following table summarizes the gross amounts and accumulated amortization of intangible assets by type as of August 31, 2018 and August 25, 2017 (dollars in thousands):

		August 31, 2018			August 25, 2017		
	Weighted avg. life (yrs)	Gross Carrying amount	Accumulated amortization	Net	Gross Carrying amount	Accumulated amortization	Net
Customer relationships	5 - 7	$37,187	$ (22,968)	$14,219	$ 26,971	$ (22,844)	$ 4,127
Trademarks/tradename	7	12,200	(400)	11,800	—	—	—
Technology	4	5,150	(4,914)	236	4,900	(3,920)	980
Backlog	< 1	400	(400)	—	—	—	—
Total		$54,937	$ (28,682)	$26,255	$ 31,871	$ (26,764)	$ 5,107

Amortization expense related to intangible assets totaled approximately $6.1 million, $11.9 million and $13.4 million in fiscal 2018, 2017 and 2016, respectively. Acquired intangibles are amortized on a straight-line basis over the remaining estimated economic life of the underlying intangible assets.

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Amortization of intangible assets classification (in thousands):			
Cost of sales	$ 7	$ —	$ —
Research and development	987	4,897	4,897
Selling, general and administrative	5,136	7,042	8,471
Total	$ 6,130	$ 11,939	$ 13,368

Estimated amortization expense of these intangible assets for the next five fiscal years and all years thereafter are as follows (in thousands):

	Amount
Fiscal year ending August:	
2019	$ 3,905
2020	3,905
2021	3,905
2022	3,891
2023	3,843
2024 and thereafter	6,806
Total	$ 26,255

(m) Long-Lived Assets

Long-lived assets, excluding goodwill, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset group to the future undiscounted cash flows expected to be generated by the asset group. If such assets are considered to be impaired, the impairment is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed are reported at the lower of the carrying amount or fair value, less cost to sell. No impairment of long-lived assets was recognized in fiscal 2018, 2017 and 2016.

(n) Research and Development Expense

Research and development expenditures are expensed in the period incurred.

(o) Restructuring Expense

In fiscal 2017 and 2016, the Company had multiple reductions-in-force in order to streamline operations and achieve operating efficiencies. During fiscal 2017, the Company recorded restructuring costs of $0.5 million for severance, severance-related benefits and building-related charges, of which $0.1 million was remaining to be paid as of August 25, 2017. During fiscal 2016, the Company recorded restructuring costs of $1.1 million for severance and severance-related benefits most of which was settled prior to August 26, 2016. For each fiscal 2017 and 2016, the reductions-in-force were completed by the end of the respective periods.

(p) Income Taxes

The Company uses the asset and liability method of accounting for income taxes. Deferred tax assets and liabilities are recognized for the future consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis and net operating loss and credit carryforwards. When necessary, a valuation allowance is recorded to reduce tax assets to amounts expected to be realized. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income (or loss) in the period that includes the enactment date. The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest and penalties related to unrecognized tax benefits in tax expense.

(q) Foreign Currency Translation

For foreign subsidiaries using the local currency as their functional currency, assets and liabilities are translated at exchange rates in effect at the balance sheet date and income and expenses are translated at average exchange rates during the period. The effect of this translation is reported in other comprehensive income (loss). Exchange gains and losses arising from transactions denominated in a currency other than the functional currency of the respective foreign subsidiaries are included in results of operations.

For foreign subsidiaries using the U.S. dollar as their functional currency, the financial statements of these foreign subsidiaries are remeasured into U.S. dollars using the historical exchange rate for property and equipment and certain other nonmonetary assets and liabilities and related depreciation and amortization on these assets and liabilities. The Company uses the exchange rate at the balance sheet date for the remaining assets and liabilities, including deferred taxes. A weighted average exchange rate is used for each period for revenues and expenses.

All foreign subsidiaries and branch offices, except Brazil and South Korea, use the U.S. dollar as their functional currency. The gains or losses resulting from the remeasurement process are recorded in other income (expense) in the accompanying consolidated statements of operations.

In fiscal 2018, 2017 and 2016, the Company recorded ($13.2) million, $0.3 million and 1.1 million, respectively, of foreign exchange gains (losses) primarily related to its Brazilian operating subsidiaries.

(r) Share-Based Compensation

The Company accounts for share-based compensation under ASC 718, *Compensation—Stock Compensation*, which requires companies to recognize in their statement of operations all share-based payments, including grants of share options and other types of equity awards, based on the grant-date fair value of such share-based awards.

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Stock-based compensation expense by category (in thousands):			
Cost of sales	$ 1,335	$ 636	$ 461
Research and development	1,460	655	725
Selling, general and administrative	7,763	4,073	2,686
Total	$ 10,558	$ 5,364	$ 3,872

(s) Loss Contingencies

The Company is subject to the possibility of various loss contingencies arising in the ordinary course of business. The Company considers the likelihood of a loss and the ability to reasonably estimate the amount of loss in determining the necessity for and amount of any loss contingencies. Estimated loss contingencies are accrued when it is probable that a liability has been incurred or an asset impaired and the amount of loss can be reasonably estimated. The Company regularly evaluates the most current information available to determine whether any such accruals should be recorded or adjusted.

(t) Comprehensive Income (Loss)

Comprehensive income (loss) consists of net income (loss) and other gains and losses affecting shareholders' equity that, under U.S. GAAP are excluded from net income (loss). For the Company, other comprehensive income (loss) generally consists of foreign currency translation adjustments.

(u) Concentration of Credit and Supplier Risk

The Company's concentration of credit risk consists principally of cash and cash equivalents and accounts receivable. The Company's revenues and related accounts receivable reflect a concentration of activity with certain customers (see Note 12). The Company does not require collateral or other security to support accounts receivable. The Company performs periodic credit evaluations of its customers to minimize collection risk on accounts receivable and maintains allowances for potentially uncollectible accounts.

The Company relies on three suppliers for the majority of its raw materials. At August 31, 2018 and August 25, 2017, the Company owed these three suppliers $138.4 million and $141.4 million, respectively, which was recorded as accounts payable and accrued liabilities. The inventory purchases from these suppliers in fiscal 2018, 2017 and 2016 were $1.5 billion, $1.0 billion and $1.0 billion, respectively.

(v) New Accounting Pronouncements

In March 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-05, Income Taxes (Topic 740): Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 118. This standard amends ASC 740, Income Taxes, to provide guidance on accounting for tax effects of the Tax cuts and Jobs Act (the "Tax Act") pursuant to Staff Accounting Bulletin No. 118, which allows companies to complete the accounting under ASC 740 within one-year measurement period from the Tax Act enactment date. This standard is effective upon issuance. The Company has applied the guidance in ASU 2018-05, see Note 6, Income Taxes, for further disclosure.

In February 2018, the FASB issued, ASU 2018-02, *Income Statement-Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Comprehensive Income*. The new guidance allows companies to reclassify stranded tax effects resulting from the Tax Act, from accumulated other comprehensive income to retained earnings. The guidance also requires certain new disclosures regardless of the election. The Company is required to adopt the guidance in the first quarter of fiscal 2020. Early adoption is permitted. The Company is currently evaluating the timing and the impact of these amendments to its consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash*, which clarifies the presentation of changes in restricted cash and restricted cash equivalents in the statement of cash flows. ASU 2016-18 will be effective for the Company in the first quarter of fiscal 2019 on a retrospective basis, and early adoption is permitted. The Company had $5.9 million of restricted cash at August 31, 2018 which is classified as noncurrent assets in the accompanying consolidated financial statements. The restricted cash was returned to the Company in the first quarter of fiscal 2019.

In August 2016, the FASB issued ASU 2016-15, *Cash Flow Statements, Classification of Certain Cash Receipts and Cash Payments*. The new guidance is intended to address the diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows under Topic 230, Statement of Cash Flows, and other Topics. The guidance addresses eight specific cash flow classification issues with the objective of reducing diversity in practice. The amendments are effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted including adoption in an interim period. If an entity early adopts the amendments in an interim period, any adjustments should be reflected as of the beginning of the fiscal year that includes the interim period. An entity that elects early adoption must adopt all of the amendments in the same period. The amendments should be applied using a retrospective transition period to each period presented. The Company does not believe the adoption of ASU 2016-15 will have a material impact on its consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*, which simplified certain aspects of the accounting for share-based payment transactions, including income taxes, forfeitures and classification of awards and classification in the statement of cash flows. In the first quarter of fiscal 2018, the Company adopted the applicable provisions of this standard as follows:

- The guidance requires excess tax benefits and tax deficiencies to be recorded as income tax benefit or expense in the statement of operations when the awards vest are settled, and eliminates the requirement to reclassify cash flows related to excess tax benefits from financing activities to operating activities on the statement of cash flows. The Company adopted the guidance prospectively effective August 26, 2017, and there was no impact to its consolidated financial statements.
- The guidance eliminates the requirement that excess tax benefits must be realized (through a reduction in income taxes payable) before companies can recognize them. The Company applied the modified retrospective transition method upon adoption. The previously unrecognized excess tax effects were recorded as a deferred tax asset in the amount of $0.9 million, which was fully offset by a valuation allowance of the same amount as of August 26, 2017, resulting no impact to opening retained earnings.
- In accordance with the guidance, the Company has elected to make an entity-wide accounting policy change to account for forfeitures when they occur. There is no cumulative-effect on opening retained earnings.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, which modified lease accounting for both lessees and lessors to increase transparency and comparability by recognizing lease assets and lease liabilities by lessees for those leases classified as operating leases under previous accounting standards and disclosing key information about leasing arrangements. ASU 2016-02 will be effective for the Company beginning on September 1, 2019 and early adoption is permitted. In transition, lessees and lessors are required to recognize and measure leases at the beginning of the earliest period presented using a modified retrospective approach. Although the Company is currently evaluating the impact of adopting ASU 2016-02 on its consolidated financial statements and related disclosures, as disclosed in Note 10(a), the Company has over $18.4 million in lease commitments at August 31, 2018 and believes that the adoption will have a material impact to the consolidated financial statements.

In May 2014, the FASB issued a new standard, ASU No. 2014-09, *Revenue from Contracts with Customers,* as amended, which will supersede nearly all existing revenue recognition guidance. Under ASU 2014-09, an entity is required to recognize revenue upon transfer of promised goods or services to customers in an amount that reflects the expected consideration received in exchange for those goods or services. ASU No. 2014-09 defines a five-step process in order to achieve this core principle, which may require the use of judgment and estimates, and also requires expanded qualitative and quantitative disclosures relating to the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers, including significant judgments and estimates used. The FASB has issued several amendments to the new standard, including clarification on identifying performance obligations. The amendments include ASU No. 2016-08, *Revenue from Contracts with Customers (Topic 606)—Principal versus Agent Considerations*, which was issued in March 2016, and clarifies the implementation guidance for principal versus agent considerations in ASU 2014-09. The new standard permits adoption either by using (i) a full retrospective approach for all periods presented in the period of adoption or (ii) a modified retrospective approach with the cumulative effect of initially applying the new standard recognized at the date of initial application and providing certain additional disclosures. The new standard is effective for annual reporting periods beginning after December 15, 2017, with early adoption permitted for annual reporting periods beginning after December 15, 2016. The Company will adopt the new standard effective September 1, 2018 using the modified retrospective approach. While the Company is finalizing the assessment of the impact of adoption, it currently anticipates the cumulative effect amount to be less than a $2.0 million increase to retained earnings related to the difference in timing of revenue recognition.

The Company has completed its assessment and implemented policies, processes, and controls to support the standard measurement and disclosure requirements. Under ASC 606, the Company will recognize a change to the timing of revenue recognition in two areas. The first relates to customized product sales orders deemed not cancellable and nonrefundable (NCNR). Under current accounting standards, the Company recognizes revenue and costs related to these sales when products are shipped or delivered to the customers based on the terms of the purchase orders and sales agreements. Under ASC 606, the terms within the NCNR sales orders that provide the Company with a legally enforceable right to receive payment for performance completed to date will affect the timing of revenue recognition. Accordingly, the Company will recognize revenue over time as customized products listed within the NCNR orders are completed.

The second change for the Company under ASC 606 relates to the timing of revenue recognition for customized product sales with terms that require the customer to purchase 100% of all parts built to fulfill the customers forecast. Under current accounting standards, the Company recognizes revenue and costs related to these sales when products are shipped or delivered to the end-customers based on the terms of the purchase orders and sales agreements. Under ASC 606, the Company will recognize revenue when control of the underlying asset(s) has passed to the customer. For these sales, control passes when the Company has made these products available to the customer and under the terms of the agreement cannot repurpose them without the customer's express consent. Accordingly, the Company will recognize revenue at the point in time when products made to the customer's forecast are completed and made available to the customer.

We incur certain incremental costs to obtain contracts with customers, primarily in the form of sales commission. As the amortization period is generally one year or less, we have elected to apply the practical expedient and recognize the related commission expense as incurred.

(w) Subsequent events

On October 2, 2018, after the date of the balance sheet, SMART Worldwide, Global, SMART Modular Technologies (Global), Inc. (Global) and SMART Modular Technologies, Inc. (SMART Modular) entered into the Second Amendment (the Second Amendment) to the Amended Credit Agreement (as defined in Note 7) which did not become effective until October 25, 2018. As a result of the Second Amendment, the borrowers were granted a holiday from the obligation to make repayments of principal under the Initial Term Loans and the Incremental Term Loans (as defined in Note 7) at any time with respect to fiscal 2019. In addition, the borrowers were granted a holiday from the obligation to repay any loans as a result of excess cash flow that would otherwise be due with respect to any period of fiscal 2019.

SMART Brazil entered into a guarantee arrangement with Banco Votorantim S.A. which bank in turn replaced the guarantees of the BNDES Agreements (as defined in Note 7) previously issued by Itaú Bank. Itaú Bank approved the guarantee arrangements and returned R$22.0 million (or $5.9 million) of committed balances to SMART Brazil in the first quarter of fiscal 2019.

(2) Business Acquisitions

On June 8, 2018, SMART Global Holdings entered into an Agreement and Plan of Merger (the Penguin Merger Agreement), by and among SMART Global Holdings, Glacier Acquisition Sub, Inc., a Delaware corporation and a wholly-owned indirect subsidiary of the SMART Global Holdings (Merger Sub), Penguin Computing, Inc., a California corporation (Penguin) and Fortis Advisors LLC, a Delaware limited liability company, solely in its capacity as the representative of the holders of the securities of Penguin. Pursuant to the Penguin Merger Agreement, on June 8, 2018, Merger Sub was merged with and into Penguin, with Penguin surviving as a wholly-owned indirect subsidiary of SMART Global Holdings (the Penguin Merger). SMART Global Holdings through one or more subsidiaries, paid the Penguin equityholders approximately $45 million at closing and assumed approximately $32.3 million of Penguin's outstanding indebtedness. SMART Global Holdings financed the acquisition with net proceeds of $60.0 million from the Incremental Amendment. Pursuant to the Penguin Merger Agreement, the former equityholders of Penguin are also entitled to potential cash earn-out payments, up to $25.0 million based on Penguin's achievement of specified gross profit levels through December 31, 2018. SMART Global Holdings deposited $6.0 million of the purchase price into escrow as security for Penguin's indemnification obligations during the escrow period of one year. SMART Global Holdings also deposited $2.0 million of the purchase price into escrow as security for customary post-closing adjustments to the purchase price.

Under the acquisition method of accounting, the assets acquired and liabilities assumed of Penguin were recorded as of the acquisition date at their respective fair values. The reported consolidated financial condition after completion of the acquisition reflects these fair values. Penguin's results of operations are included in the consolidated financial statements from the date of acquisition.

The initial fair value of contingent consideration was estimated at the date of acquisition to be $3.0 million, which was recorded as a current liability. The Company determined the fair value of the obligations to pay contingent consideration using a real options technique which incorporates various estimates, including projected gross profit for the period, a volatility factor applied to gross profit based on year-on-year growth in gross profit of comparable companies, discount rates and the estimated amount of time until final payment is made. This fair value measurement is based on significant inputs not observable in the market, which ASU 820-10-35 refers to as Level 3 inputs. The resulting probability-weighted cash flows were discounted using the US Information Technology B Corporate Bond Yields of 4.06%, which is representative of a market participant assumption.

Subsequent to the acquisition date, the Company adjusted the contingent consideration to its current fair value with such changes recognized in income from operations. Changes in fair values reflect new information about the probability and timing of meeting the conditions of the gross profit target. As of August 31, 2018, the fair value of the contingent consideration was $0.

A reconciliation of net cash exchanged in accordance with the purchase agreement to the total purchase price as of the closing date of the merger, June 8, 2018, is presented below (in thousands):

Net cash for merger	$	42,316
Cash and cash equivalents acquired		2,769
Upfront payment in accordance with agreement		45,085
Post closing adjustments in accordance with agreement		(3,479)
Total consideration		41,606
Estimated fair value of contingent consideration		3,000
Total purchase price	$	44,606

The assets acquired and liabilities assumed at the acquisition date are based upon their respective fair values summarized below (in thousands):

Tangible assets acquired	$	84,707
Liabilities assumed		(72,226)
Identifiable intangible assets		27,550
Goodwill		4,575
Total net assets acquired	$	44,606

Asset categories acquired included working capital, fixed assets, and identified intangible assets. The intangible assets are as follows (in thousands):

		Amount	Estimated Useful Life (in years)
Customer relationships	$	14,700	7 years
Trade name		12,200	7 years
Technology		250	4 years
Existing order backlog		400	< 1 year
	$	27,550	

The excess of purchase price over the fair value amounts assigned to the assets acquired and liabilities assumed represents the goodwill amount resulting from the acquisition. The Company does not expect any portion of this goodwill to be deductible for tax purposes. The goodwill attributable to the Penguin Merger has been recorded as a noncurrent asset and is not amortized, but is subject to an annual review for impairment. Factors that contributed to the recognition of goodwill include the broader reach and capabilities of the Company into new technologies, markets and channels that leverage its existing products and services. Penguin brings an outstanding customer base, solid products and strong supplier relationships to the Company in the specialty compute, storage and networking markets. Conversely, Penguin will have substantially improved access to capital to drive additional investment in, and further development and growth of its product and services.

As part of the Penguin Merger, the Company recorded a net deferred tax liability of $1.6 million. This amount was primarily comprised of $7.9 million related to non-goodwill intangible assets and other fair market value adjustments, offset by net deferred tax assets including acquired net operating losses and research credit carryovers totaling $6.3 million.

Due to the timing of acquisition, the total purchase consideration has been allocated to the tangible and intangible assets acquired and liabilities assumed based on a preliminary valuation analysis. These preliminary values may change in future reporting periods upon finalization of the valuation and net working capital adjustment, which will occur no later than the third quarter of fiscal 2019. During the year ended August 31, 2018, the Company incurred certain costs related to the merger, which are included in selling, general and administrative expense on the statement of operations. Merger-related costs include the following (in thousands):

		August 31, 2018
Professional fees	$	2,254
Employee retention bonuses		1,181
	$	3,435

For the period of June 8, 2018 (date of acquisition) to August 31, 2018, total revenues and net loss for Penguin amounted to $52.5 million and $0.7 million, respectively.

Unaudited Pro Forma Information

The following unaudited pro forma financial information presents our combined results of operations as if the acquisition of Penguin and the related issuance of our Incremental Facility Agreement had occurred on August 27, 2016. The unaudited pro forma financial information is not necessarily indicative of what our consolidated results of operations actually would have been had the acquisition been completed on August 27, 2016. In addition, the unaudited pro forma financial information does not attempt to project the future results of operations of the combined company. The actual results may differ significantly from the pro forma results presented here due to many factors.

(In thousands, except per share data)	Fiscal 2018	Fiscal 2017
Total net sales	$ 1,437,963	$ 909,022
Net income (loss)	$ 116,787	$ (14,268)
Earnings per share:		
Basic	$ 5.30	$ (0.90)
Diluted	$ 5.05	$ (0.90)

The unaudited pro forma financial information above reflects the following material adjustments:

- Incremental amortization expense related to the estimated fair value of identifiable intangible assets from the purchase price allocation.
- Incremental interest expense and amortization of debt issuance costs related to our Incremental Facility Agreement (as defined in Note 7).
- The adjustments to income tax expense as a result of the consolidation and pro forma adjustments.

(3) Related Party Transactions

In the normal course of business, the Company had transactions with its affiliates as follows (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Affiliates:			
Net sales	$ 133,552	$ 73,455	$ 38,817
Expenses:			
Management advisory fees	$ —	$ 3,000	$ 4,001

As of August 31, 2018 and August 25, 2017, amounts due from these affiliates were $11.7 million and $8.7 million, respectively.

Management advisory fees represent fees paid to entities affiliated with Silver Lake pursuant to a management agreement that was terminated upon closing of the Company's initial public offering on May 30, 2017 (the IPO). There was no balance due under this agreement as of August 31, 2018 and August 25, 2017.

(4) Accounts Receivable Purchasing Facility

In May 2012, SMART Modular and SMART Modular Technologies (Europe) Limited (collectively, for this footnote only, Sellers), both wholly owned subsidiaries of the Company, entered into a Receivables Purchasing Agreement (as amended, the RPA) with Wells Fargo Bank, N.A. (Wells Fargo). Under the RPA, the Sellers could offer to sell to Wells Fargo certain Eligible Receivables (as defined in the RPA) due from certain designated customers, and Wells Fargo had the right to purchase Eligible Receivables offered for sale by Sellers. The maximum amount of Eligible Receivables that Wells Fargo could purchase was capped based upon the aggregate outstanding balances of purchased receivables which maximum was set at $50 million with sublimits assigned to each of Sellers' customers that were approved for the program. Wells Fargo had no obligation to purchase any Eligible Receivables under the RPA. All purchases of Eligible Receivables are at a discount equal to a 2-month LIBOR plus 2.75% annual discount margin, calculated on a daily basis for the number of days between the payment of the purchase price by Wells Fargo to the Sellers and the actual collection of the Eligible Receivables by Wells Fargo from the account debtor. Purchases were also subject to a 95% advance rate with the 5% being reimbursed to the Sellers upon collection by Wells Fargo from the account debtor. Under the terms of the RPA, Sellers retained limited recourse for product warranties and commercial disputes and Wells Fargo would bear the full risk of insolvency and collectability. Sellers were appointed as the agent of Wells Fargo to perform collection services. The RPA was not a committed facility and could be terminated by either party upon 30 days' notice. The RPA had standard representations and warranties, including for the validity and collectability of the Eligible Receivables, and various negative and affirmative covenants that are typical for arrangements of this nature. The obligations of the Sellers were jointly and severally guaranteed by SMART Worldwide and Global. Financing under this receivables purchase program qualified for off-balance sheet financing as the transfer of receivables to Wells Fargo represented a true-sale. The RPA was terminated effective June 30, 2017.

In fiscal 2017, the Sellers sold $166.2 million of accounts receivables under the RPA. There were no outstanding balance of receivables sold and not yet collected as of August 25, 2017. Total interest expense fees paid in 2017 and 2016 was $0.7 million and $1.8 million, respectively.

(5) Balance Sheet Details

Inventories

Inventories consisted of the following (in thousands):

	August 31, 2018	August 25, 2017
Raw materials	$ 105,017	$ 42,255
Work in process	35,977	22,965
Finished goods	80,425	61,915
Total inventories*	$ 221,419	$ 127,135

* As of August 31, 2018 and August 25, 2017, 22% and 34%, respectively, of total inventories represented inventory held under the Company's supply chain services.

Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consisted of the following (in thousands):

	August 31, 2018	August 25, 2017
Indemnification claims receivable*	$ 8,000	$ —
Unbilled service receivables	5,361	4,280
Prepaid ICMS taxes in Brazil**	4,593	—
Prepaid R&D expenses	2,590	3,194
Prepayment for VAT and other transaction taxes	2,557	1,890
Prepaid income taxes	1,697	1,023
Revolver debt fees	952	970
Other prepaid expenses and other current assets	6,293	2,758
Total prepaid expenses and other current assets	$ 32,043	$ 14,115

* See Note 2.

** See Note 1(i).

Property and Equipment, Net

Property and equipment consisted of the following (in thousands):

	August 31, 2018	August 25, 2017
Office furniture, software, computers and equipment	$ 21,267	$ 17,134
Manufacturing equipment	97,192	96,318
Leasehold improvements*	24,011	24,302
	142,470	137,754
Less accumulated depreciation and amortization	85,855	82,572
Net property and equipment	$ 56,615	$ 55,182

* Includes Penang facility, which is situated on leased land.

Depreciation and amortization expense for property and equipment was approximately $20.0 million, $21.3 million and $18.1 million in fiscal 2018, 2017 and 2016, respectively.

Other Noncurrent Assets

Other noncurrent assets consisted of the following (in thousands):

	August 31, 2018	August 25, 2017
Prepaid ICMS taxes in Brazil*	$ 7,483	$ 12,253
Restricted cash	5,859	7,027
Deferred tax assets	2,430	2,098
Prepaid R&D expense	2,218	333
Revolver debt fees	1,383	2,334
Tax receivable	1,237	1,223
Other	1,839	1,460
Total other noncurrent assets	$ 22,449	$ 26,728

* See Note 1(i)

Accrued Liabilities

Accrued liabilities consisted of (in thousands):

	August 31, 2018	August 25, 2017
Accrued employee compensation	$ 19,501	$ 17,426
Deferred revenue	8,292	—
Indemnification claims liability	4,521	—
VAT and other transaction taxes payable	3,037	1,314
Accrued interest payable	2,457	681
Income taxes payable	2,242	2,459
Accrued warranty reserve	856	275
Accrued credits payable to customers	379	2,296
Other accrued liabilities	3,905	2,865
Total accrued liabilities	$ 45,190	$ 27,316

(6) Income Taxes

Income (loss) before provision for income taxes for all annual periods presented consisted of the following (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
U.S.	$ (7,918)	$ (8,352)	$ (5,545)
Non-U.S.	145,696	10,471	(11,971)
Total	$ 137,778	$ 2,119	$ (17,516)

The components of the provision for income taxes are as follows (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Current:			
Federal	$ —	$ (79)	$ 3
State	19	(461)	50
Other foreign	21,688	12,616	3,678
	21,707	12,076	3,731
Deferred:			
Federal and state	(1,661)	—	—
Other foreign	(1,731)	(2,162)	(1,287)
	(3,392)	(2,162)	(1,287)
Total income tax provision	$ 18,315	$ 9,914	$ 2,444

In applying the statutory tax rate in the effective income tax rate reconciliation, the Company used the U.S. statutory tax rate, rather than the Cayman Islands zero percent tax rate. The effective income tax rate, expressed as a percentage of income before income taxes, varied from the U.S. statutory income tax rate applied to loss before provision for income taxes as a result of the following items:

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Statutory tax benefit rate	25.8%	35.0%	35.0%
Foreign income taxes at different rates	(16.2)	312.1	(37.5)
State income tax, net of federal tax benefit	3.5	(23.8)	(0.2)
Tax on uncertain tax positions	—	21.8	0.3
Change in valuation allowance	(9.7)	68.1	(9.7)
Non-deductible expenses	(1.4)	56.0	—
Change in U.S. federal tax rate	11.4	—	—
Other - net	(0.1)	(1.5)	(1.8)
Effective income tax rate	13.3%	467.7%	(13.9%)

The tax effects of temporary differences that gave rise to significant portions of deferred tax assets and liabilities are as follows (in thousands):

	August 31, 2018	August 25, 2017
Deferred tax assets:		
Accruals and allowances	$ 4,002	$ 2,243
Share-based compensation	5,155	9,258
Research and other tax credits carryforwards	1,625	925
Property and equipment	721	1,901
Net operating loss carryforwards	29,563	33,417
Deferred tax assets	41,066	47,744
Valuation allowance	(32,497)	(45,534)
Deferred tax assets after valuation allowance	8,569	2,210
Deferred tax liabilities:		
Purchase accounting intangibles	(6,432)	(1,598)
Net deferred tax liabilities	(6,432)	(1,598)
Net deferred tax assets	$ 2,137	$ 612

The Company records its deferred tax assets within other long term assets on the consolidated balance sheets as of August 31, 2018 and August 25, 2017.

On December 22, 2017, the Tax Cuts and Jobs Act (P.L. 115-97) (TCJA) was signed into law. Among other changes is a permanent reduction in the federal corporate income tax rate from 35% to 21% effective January 1, 2018. As a result of the reduction in the corporate income tax rate, the Company revalued its net deferred tax asset during the year ended August 31, 2018. The Company estimates the reduction in the value of our net deferred tax asset of approximately $15.7 million, which will be offset by the change in valuation allowance of $15.7 million. TCJA also repealed the corporate AMT for tax years beginning after December 31, 2017, and provides that existing AMT credit carryovers are refundable in tax years beginning after December 31, 2017. The Company has approximately $0.3 million of AMT credit carryovers that are expected to be fully refunded between 2019 and 2022. This amount is recorded as a long term tax receivable within other long term assets on the consolidated balance sheet as of August 31, 2018. The Company does not expect that the Act will have a significant impact on the results of operations.

In connection with the Company's acquisition of Penguin during fiscal 2018, deferred tax liabilities were established on the acquired identifiable intangible assets. These deferred tax liabilities exceeded the acquired deferred tax assets by $1.6 million and created additional sources of income to realize a tax benefit for the Company's deferred tax assets. As such, authoritative guidance requires the impact on the acquiring company's deferred tax assets and liabilities caused by an acquisition be recorded in the acquiring company's financial statements outside of acquisition accounting. Accordingly, the valuation allowance on a portion of the Company's deferred tax assets was released and resulted in an income tax benefit of $1.6 million.

As of August 31, 2018, the Company had U.S. (federal) and California (state) net operating loss carryforwards of approximately $131.1 million and $70.0 million, respectively. The federal net operating loss carryforwards will expire in fiscal 2023 through fiscal 2038, if not utilized, and the California net operating loss carryforwards will expire in fiscal 2019 through fiscal 2038, both in varying amounts. In addition, the Company has U,S, (federal) and California (state) tax credit carryforwards of approximately $1.0 million and $0.8 million, respectively. These federal and California carryforwards are subject to an annual limitation, under the provisions of Section 382 of the Internal Revenue Code of 1986. Section 382 provides an annual limitation on net operating loss carryforwards following an ownership change. Any unused annual limitation is carried forward and added to the limitation in the subsequent year. In addition to other potential limitations, approximately $14.8 million and $4.6 million of acquired federal and state loss carryovers and $0.2 million and $0.5 million of acquired federal and state credit carryovers are subject to these limitations.

The valuation allowance on deferred tax assets, primarily related to U.S. net operating loss carry forwards and tax credit carryforwards, was $32.5 million and $45.5 million as of August 31, 2018 and August 25, 2017, respectively. The decrease in valuation allowance of $13.0 million is primarily attributable to the increase in TCJA corporate rate reduction and future reversals of acquired taxable temporary differences. We intend to maintain a valuation allowance until sufficient positive evidence exists to support the realization of such deferred tax assets.

Provisions have been made for deferred income taxes on undistributed earnings of foreign subsidiaries to the extent that dividend payments by such foreign subsidiaries are expected to result in additional tax liability. The undistributed foreign earnings of approximately $229.4 million would not be included in U.S. taxable income because the U.S. subsidiaries are not direct or indirect shareholders of these foreign subsidiaries. The Company, a Cayman Islands entity, is the indirect holding company for which the Cayman Islands do not assess income taxes. The undistributed foreign earnings would incur an insignificant amount of foreign country withholding taxes if it were to be distributed to the Company due to foreign tax laws and rulings.

The Company's Malaysia subsidiary, SMART Modular Technologies Sdn. Bhd. (SMART Malaysia), has been approved for tax holidays for the operations of its Pioneer business and Global Supply Chain (GSC) business. Both tax holidays are effective for five years. The Pioneer tax holiday commenced on January 1, 2014 and will expire on December 31, 2018. The GSC tax holiday commenced on September 1, 2013 and expired on August 31, 2018. The Malaysian tax holidays are subject to certain conditions, with which SMART Malaysia has complied for all applicable periods in fiscal 2018, 2017 and 2016. The net impact of these tax holidays in Malaysia, as compared to the Malaysia statutory tax rate, was to decrease income tax expense by approximately $9.1 million ($0.39 per share), $6.1 million ($0.39 per share) and $4.9 million ($0.36 per share) in fiscal 2018, 2017 and 2016, respectively. The Company has received approvals for a continuation of these tax incentives beyond calendar 2018, subject to certain operating conditions. The impact of these tax incentives will be recorded in the period in which they become effective.

Effective February 1, 2011, SMART Brazil began to participate in PADIS. This program is specifically designed to promote the development of the local semiconductor industry. The Brazilian government has approved multiple applications for different products by SMART Brazil for certain beneficial tax treatment under the PADIS incentive. This beneficial tax treatment includes a reduction in the Brazil statutory income tax rate from 34% to 9% on taxable income for the Brazilian semiconductor operations of SMART Brazil. The net impact of the PADIS beneficial tax treatment, as compared to the Brazilian statutory tax rate, was to decrease income tax expense by approximately $30.5 million ($1.32 per share), $10.4 million ($0.66 per share) and $0.7 million ($0.06 per share) for fiscal 2018, 2017 and 2016, respectively. In order to receive the expected benefits, SMART Brazil is required to invest 4% of its net semiconductor sales in research and development (R&D) activities each calendar year, which is the measurement period. In May 2014, the R&D investment requirement was reduced to 3% for calendar years 2014 and 2015. SMART Brazil fulfilled this R&D investment requirement in calendar year 2016 and 2017 and expects to fulfill this R&D requirement in calendar year 2018.

The total gross amount of unrecognized tax benefits was approximately $16.5 million and $15.7 million as of August 31, 2018 and August 25, 2017, respectively. The Company records interest and penalties on unrecognized tax benefits as income tax expense. The balance of accrued interest and penalties on unrecognized tax benefits was $0.3 million as of both August 31, 2018 and August 25, 2017. As of August 31, 2018, changes to our uncertain tax positions in the next twelve months that are reasonably possible are not expected to have a significant impact on our financial position or results of operations.

The aggregate changes in the balance of unrecognized tax benefits were as follows (in thousands):

	August 31, 2018	August 25, 2017
Unrecognized tax benefits, beginning of period	$ 15,715	$ 15,333
Tax positions taken in prior periods:		
Gross increases	329	246
Gross decreases	—	—
Tax positions taken in current period:		
Gross increases	489	700
Settlements	(19)	(564)
Unrecognized tax benefits, end of period	$ 16,514	$ 15,715

The total amount of unrecognized tax benefits that would affect the effective tax rate, if recognized is $1.6 million and $1.5 million for fiscal 2018 and 2017, respectively.

The Company's U.S. subsidiaries file federal and state income/franchise tax returns in the United States. The tax periods ended August 2013 through August 2017 remain open to federal income tax examination. Generally, in the major state jurisdictions, the tax periods ended August 2012 through August 2017 remain open to state income/franchise tax examination. In addition, any prior year that generated a net operating loss or tax credit carryforward available for use in the taxable periods ending after August 2012 and August 2011 for federal and state income/franchise taxes, respectively, remains open to income tax examination to the extent of such net operating loss carryforward.

The Company's non-U.S. subsidiaries file income tax returns in various non-U.S. jurisdictions, including Malaysia, Brazil, Luxembourg, United Kingdom, Hong Kong, South Korea, Taiwan, Singapore and Italy. The years that are open for examination by the tax authorities of these jurisdictions vary by country. The earliest year open for examination is the fiscal year ended 2003 in the U.S. and the fiscal year ended August 2010 for any non-U.S. subsidiary (SMART Malaysia).

(7) Long-Term Debt

Senior Secured Credit Agreement

On August 9, 2017, SMART Worldwide, Global, and SMART Modular entered into a Second Amended and Restated Credit Agreement (together with all related documents, as amended from time to time including as amended by the Incremental Amendment as defined below, the Amended Credit Agreement) with certain lenders which amended and restated that certain Amended and Restated Credit Agreement dated as of November 5, 2016 (the ARCA), which had amended and restated that certain Credit Agreement dated as of August 26, 2011 (the Original Credit Agreement). The Company's subsidiaries named as borrowers in the Amended Credit Agreement and certain other subsidiaries that entered into a guarantee with respect to the Amended Credit Agreement including Penguin, are collectively referred to as the Loan Parties and together with SMART Malaysia, the Credit Group. The Amended Credit Agreement provides for $165 million of initial term loans (the Initial Term Loans) with a maturity date of August 9, 2022, and $50 million of revolving loans with a maturity date of February 9, 2021 (the Initial Revolver Maturity Date) which revolving loan maturity date automatically extends to February 9, 2022 if the total leverage ratio of the Credit Group is less than 3.0:1.0 on the Initial Revolver Maturity Date. SMART Global Holding is not a party to the Amended Credit Agreement.

On June 8, 2018, SMART Worldwide, Global and SMART Modular entered into an Incremental Facility Agreement (the Incremental Amendment) which provided for incremental term loans under the Amended Credit Agreement in the aggregate amount of $60 million (the Incremental Term Loans) which Incremental Term Loans are on substantially identical terms as the Initial Term Loans. Pursuant to the Incremental Amendment, the borrowers agreed to pay the structuring advisor a $0.6 million fee pursuant to a separate agreement.

The Amended Credit Agreement is jointly and severally guaranteed on a senior basis by certain subsidiaries of Global (excluding, among other subsidiaries, SMART Malaysia). In addition, the Amended Credit Agreement is secured by a pledge of the capital stock of, or equity interests in, most of the subsidiaries of SMART Worldwide (including, without limitation, SMART Malaysia and Penguin) and by substantially all of the assets of the subsidiaries of SMART Worldwide, excluding the assets of SMART Malaysia and certain other subsidiaries.

Covenants. The Amended Credit Agreement contains various representations and warranties and affirmative and negative covenants that are usual and customary for loans of this nature including, among other things, limitations on the Credit Group's ability to engage in certain transactions, incur debt, pay dividends, and make investments. The Amended Credit Agreement also requires that the Credit Group maintain a Secured Leverage Ratio not in excess of 3.5:1.0 as of the end of each fiscal quarter (commencing with the fiscal quarter ending November 24, 2017) and puts restrictions on the Credit Group's ability to retain cash proceeds from the sale of certain assets with net proceeds in excess of $2 million, subject to customary six-month reinvestment rights. The Incremental Amendment prohibited the Credit Group from increasing the borrowings under the Penguin Credit Facility, as defined below, after the Penguin acquisition and required the Credit Group to maintain a minimum amount of liquidity until the Credit Group repaid the Penguin Credit Facility which the Credit Group was required to do within 60 days (or such longer period as agreed to by the Administrative Agent) after the Penguin acquisition. The Incremental Amendment also required the Credit Group to pledge as collateral, all of the capital stock of and substantially all of the assets of Penguin within 60 days after the closing of the Penguin acquisition.

Interest and Interest Rates. Loans under the Amended Credit Agreement accrue interest at a rate per annum equal to an applicable margin plus, at the borrowers' option, either a LIBOR rate, or a base rate. The applicable margin for term loans with respect to LIBOR borrowings is 6.25% and with respect to base rate borrowings is 5.25%. The interest rate on the Initial Term Loans was 8.6%, 7.57% and 8.25% as of August 31, 2018, August 25, 2017 and August 26, 2016, respectively. The interest rate on the Incremental Term Loans was 8.58% as of August 31, 2018.

The applicable margin for revolving loans adjusts every quarter based on the Secured Leverage Ratio for the most recent fiscal quarter with the applicable margin for revolving loans with respect to LIBOR borrowings ranging from 3.75% to 4.00% and the applicable margin for revolving loans with respect to base rate borrowings ranging from 2.75% to 3.00%. Prior to November 5, 2016, the effective date of the ARCA, the applicable margin was adjusted based on the Secured Net Leverage Ratio.

Interest on base rate loans is payable on the last day of each calendar quarter. Interest on LIBOR-based loans is payable every one, two, three, six, nine or twelve months after the date of each borrowing, dependent on the particular interest rate period selected with respect to such borrowing.

Principal Payments. The Amended Credit Agreement requires quarterly repayments of principal under the Initial Term Loans equal to 2.5% of $165 million, or $4.1 million per fiscal quarter and, commencing on November 30, 2018, quarterly repayments of principal under the Incremental Term Loans equal to 2.5% of $60 million, or $1.5 million per fiscal quarter. During fiscal 2018 and 2017, the borrowers made scheduled principal payments of $16.5 million and $11.6 million, respectively.

Prepayments . The borrowers have the right at any time to make optional prepayments of the principal amounts outstanding under the Amended Credit Agreement provided that prepayments of principal which are voluntary or are made in connection with certain transactions will be subject to prepayment premiums of 3%, 2% and 1% during the first, second and third years, respectively, after the effective date of the Amended Credit Agreement; provided that such prepayment premiums were not applicable to prepayments of the Incremental Term Loans during the two months following the closing of the Penguin acquisition.

The Amended Credit Agreement also requires certain mandatory prepayments of principal whereby the borrowers must prepay outstanding loans, subject to certain exceptions, which include, among other things:

- 75% of excess cash flow on a semi-annual basis if the total leverage ratio is greater than 1.5:1.0, (ii) 50% of excess cash flow on a semi-annual basis if the total leverage ratio is greater than 1.0:1.0 but less than or equal to 1.5:1.0 and (iii) 25% of excess cash flow on an annual basis if the secured leverage ratio is less than or equal to 1.0:1.0., which amounts will be reduced by any permitted voluntary prepayments of principal made in the applicable fiscal year;

- 100% of the net proceeds of certain asset sales or other dispositions of property of Global or any of its restricted subsidiaries, subject to limited rights to reinvest the proceeds within six months; and
- 100% of the net cash proceeds of incurrence of certain debt by Global or any of its restricted subsidiaries, other than proceeds from certain debt to be incurred under the Amended Credit Agreement.

No mandatory prepayments were required for fiscal 2018 or 2017.

On November 29, 2016, the Credit Group received all required approvals from the lenders and entered into Amendment No. 4 to the Credit Agreement (Amendment 4) dated as of November 5, 2016 (the Amendment 4 Effective Date) which, among other things, adopted the ARCA. Pursuant to Amendment 4, the borrowers agreed to pay the Administrative Agent a fee in the amount of $1 million pursuant to a separate agreement and to pay a fee in the form of an additional term loan, in the amount of $5 million for the ratable account of the term lenders party to Amendment 4. Additionally, SMART Global Holdings was obligated to make an aggregate equity investment of at least $9.9 million in cash in Global, and SMART Global Holdings was obligated to issue 3,467,571 warrants (the Lender Warrants) to purchase 20% on a pro forma basis, of the then outstanding ordinary shares of SMART Global Holdings, to the term lenders party to Amendment 4, which Lender Warrants were exercisable at $0.03 per share, with 1,541,143 warrants totaling 10% of SMART Global Holdings' then outstanding shares (the First Tranche Warrants) exercisable immediately and 1,926,428 warrants to purchase an additional 10% of SMART Global Holdings' then outstanding shares (the Second Tranche Warrants), exercisable only if there were balances outstanding under the original term loans at the one year anniversary of the Amendment 4 Effective Date. The relative fair value of the Lender Warrants and the fees payable to the lenders in connection with the ARCA were recorded as debt discount and resulted in additional interest expense over the then amended term of the loan using the effective interest method following debt modification accounting.

Under the terms of the ARCA, the maturity date of the term loans and the revolving loans was extended from August 26, 2017 to August 26, 2019. If there were balances still outstanding on the original term loans at the one year anniversary of the Amendment 4 Effective Date, the borrowers would have been obligated to pay an additional fee to the term lenders of $5 million in cash. In addition, the ARCA increased the quarterly scheduled principal payments of term loans to $3.9 million per quarter to be paid on the last day of each fiscal quarter starting November 25, 2016. Under the ARCA, early mandatory repayments of principle were applied in the reverse order of maturity.

On June 2, 2017, SMART Global Holdings contributed $61.0 million from the proceeds of the IPO, to Global which proceeds Global in turn used to pay down the original term loans as required under the ARCA, resulted in a $6.7 million loss on early repayment of long-term debt. As of August 9, 2017, prior to the one year anniversary of the Amendment 4 Effective Date, the Credit Group entered into the Amended Credit Agreement with new term loans in the aggregate principal amount of $165 million with different lenders and the Second Tranche Warrants were terminated. The proceeds from the Amended Credit Agreement were used to fully repay and refinance the term loans under the ARCA in the principal amount of $151.0 million, which resulted in a write off of $15.2 million of original issue discount and debt issuance costs as an extinguishment loss.

Term loans under the Amended Credit Agreement were issued at a discount of 2.0% of the then outstanding principal amount of $165 million, for a discount of $3.3 million. The Company incurred $8.7 million debt issuance costs upon entering into the Amended Credit Agreement, of which $5.3 million was attributable to the term loans and recorded as a direct reduction to the face amount of the term loans, and $3.4 million was allocated to the revolving line of credit and recorded as a separate asset on the balance sheet. Debt issuance costs and debt discount related to term loans are being amortized to interest expense based on the effective interest rate method over the life of the term loans. Those fees allocated to the revolving line of credit are being amortized to interest expense ratably over the life of the revolving line of credit.

As of August 31, 2018, the outstanding principal balance of all term loans under the Amended Credit Agreement was $208.5 million and there were no outstanding revolving loans. As of August 25, 2017, the outstanding principal balance of term loans under the credit agreement then in effect was $165.0 million and there were no outstanding revolving loans. The fair value of the term loans as of August 31, 2018 and August 25, 2017 was estimated to be approximately $207.5 million and $164.2 million, respectively. As of August 31, 2018 and August 25, 2017, since the Company used broker quotes from inactive markets and there were no unobservable inputs, this was treated as a Level 2 financial instrument.

On October 2, 2018, after the date of the balance sheet, SMART Worldwide, Global and SMART Modular entered into the Second Amendment to the Amended Credit Agreement (the Second Amendment) which did not become effective until October 25, 2018. As a result of the Second Amendment, the borrowers were granted a holiday from the obligation to make repayments of principal under the Initial Term Loans and the Incremental Term Loans at any time with respect to fiscal 2019. In addition, the borrowers were granted a holiday from the obligation to repay any loans as a result of excess cash flow that would otherwise be due with respect to any period of fiscal 2019.

Penguin Credit Agreement

On June 8, 2018 in connection with the Penguin acquisition, the Company assumed the outstanding balances due under that certain credit agreement dated January 8, 2018 between Penguin and Wells Fargo Capital Finance, LLC (the Penguin Credit Facility) which had an outstanding balance of $32.3 million as of June 8, 2018. In addition, on June 8, 2018, SMART Global Holdings entered into a guarantee with Wells Fargo Capital Finance, LLC (WFCF) whereby SMART Global Holdings guaranteed the repayment and full performance of Penguin under the Penguin Credit Facility. As required under the Incremental Amendment, the Company paid off the outstanding balance under the Penguin Credit Facility in August 2018.

BNDES Credit Agreements

In December 2013, SMART Brazil, entered into a credit facility with the Brazilian Development Bank, or BNDES (such loan the BNDES 2013 Credit Agreement). Under the BNDES 2013 Credit Agreement, a total of R$50.6 million (or $13.5 million) was made available to SMART Brazil for investments in infrastructure, research and development conducted in Brazil and acquisitions of equipment not otherwise available in the Brazilian domestic market. SMART Brazil’s obligations under the BNDES 2013 Credit Agreement were guaranteed by Banco Itaú BBA S.A., or Itaú Bank, which guarantee was in turn secured by a guarantee from SMART Brazil and SMART do Brazil and a commitment by SMART Brazil to maintain minimum cash balances with Itaú Bank equal to 11.85% of the maximum aggregate balance of principal, interest and fees outstanding under the BNDES 2013 Credit Agreement. As of August 31, 2018, the committed amount was R$6.0 million (or $1.6 million), which is shown on the Company’s consolidated balance sheets as restricted cash in other noncurrent assets.

Approximately half of the available debt under the BNDES 2013 Credit Agreement accrues interest at a fixed rate while the other half accrues interest at a floating rate. The facility under the BNDES 2013 Credit Agreement is a term loan fully amortizing in 48 equal monthly installments beginning on August 15, 2015 with the final principal payment being due on July 15, 2019.

As of August 31, 2018, SMART Brazil’s outstanding debt under the BNDES 2013 Credit Agreement was R$12.9 million (or $3.4 million), of which R$6.3 million (or $1.7 million) accrues interest at the fixed rate of 3.5% and R$6.6 million (or $1.7 million) of the debt accrues interest at the floating rate of 0.5% above the TJLP rate published by the Central Bank of Brazil, or BZTJLP (5.0%), combined corresponding to an overall effective interest rate of 5.5% per annum. As of August 25, 2017, SMART Brazil’s outstanding debt under the BNDES 2013 Credit Agreement was R$25.6 million (or $8.2 million), of which R$12.6 million (or $4.0 million) accrues interest at the fixed rate of 3.5% and R$13.0 million (or $4.2 million) of the debt accrues interest at the floating rate of 0.5% above the TJLP rate published by the Central Bank of Brazil, or BZTJLP (5.0%), combined corresponding to an overall effective interest rate of 5.5% per annum.

In December 2014, SMART Brazil, entered into a second credit facility with BNDES, referred to as the BNDES 2014 Credit Agreement. The BNDES 2013 Credit Agreement and the BNDES 2014 Credit Agreement are collectively referred to as the BNDES Agreements. Under the BNDES 2014 Credit Agreement, a total of R$52.8 million (or $14.1 million) was made available to SMART Brazil for research and development conducted in Brazil related to integrated circuit (IC) packaging and for acquisitions of equipment not otherwise available in the Brazilian domestic market.

SMART Brazil’s obligations under the BNDES 2014 Credit Agreement were also guaranteed by Itaú Bank, which guarantee was in turn secured by a guarantee from SMART Brazil and SMART do Brazil and a commitment by SMART Brazil to maintain minimum cash balances with Itaú Bank equal to 30.31% of the maximum aggregate balance of principal, interest and fees outstanding under the BNDES 2014 Credit Agreement, or approximately R$16.0 million (or $4.3 million) of required cash balances, which is shown on the Company’s consolidated balance sheets as restricted cash in other noncurrent assets.

The available debt under the BNDES 2014 Credit Agreement accrues interest at a fixed rate of 4% per annum. The BNDES 2014 Credit Agreement is a term loan fully amortizing in 48 equal monthly installments beginning on August 15, 2016 with the final principal payment being due on July 15, 2020.

In July 2018, SMART Brazil entered into guarantee arrangements with Banco Votorantim S.A. which bank in turn replaced the guarantees of the BNDES Agreements previously issued by Itaú Bank. Itaú Bank approved the guarantee arrangements and returned R$22.0 million (or $5.9 million) of committed balances to SMART Brazil in the first quarter of fiscal 2019.

As of August 31, 2018 and August 25, 2017, SMART Brazil's outstanding debt under the BNDES 2014 Credit Agreement was R$26.4 million (or $7.0 million) and R$39.6 million (or $12.6 million), respectively.

While the BNDES Agreements do not include any financial covenants, they contain affirmative and negative covenants customary for loans of this nature, including, among other things, an obligation to comply with all laws and regulations; a right for BNDES to terminate the loan in the event of a change of effective control; and a prohibition against the disposition or encumbrance, without BNDES consent, of intellectual property developed with the funds from the loans. The BNDES 2013 Credit Agreement includes an obligation to draw down the entire loan within specified periods of time or pay unused commitment fees of 0.1%. The BNDES 2014 Credit Agreement required a loan fee of 0.3% of the total face amount of the loan facility.

The fair value of amounts outstanding under the BNDES Agreements as of August 31, 2018 and August 25, 2017 was estimated to be approximately $9.4 million and $16.9 million, respectively. Since the Company used broker quotes from inactive markets and there were no unobservable inputs, this was treated as a Level 2 financial instrument.

The Amended Credit agreement and the BNDES Agreements are classified as follows in the accompanying consolidating balance sheets (in thousands):

	August 31, 2018	August 25, 2017
Term loan	$ 208,500	$ 165,000
BNDES 2013 principal balance	3,422	8,185
BNDES 2014 principal balance	7,030	12,647
Unamortized debt discount	(2,520)	(3,267)
Unamortized debt issuance costs	(4,833)	(5,274)
Net amount	211,599	177,291
Current portion of long-term debt	(27,409)	(22,841)
Long-term debt	$ 184,190	$ 154,450

The future minimum principal payments under the Amended Credit Agreement and the BNDES Agreements as of August 31, 2018 are (in thousands):

	Amended Credit Agreement(1)	BNDES	TOTAL
Fiscal year ending August:			
2019	$ 22,500	$ 6,937	$ 29,437
2020	22,500	3,515	26,015
2021	22,500	—	22,500
2022	141,000	—	141,000
Total	$ 208,500	$ 10,452	$ 218,952

(1) The borrowers were granted, subsequent to year-end, a holiday from the obligation to make repayments of principal in fiscal 2019.

(8) Financial Instruments

Fair Value of Financial Instruments

The fair value of the Company's cash, cash equivalents, accounts receivable and accounts payable approximates the carrying amount due to the relatively short maturity of these items. Cash and cash equivalents consist of funds held in general checking and savings accounts, money market accounts, and securities with maturities of less than 90 days at the time of purchase. The Company does not have investments in variable rate demand notes or auction rate securities.

The FASB guidance establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets to identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

- Level 1. Valuations based on quoted prices in active markets for identical assets or liabilities that an entity has the ability to access. The Company's Level 1 assets include money market funds that are classified as cash equivalents and restricted cash which is classified under long-term assets.
- Level 2. Valuations based on quoted prices for similar assets or liabilities, quoted prices for identical assets or liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets and liabilities. The Company's Level 2 liabilities include the term loans under the Amended Credit Agreement and the BNDES Credit Agreements that are classified as long-term debt.
- Level 3. Valuations based on inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. The Company's Level 3 liability includes the contingent consideration related to Penguin acquisition (see Note 2), which had a fair value of $0 as of August 31, 2018. The Company did not have any financial instruments measured under Level 3 as of August 25, 2017.

Assets and liabilities measured at fair value on a recurring basis include the following (in millions):

	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Observable/ Unobservable Inputs Corroborated by Market Data (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Balances as of August 31, 2018:				
Assets				
Cash and cash equivalents	$ 31.4	$ —	$ —	$ 31.4
Restricted cash[1]	5.9	—	—	5.9
Total assets measured at fair value	$ 37.3	$ —	$ —	$ 37.3
Liabilities				
Term loan	$ —	$ 207.5	$ —	$ 207.5
BNDES Credit Agreements	—	9.4	—	9.4
Acquisition-related contingent consideration	—	—	—	—
Total liabilities measured at fair value[2]	$ —	$ 216.9	$ —	$ 216.9
Balances as of August 25, 2017:				
Assets				
Cash and cash equivalents	$ 22.4	$ —	$ —	$ 22.4
Restricted cash[1]	7.0	—	—	7.0
Total assets measured at fair value	$ 29.4	$ —	$ —	$ 29.4
Liabilities				
Term loan	$ —	$ 164.2	$ —	$ 164.2
BNDES Credit Agreements	—	16.9	—	16.9
Total liabilities measured at fair value[2]	$ —	$ 181.1	$ —	$ 181.1

(1) Included in other noncurrent assets on the Company's consolidated balance sheets - see Note 5.
(2) Included under long-term debt on the Company's consolidated balance sheets.

(9) Share-Based Compensation and Employee Benefit Plans

(a) Share-Based Compensation

Equity Awards

On August 26, 2011, the board of directors adopted the Saleen Holdings, Inc. 2011 Stock Incentive Plan which was amended and restated as of May 18, 2017 and is now known as the SMART Global Holdings, Inc. 2017 Share Incentive Plan (the SGH Plan). The SGH Plan provides for grants of equity awards to employees, directors and consultants of SMART Global Holdings and its subsidiaries. Options granted under the SGH Plan provide the option to purchase SMART Global Holdings’ ordinary shares at the fair value of such shares on the grant date. The options generally vest over a four-year period beginning on the grant date with a two year cliff and then monthly thereafter, and generally have a ten year term. Options granted after August 26, 2011 and before September 23, 2014 have an eight year term. As of August 31, 2018, there were 3,385,550 ordinary shares reserved for issuance under the SGH Plan, of which 251,965 ordinary shares were available for grant. As of August 25, 2017, there were 1,500,000 ordinary shares reserved for issuance under the SGH Plan, of which 1,491,226 ordinary shares were available for grant.

On May 5, 2017, the shareholders of the Company authorized the creation of an additional 530,000,000 ordinary shares and an increase in the share capital from $700,000 divided into 70,000,000 shares of a par value of $0.01 each, to $6,000,000 divided into 600,000,000 shares of a par value of $0.01 each, followed by the consolidation of all of the 600,000,000 shares with a par value of $0.01 each (issued and unissued) into 200,000,000 shares with a par value of $0.03 each (issued and unissued). The effect of these actions was that the Company’s ordinary shares were reduced by a one-for-three reverse split, the par value was increased from $0.01 to $0.03 per share and the authorized ordinary shares increased to 200,000,000 shares on a post-split basis.

Tender Offer

On April 25, 2016, the Company offered the SGH Plan option holders the opportunity to exchange certain outstanding and unexercised grants with exercise prices higher than $11.55 per share, for new replacement grants with the following terms: (a) an exercise price of $11.55 per share, (b) a lower number of shares based on pre-determined formula, (c) a vesting schedule of 2 years with 50% vesting on first anniversary and the balance vesting quarterly over the second year, and (d) a new ten year term (the Tender Offer).

On May 23, 2016, the Tender Offer was completed and resulted in 1,652,575 options being cancelled, in exchange for 811,277 replacement options. As a result of the Tender Offer, there was an option modification charge of $2.7 million which will be expensed over the two following years, which is the vesting period of the replacement grants.

Summary of Assumptions and Activity

The fair value of each option grant is estimated on the date of grant using the Black-Scholes option pricing model that uses the assumptions noted in the following table. The fair value of the ordinary shares underlying the Company's equity awards, prior to the IPO, was determined by the Company's board of directors. Because there was no public market for the Company's ordinary shares and in the absence of recent arm's-length cash sales transactions of the Company's ordinary shares with independent third parties, the Company's board of directors determined the fair value of the Company's ordinary shares by considering at the time of grant a number of objective and subjective factors, including the following: the value of tangible and intangible assets of the Company, the present value of anticipated future cash flows of the Company, the market value of stock or equity interests in similar corporations and other entities engaged in businesses substantially similar to those engaged in by the Company, the Company's current financial condition and anticipated expenses, control discounts for the lack of marketability, the Company's need for additional capital, current and potential strategic relationships and competitive developments and periodic valuations from an independent third-party valuation firm.

The expected volatility is based on the historical volatilities of the common stock of comparable publicly traded companies. The expected term of options granted represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and the historical exercise patterns. The risk-free interest rate for the expected term of the option is based on the average U.S. Treasury yield curve at the end of the quarter in which the option was granted.

The following assumptions were used to value the Company's stock options:

	Fiscal Year Ended		
	August 31, 2018	**August 25, 2017**	**August 26, 2016**
Stock options:			
Expected term (years)	6.25	6.25	6.25
Expected volatility	39.00% - 46.27%	45.88% - 55.75%	49.46% - 54.38%
Risk-free interest rate	2.15% - 2.82%	1.89% - 2.03%	1.36% - 1.82%
Expected dividends	—	—	—

SGH Plan—Options

A summary of option activity for the SGH Plan is presented below (dollars and shares in thousands, except per share data):

SGH Plan:	Shares	Weighted average per share exercise price	average remaining contractual term (years)	Aggregate intrinsic value
Options outstanding at August 28, 2015	2,429	$ 19.62	5.37	$ 3,548
Options granted [(1)]	925	11.46		
Options exercised	(43)	3.06		
Options forfeited and cancelled [(2)]	(1,783)	23.34		
Options outstanding at August 26, 2016	1,528	$ 10.80	7.36	$ 2,373
Options granted	506	15.13		
Options exercised	(152)	2.68		
Options forfeited and cancelled	(94)	11.64		
Options outstanding at August 25, 2017	1,788	$ 12.66	7.61	$ 11,174
Options granted	1,354	40.53		
Options exercised	(700)	10.69		
Options forfeited and cancelled	(28)	23.50		
Options outstanding at August 31, 2018	2,414	$ 28.75	7.88	$ 20,459
Options exercisable at August 31, 2018	712	$ 13.33	6.92	$ 14,001
Options vested and expected to vest at August 31, 2018	2,414	$ 28.75	7.88	$ 20,459

(1) Includes 811 shares granted in connection with the Tender Offer.
(2) Includes 1,653 shares cancelled in connection with the Tender Offer.

In March 2018, the Company granted two performance-based stock options that contained a stock market index as a benchmark for performance (Market-Based Options). The share-based compensation expense for these options is recognized over the requisite service period by tranche. The exercisability of Market-Based Options will depend upon the 30-trading day rolling average closing price of Company's ordinary shares. If the target price is not achieved by the end of 4th or 7th anniversary of the respective grant date, the options will expire. The fair value of Market-Based Options is determined by using a Monte Carlo valuation model, using the following assumptions:

	Fiscal Year Ended August 31, 2018
Stock options:	
Expected term (years)	1.10 - 4.00
Expected volatility	46.29%
Risk-free interest rate	2.75%
Expected dividends	—

The Black-Scholes weighted average fair value of options granted under the SGH Plan in fiscal 2018, 2017 and 2016 was $18.18, $7.14 and $9.60 per share, respectively. The total intrinsic value of employee stock options exercised in fiscal 2018, 2017 and 2016 was approximately $19.5 million, $0.9 million and $0.4 million, respectively. As of August 31, 2018, there was approximately $23.5 million of unrecognized compensation costs related to stock options under the SGH Plan, which will be recognized over a weighted average period of 3.0 years. As of August 25, 2017, there was approximately $6.7 million of unrecognized compensation costs related to stock options under the SGH Plan, which will be recognized over a weighted average period of 2.47 years.

SGH Plan—RSUs and RSAs

A summary of the changes in restricted share awards (RSAs) and restricted share units (RSUs) outstanding is presented below (dollars and shares in thousands, except per share data):

SGH Plan:	Shares	Weighted average grant date fair value per share	Aggregate intrinsic value
Awards outstanding at August 28, 2015	6	$ 26.97	$ 63
Awards vested and paid out	(2)	26.97	
Awards outstanding at August 26, 2016	4	$ 26.97	$ 40
Awards granted	491	7.75	
Awards vested and paid out	(117)	7.99	
Awards outstanding at August 25, 2017	378	$ 7.91	$ 6,956
Awards granted	465	38.39	
Awards vested and paid out	(113)	8.03	
Awards forfeited and cancelled	(10)	12.01	
Awards outstanding at August 31, 2018	720	$ 27.50	$ 23,753

The share-based compensation expense related to RSAs and RSUs in fiscal 2018, 2017 and 2016 was approximately $2.7 million, $1 million and $40 thousand, respectively. The total fair value of shares vested in fiscal 2018, 2017 and 2016 was approximately $4 million, $2 million and $16 thousand, respectively.

Employee Stock Purchase Plan

In January 2018, the Company’s shareholders approved the SMART Global Holdings, Inc. 2018 Employee Share Purchase Plan (the Purchase Plan) under which an aggregate of 350,000 of ordinary shares have been approved for issuance to eligible employees. The Purchase Plan generally permits employees to purchase ordinary shares at 85% of the lower of the fair market value of the ordinary shares at the beginning of the offering period or at the end of purchase period. Rights to purchase ordinary shares are granted during the first and third quarter of each fiscal year. The Purchase Plan terminates in January 2028. No ordinary shares have been issued under the Purchase Plan to date as of August 31, 2018. As of August 31, 2018, the number of ordinary shares reserved for future purchases by eligible employees was 350,000.

Equity Rights and Restrictions

The holders of ordinary shares of SMART Global Holdings are entitled to such dividends and other distributions as may be declared by the board of directors of SMART Global Holdings from time-to-time, out of the funds of SMART Global Holdings lawfully available therefor.

All SMART Global Holdings shares owned by employees, by certain former lenders of the Company, and all shares underlying the SMART Global Holdings options and RSUs are subject to either the Employee Investors Shareholders Agreement dated August 26, 2011 (the Employee Investors Shareholders Agreement) or the Amended and Restated Investors Shareholders Agreement dated as of November 5, 2016 (as amended by Amendment No. 5, Amendment No. 4, Amendment No. 3, Amendment No. 2 and subsequent amendments, the Amended and Restated Investors Shareholders Agreement; the Employee Investors Shareholders Agreement and the Amended and Restated Investors Shareholders Agreement are collectively referred to as the Shareholders Agreements). Under the terms of the Shareholders Agreements, such shares are subject to certain restrictions on sale and could become subject to lock-up restrictions in the event of any future registered public offerings by the Company.

(b) Savings and Retirement Program

The Company offers a 401(k) Plan to U.S. employees, which provides for tax-deferred salary deductions for eligible U.S. employees. Employees may contribute up to 60% of their annual eligible compensation to this plan, limited by an annual maximum amount determined by the U.S. Internal Revenue Service. The Company may also make discretionary matching contributions, which vest immediately, as periodically determined by management. The matching contributions made by the Company in fiscal 2018, 2017 and 2016 were approximately $1.2 million, $1.1 million and $0.8 million, respectively.

(10) Commitments and Contingencies

(a) Commitments

Minimum rent payments under operating leases are recognized on a straight-line basis over the term of the lease including any periods of free rent. Rent expense for operating leases in fiscal 2018, 2017 and 2016 was $3.3 million, $2.9 million, and $2.4 million, respectively.

Future minimum lease payments under all leases as of August 31, 2018 are as follows (in thousands):

	Amount
Fiscal year ending August:	
2019	$ 3,833
2020	3,582
2021	3,063
2022	2,456
2023	1,391
2024 and thereafter	4,059
Total	$ 18,384

(b) Product Warranty and Indemnities

Product warranty reserves are established in the same period that revenue from the sale of the related products is recognized, or in the period that a specific issue arises as to the functionality of a Company's product. The amounts of the reserves are based on established terms and the Company's best estimate of the amounts necessary to settle future and existing claims on products sold as of the balance sheet date.

The following table reconciles the changes in the Company's accrued warranty (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Beginning accrued warranty reserve	$ 275	$ 266	$ 290
Addition from business acquisition (see Note 2)	558	—	—
Provision for product warranties	612	412	321
Warranty claims	(589)	(403)	(345)
Ending accrued warranty reserve	$ 856	$ 275	$ 266

Product warranty reserves are recorded in accrued liabilities in the accompanying consolidated balance sheets.

In addition to potential liability for warranties related to defective products, the Company currently has in effect a number of agreements in which it has agreed to defend, indemnify and hold harmless its customers and suppliers from damages and costs, which may arise from product defects as well as from any alleged infringement by its products of third-party patents, trademarks or other proprietary rights. The Company believes its internal development processes and other policies and practices limit its exposure related to such indemnities. Maximum potential future payments cannot be estimated because many of these agreements do not have a maximum stated liability. However, to date, the Company has not had to reimburse any of its customers or suppliers for any losses related to these indemnities. The Company has not recorded any liability in its financial statements for such indemnities.

(c) Legal Matters

From time to time, the Company is involved in legal matters that arise in the normal course of business. Litigation in general and intellectual property, employment and shareholder litigation in particular, can be expensive and disruptive to normal business operations. Moreover, the results of complex legal proceedings are difficult to predict. The Company believes that it has defenses to the cases pending, including those set forth below. Except as noted below, the Company is not currently able to estimate, with reasonable certainty, the possible loss, or range of loss, if any, from such legal matters, and accordingly, no provision for any potential loss, which may result from the resolution of these matters, has been recorded in the accompanying consolidated financial statements.

Indemnification Claims by SanDisk

In August 2013, the Company completed the sale (the Sale) of substantially all of the business unit which was focused on solid state drives, to SanDisk Corporation (now a part of Western Digital). In connection with the Sale the sale agreement (Sale Agreement) contained certain indemnification obligations, including, among others, for losses arising from breaches of representations and warranties relating to the Sale. These indemnification obligations are subject to a number of limitations, including certain deductibles and caps and limited time periods for making indemnification claims. At the closing of the Sale, $30.5 million of the purchase price was placed into a third party escrow to secure certain of the Company's indemnification obligations. The escrow was due to terminate on August 22, 2014 in the event that SanDisk did not timely submit a claim for indemnification. On August 21, 2014, SanDisk made a claim against the Company under the indemnification provisions of the Sale Agreement in connection with a lawsuit filed by Netlist, Inc. (Netlist) against SanDisk alleging that certain products sold in the Sale infringe various Netlist patents, which SanDisk in turn alleges would, if true, constitute a breach of representations and warranties under the Sale Agreement. Under the Sale Agreement, the Company's indemnification obligation in respect of intellectual property matters, such as those claimed by SanDisk, is subject to a deductible of approximately $1.8 million and a cap of $60.9 million. As required in the Sale Agreement, the SanDisk claim purported to include a preliminary good faith estimate of SanDisk's alleged indemnifiable losses, which estimate was greater than the Sale Agreement cap for intellectual property matters. The Company believes that the allegations giving rise to the indemnification claim are without merit and the Company intends to dispute SanDisk's claim for indemnification. In addition, there may be other grounds for the Company to dispute the indemnification claim and/or the amounts of any indemnifiable losses of SanDisk. On December 4, 2014, SanDisk and the Company agreed to release from escrow the funds held in connection with this indemnification claim, however, the agreement to release the funds from escrow does not relieve the Company of its indemnification obligations to SanDisk, and SanDisk has not amended or reduced the amount of its indemnification claim.

Netlist

On September 10, 2012, SMART Modular filed a complaint in the Eastern District of California (the EDCA) against Netlist, Inc. (Netlist) alleging infringement of certain claims of SMART Modular's U.S. Patent No. 8,250,295 (the '295 patent) and seeking, among other things, a preliminary injunction. Netlist filed certain counterclaims alleging, among other things, attempted monopolization, collusion, unfair competition, fraud on the U.S. Patent and Trademark Office (the USPTO) and sham litigation, and asserting that the '295 patent is invalid. The counterclaims do not specify the amount of damages sought. Netlist also filed a request for reexamination of the '295 patent in the USPTO. On May 30, 2013, the court denied SMART

Modular’s motion for a preliminary injunction and granted a stay in the proceedings pending the outcome of the reexamination. In September 2016, the EDCA lifted the stay. After several filings and decisions at the USPTO and the Patent Trial and Appeals Board (the PTAB) from 2013 through 2017, in December 2017, the PTAB issued a decision declaring the original claims of SMART Modular’s ‘295 patent as well as certain of newly added claims, to be invalid. The Company has appealed the decision of the PTAB to the Federal Circuit Court of Appeals. In March 2018, SMART Modular and Netlist entered a stipulation staying the court proceedings pending the outcome of the appeal and completion of the reexamination of SMART Modular’s ‘295 patent.

In July 2013, Netlist filed a lawsuit in the Central District of California against SMART Modular alleging claims very similar to Netlist’s counterclaims set forth in the EDCA case. Netlist later amended its complaint to add additional parties, including SMART Worldwide. Netlist has sought compensatory damages for the harm it claims to have suffered, as well as an award of treble damages and attorneys’ fees. The claims against SMART Modular and SMART Worldwide were transferred to the EDCA.

The Company believes that there are valid defenses to all of the claims and counterclaims made by Netlist and that the claims are without merit. The Company intends to vigorously fight the claims and counterclaims. The Company believes that the likelihood of any material charge resulting from these claims is remote.

(d) Contingencies

Import Duty Tax assessment in Brazil

On February 23, 2012, SMART Brazil was served with a notice of a tax assessment for approximately R$117 million (or $31.2 million) (the First Assessment). The First Assessment was from the federal tax authorities of Brazil and related to four taxes in connection with the importation processes. The tax authorities claimed that SMART Brazil categorized its imports of unmounted integrated circuits in the format of wafers under an incorrect product classification code, which carries an import duty of 0%. The authorities alleged that a different classification code should have been used that would require an 8% import duty and the authorities were seeking to recover these duties, as well as other related taxes, for the five calendar years of 2007 through and including 2011. Subsequent to the initial assessment, SMART Brazil received a second notice of an additional administrative penalty of approximately R$6.0 million (or $1.6 million) directly related to the same issue and which has been imposed exclusively for the alleged usage of an inappropriate import tax code (the Second Assessment).

In March 2012, SMART Brazil filed defenses to the First Assessment and the Second Assessment. On May 2, 2013, the first level administrative tax court issued a ruling in favor of the tax assessor and against SMART Brazil on the First Assessment. On May 31, 2013, SMART Brazil filed an appeal to the second level tax court known as CARF. The appeal was heard on November 26, 2013 and the Company received a unanimous favorable ruling rejecting the position of the tax authorities. This ruling was published by the tax authorities and made official in February 2014. Subsequently, the tax authorities filed a request for clarification and on September 17, 2014, the Company received a unanimous ruling rejecting the request from the tax authorities for clarification. On November 7, 2014, the tax authorities notified CARF that they would not be appealing the CARF decision, and the First Assessment has been extinguished. On February 6, 2018, the first level administrative court unanimously ruled in favor of SMART Brazil with respect to the Second Assessment. Due to the size of the Second Assessment, Brazil law requires that the tax authorities appeal the decision to CARF and the appeal process is underway.

On December 12, 2013, SMART Brazil received another notice of assessment in the amount of R$3.6 million (or $1.0 million) with respect to the same import-related tax issues and penalties discussed above for 2012 and 2013 (the Third Assessment). The Third Assessment does not seek import duties and related taxes on Dynamic Random Access Memory ("DRAM") products and only seeks import duties and related taxes on Flash unmounted components with respect to the months of January 2012 to June 2012. This is because SMART Brazil's imports of DRAM unmounted components were subject to 0%, and, after June 2012, SMART Brazil's imports of Flash unmounted components became subject to 0%, import duties and related taxes, both as a result of PADIS. Even with this 0%, if SMART Brazil is found to have used the incorrect product classification code, SMART Brazil will be subject to an administrative penalty equal to 1% of the value of the imports. SMART Brazil has filed defenses to the Third Assessment. The Company believes that SMART Brazil used the correct product code on its imports and that the Third Assessment is incorrect. SMART Brazil intends to vigorously fight this matter. Although SMART Brazil did not receive the Third Assessment until December 12, 2013, the Third Assessment was issued before the CARF decision in favor of SMART Brazil on the First Assessment as discussed above was published.

The amounts claimed by the tax authorities on the Second Assessment and on the Third Assessment are subject to increases for interest and other charges, which resulted in a combined assessment balance of approximately R$15.1 million (or $4.0 million) and R$14.4 million (or $4.6 million) as of August 31, 2018 and August 25, 2017, respectively.

As a result of the CARF decision in favor of SMART Brazil on the First Assessment and the first level administrative court decision in favor of SMART Brazil on the Second Assessment, the Company believes that the probability of any material charges as a result of the Second Assessment and the Third Assessment is remote and the Company does not expect the resolution of these disputed assessments to have a material impact on its consolidated financial position, results of operations or cash flows. While the Company believes that the Second Assessment and the Third Assessment are incorrect, there can be no assurance that SMART Brazil will prevail in the disputes.

(11) Segment and Geographic Information

The Company operates in one reportable segment: the design, manufacture and sale of specialty memory solutions and services to the electronics industry. The Company's chief operating decision-maker, the President and CEO, evaluates financial performance on a company-wide basis.

A summary of the Company's net sales by geographic area, based on the ship-to location of the customer, and property and equipment by geographic area is as follows (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Geographic Net Sales:			
U.S.	$ 203,410	$ 140,188	$ 104,788
Brazil	798,257	398,385	245,503
Asia	227,216	174,644	141,811
Europe	30,137	26,293	24,502
Other Americas	29,801	21,781	17,819
Total	$1,288,821	$ 761,291	$ 534,423

	August 31, 2018	August 25, 2017
Property and Equipment, Net:		
U.S.	$ 7,805	$ 3,110
Brazil	41,611	44,180
Malaysia	4,749	5,049
Other	2,450	2,843
Total	$ 56,615	$ 55,182

(12) Major Customers

A majority of the Company's net sales are attributable to customers operating in the information technology industry. Net sales to significant end user customers, including sales to their manufacturing subcontractors, defined as net sales in excess of 10% of total net sales, are as follows (dollars in thousands):

	Fiscal Year Ended					
	August 31, 2018		August 25, 2017		August 26, 2016	
	Amount	Percentage of net sales	Amount	Percentage of net sales	Amount	Percentage of net sales
Customer A ...	$ 434,438	34%	$ 146,478	19%	$ 70,670	13%
Customer B ...	158,172	12%	116,821	15%	100,529	19%
Customer C ...	143,367	11%	82,285	11%	71,063	13%
Customer D ...	128,848	10%	—	—	—	—
	$ 864,825	67%	$ 345,584	45%	$ 242,262	45%

As of August 31, 2018, four direct customers that represented less than 10% of net sales, Customers E, F, G, H, accounted for approximately 19%, 17%, 15% and 11% of accounts receivable, respectively. As of August 25, 2017, four direct customers that represented less than 10% of net sales, Customers E, F, G and H, accounted for approximately 18%, 14%, 24% and 11% of accounts receivable, respectively.

(13) Earnings Per Share

Basic earnings per share is calculated by dividing net income (loss) by the weighted average of ordinary shares outstanding during the period. Diluted earnings per share is calculated by dividing the net income (loss) by the weighted average of ordinary shares and dilutive potential ordinary shares outstanding during the period. Dilutive potential ordinary shares consist of dilutive shares issuable upon the exercise of outstanding stock options and vesting of RSUs computed using the treasury stock method. The dilutive weighted shares are excluded from the computation of diluted net loss per share when a net loss is recorded for the period as their effect would be anti-dilutive.

The following table sets forth for all periods presented the computation of basic and diluted earnings per share, including the reconciliation of the numerator and denominator used in the calculation of basic and diluted earnings per share (dollars and shares in thousands, except per share data):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Numerator:			
Net income (loss)	$ 119,463	$ (7,795)	$ (19,960)
Denominator:			
Weighted average shares outstanding:			
Basic	22,051	15,785	13,841
Diluted	23,119	15,785	13,841
Earnings per share:			
Basic	$ 5.42	$ (0.49)	$ (1.44)
Diluted	$ 5.17	$ (0.49)	$ (1.44)
Anti-dilutive weighted shares excluded from the computation of diluted earnings per share	678	1,302	2,084

(14) Other Income (Expense), Net

The following table provides the detail of other income (expense), net as follows (in thousands):

	Fiscal Year Ended		
	August 31, 2018	August 25, 2017	August 26, 2016
Foreign currency gains (losses)	$ (13,227)	$ 286	$ 1,101
Loss on extinguishment of debt	—	(16,580)	—
Loss on early repayment of debt	—	(6,744)	—
Other	(72)	487	773
Total other income (expense), net	$ (13,299)	$ (22,551)	$ 1,874

(15) Selected Quarterly Information (Unaudited)

The following tables set forth certain data from the Company's consolidated statements of operations for each of the quarters in the fiscal years ended August 31, 2018 and August 25, 2017.

The unaudited quarterly consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements contained herein and include all adjustments that the Company considers necessary for a fair presentation of such information when read in conjunction with the Company's annual audited consolidated financial statements and notes thereto appearing elsewhere in this report. The operating results for any quarter are not necessarily indicative of the results for any subsequent period or for the entire fiscal year.

	Three Months Ended							
	Aug 31, 2018	May 25, 2018	Feb 23, 2018	Nov 24, 2017	Aug 25, 2017*	May 26, 2017	Feb 24, 2017**	Nov 25, 2016
	(unaudited, in thousands except per share amounts)							
Net sales	$373,970	$335,477	$313,965	$265,409	$223,019	$206,974	$171,954	$159,344
Gross profit	$ 82,679	$ 78,054	$ 73,017	$ 57,836	$ 48,008	$ 47,375	$ 37,157	$ 29,710
Income from operations	$ 44,981	$ 48,694	$ 45,078	$ 31,468	$ 20,568	$ 20,385	$ 9,304	$ 3,617
Net income (loss)	$ 29,718	$ 31,946	$ 36,794	$ 21,005	$ (10,209)	$ 7,958	$ (2,337)	$ (3,207)
Earnings per share								
Basic	$ 1.33	$ 1.44	$ 1.68	$ 0.97	$ (0.48)	$ 0.57	$ (0.17)	$ (0.23)
Diluted	$ 1.28	$ 1.37	$ 1.60	$ 0.92	$ (0.48)	$ 0.50	$ (0.17)	$ (0.23)
Shares used in per share calculation								
Basic	22,383	22,206	21,915	21,673	21,435	13,986	13,870	13,870
Diluted	23,270	23,306	23,038	22,715	21,435	15,955	13,870	13,870

* Included $6.7 million loss on early payment of term loan for principal amount of $61.1 million in June 2017 related to IPO, and $15.2 million loss on extinguishment of long-term debt for principal payment of $151.0 million in August 2017.

** Included $1.7 million debt extension costs associated with the amendment of our senior secured term loan and revolving credit facility in November 2016, and $1.4 million loss on a February 2017 extinguishment.

EXHIBIT INDEX

Exhibit No.	Description	Incorporated by Reference Form	File No.	Exhibit	Filing Date	Filed Herewith
2.1	Agreement and Plan of Merger, dated as of June 8, 2018, by and among SMART Global Holdings, Inc., Glacier Acquisition Sub, Inc., Penguin Computing, Inc. and Fortis Advisors LLC	8-K	001-38102	2.1	6/11/2018	
3.1	Amended and Restated Memorandum and Articles of Association of SMART Global Holdings, Inc.	10-Q	001-38102	3.1	6/29/2017	
4.1	Amended and Restated Sponsor Shareholders Agreement, dated as of May 30, 2017, by and among the Issuer, SLP III Cayman, SLTI III Cayman, SLS Cayman, SLTI Sumeru Cayman, Mr. Ajay B. Shah, Krishnan-Shah Family Partners, L.P., Fund No. 1, Krishnan-Shah Family Partners, L.P., Fund No. 3, Krishnan-Shah Family Partners, L.P., Fund No. 4, and The Ajay B. Shah and Lata K. Shah 1996 Trust u/a/d 5/28/1996	10-Q	001-38102	4.1	6/29/2017	
4.2	Amended and Restated Registration Rights Agreement, dated as of November 5, 2016, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., Silver Lake Technology Investors Sumeru Cayman, L.P., Mr. Ajay B. Shah, Krishnan-Shah Family Partners, L.P., Fund No. 1, Krishnan-Shah Family Partners, L.P., Fund No. 3, Krishnan-Shah Family Partners, L.P., Fund No. 4, The Ajay B. Shah and Lata K. Shah 1996 Trust u/a/d 5/28/1996, Mr. Mukesh A. Patel, Patel Family Partners, LP – Fund No. 2, The Patel Revocable Trust u/a/d 6/6/2002, the Management Holders and the Warrant Holders	S-1/A	333-217539	4.2	5/11/2017	

4.3	Saleen Holdings, Inc. Employee Investors Shareholders Agreement, dated as of August 26, 2011, by and among Saleen Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., Silver Lake Technology Investors Sumeru Cayman, L.P. and the Employee Investors	S-1/A	333-217539	4.4	5/11/2017
4.4	Amended and Restated Investors Shareholders Agreement, dated as of November 5, 2016, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors and the Warrant Investors and Form of Amendment No. 2 to Investors Shareholders Agreement, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P. and Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors and the Warrant Investors	S-1/A	333-217539	4.5	5/22/2017
4.5	Amendment No. 2 to Investors Shareholders Agreement, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P. and Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors and the Warrant Investors	10-Q	001-38102	4.2	6/29/2017
4.6	Amendment No. 3 to Investors Shareholders Agreement, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., and Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors and the Warrant Investors	8-K	001-38102	4.1	10/23/2017

4.7	Amendment No. 4 to Investors Shareholders Agreement, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., and Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors and the Warrant Investors	8-K	001-38102	4.1	2/2/2018
4.8	Amendment No. 5 to Investors Shareholders Agreement dated as of June 20, 2018, by and among SMART Global Holdings, Inc., Silver Lake Partners III Cayman (AIV III), L.P., Silver Lake Technology Investors III Cayman, L.P., Silver Lake Sumeru Fund Cayman, L.P., Silver Lake Technology Investors Sumeru Cayman, L.P., the Management Investors (as defined in the A&R Investors Shareholders Agreement) and the Warrant Investors.	10-Q	001-38102	10.1	6/21/2018
10.1	Form of Indemnification Agreement entered into with each of the Registrant's officers and directors	S-1/A	333-217539	10.1	5/11/2017
10.2	SMART Global Holdings, Inc. Amended and Restated 2017 Share Incentive Plan	10-Q	001-38102	10.1	6/29/2017
10.3	Offer Letter by and between the Registrant and Ajay Shah, dated March 13, 2018	10-Q	001-38102	10.1	3/22/2018
10.4	Amended and Restated Employment Agreement between SMART Modular Technologies, Inc. and Jack Pacheco	10-Q	001-38102	10.2	3/22/2018
10.5	Employment Agreement, dated as of October 10, 2011, between SMART Modular Technologies, Inc. and Jack Pacheco	S-1	333-217539	10.4	4/28/2017
10.6	Severance and Change of Control Agreement, dated as of December 10, 2010, between SMART Modular Technologies (WWH), Inc. and Alan Marten	S-1	333-217539	10.5	4/28/2017
10.7	Severance and Change of Control Agreement, dated as of December 10, 2010, between SMART Modular Technologies (WWH), Inc. and Bruce Goldberg	S-1	333-217539	10.6	4/28/2017
10.8	Severance and Change of Control Agreement, dated as of December 10, 2010, between SMART Modular Technologies (WWH), Inc. and KiWan Kim	S-1	333-217539	10.7	4/28/2017
10.9	Credit Agreement, dated as of August 26, 2011, among SMART Modular Technologies (Global Memory Holdings), Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the Lender Parties thereto and JPMorgan Chase Bank, N.A., as Administrative Agent	S-1	333-217539	10.8	4/28/2017

10.10	Amendment No. 1 to Credit Agreement, dated as of December 13, 2011, among SMART Modular Technologies (Global Memory Holdings), Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent	S-1	333-217539	10.9	4/28/2017
10.11	First Refinancing Amendment to Credit Agreement, dated as of August 20, 2014, among SMART Modular Technologies (Global Holdings), Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the new revolving lenders party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent	S-1	333-217539	10.10	4/28/2017
10.12	Master Guarantee Agreement, dated as of August 26, 2011, among SMART Modular Technologies (Global Memory Holdings), Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the subsidiary guarantors identified therein and JPMorgan Chase Bank, N.A. as Administrative Agent	S-1	333-217539	10.11	4/28/2017
10.13	Collateral Agreement, dated as of August 26, 2011, among SMART Modular Technologies, Inc., the other grantors party thereto and JPMorgan Chase Bank, N.A. as Administrative Agent	S-1	333-217539	10.12	4/28/2017
10.14	Amendment No. 2 to Credit Agreement, dated as of September 19, 2014, among SMART Modular Technologies (Global Holdings), Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the lenders party thereto and Barclays Bank PLC, as Administrative Agent	S-1/A	333-217539	10.13	5/11/2017
10.15	Amendment No. 3 to Credit Agreement, dated as of December 4, 2015, among SMART Worldwide Holdings, Inc., SMART Modular Technologies (Global), Inc., the revolving lenders party thereto and Barclays Bank PLC, as Administrative Agent	S-1/A	333-217539	10.14	5/11/2017
10.16	Amendment No. 4 to Credit Agreement, dated as of November 5, 2016, among SMART Worldwide Holdings, Inc., SMART Modular Technologies (Global), Inc., the lenders party thereto and Barclays Bank PLC, as Administrative Agent	S-1/A	333-217539	10.15	5/11/2017

10.17	Amended and Restated Credit Agreement, dated as of November 5, 2016, among SMART Worldwide Holdings, Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the lenders party thereto and Barclays Bank PLC, as Administrative Agent	S-1/A	333-217539	10.16	5/11/2017
10.18	Lease Agreement, dated as of February 18, 2009, between Newark Eureka Industrial Capital LLC and SMART Modular Technologies, Inc.	S-1	333-217539	10.17	4/28/2017
10.19	First Amendment to Lease Agreement, dated as of April 29, 2014, between Newark Eureka Industrial Capital LLC and SMART Modular Technologies, Inc.	S-1	333-217539	10.18	4/28/2017
10.20	Amended and Restated Transaction and Management Fee Agreement, dated as of November 5, 2016, among SMART Worldwide Holdings, Inc., Silver Lake Management Company III, L.L.C. and Silver Lake Management Company Sumeru, L.L.C.	S-1/A	333-217539	10.19	5/11/2017
10.21	Stock Purchase Agreement, dated as of July 2, 2013, among SMART Storage Systems (Global Holdings), Inc., SanDisk Corporation, SanDisk Manufacturing and solely for the purposes of Section 5.7(c), Section 5.8, Article VIII and Article IX, Saleen Holdings, Inc., Saleen Intermediate Holdings, Inc. and SMART Worldwide Holdings, Inc.	S-1/A	333-217539	10.20	5/22/2017
10.22	Receivables Purchase Agreement, dated as of May 16, 2012, among SMART Modular Technologies, Inc., SMART Modular Technologies (Europe) Limited and Wells Fargo Bank, N.A.	S-1	333-217539	10.21	4/28/2017
10.23	First Amendment to Receivables Purchase Agreement, dated as of March 28, 2013, among SMART Modular Technologies, Inc., SMART Modular Technologies (Europe) Limited and Wells Fargo Bank, N.A., and confirmed by SMART Modular Technologies (Global Holdings), Inc., SMART Modular Technologies (Global), Inc.	S-1	333-217539	10.22	4/28/2017

10.24	Second Amended and Restated Credit Agreement, dated as of August 9, 2017, among SMART Worldwide Holdings, Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., the lenders party thereto and Barclays Bank PLC, as Administrative Agent and as Collateral Agent	8-K	001-38102	10.1	8/11/2017	
10.25	Incremental Facility Amendment, dated as of June 8, 2018, to the Second Amended and Restated Credit Agreement, dated as of August 9, 2017 (as amended, supplemented or otherwise modified from time to time) among SMART Worldwide Holdings, Inc., SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., Barclays Bank PLC, as Administrative Agent and the other Lenders party thereto	8-K	001-38102	10.1	6/11/2018	
10.26	Second Amendment, dated as of October 12, 2018 and effective October 25, 2018, to the Second Amended and Restated Credit Agreement, dated as of August 9, 2017 (as amended, supplemented or otherwise modified from time to time) among SMART Worldwide Holdings, Inc., and SMART Modular Technologies (Global), Inc., SMART Modular Technologies, Inc., Barclays Bank PLC, as Administrative Agent and other Lenders party thereto					X
21.1	List of Subsidiaries of Registrant					X
23.1	Consent of Independent Registered Public Accounting Firm					X
24.1	Power of Attorney (contained in the signature page to this Annual Report on Form 10-K)					X
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					X
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					X
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					X
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					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X

101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

SMART Global Holdings, Inc.

Dated: October 29, 2018

By: /s/ Ajay Shah

Name: Ajay Shah

Title: Chairman of the Board, President and Chief Executive Officer

POWER OF ATTORNEY AND SIGNATURES

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Ajay Shah, Jack Pacheco and Bruce Goldberg, and each of them, as his or her true and lawful attorney-in-fact and agent with full power of substitution, for him or her in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the SEC, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

/s/ Ajay Shah Ajay Shah	Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	October 29, 2018
/s/ Jack Pacheco Jack Pacheco	Executive Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	October 29, 2018
/s/ Iain MacKenzie Iain MacKenzie	Director	October 29, 2018
/s/ Kenneth Hao Kenneth Hao	Director	October 29, 2018
/s/ Paul Mercadante Paul Mercadante	Director	October 29, 2018
/s/ Jason White Jason White	Director	October 29, 2018
/s/ Mukesh Patel Mukesh Patel	Director	October 29, 2018
/s/ Sandeep Nayyar Sandeep Nayyar	Director	October 29, 2018
/s/ Randy Furr Randy Furr	Director	October 29, 2018
/s/ Bryan Ingram Bryan Ingram	Director	October 29, 2018

DIRECTORS

Ajay Shah
Chairman of the Board, President & Chief Executive Officer

Randy Furr

Kenneth Hao

Bryan Ingram

Iain MacKenzie

Paul Mercadante

Sandeep Nayyar

Mukesh Patel

Jason White

INDEPENDENT AUDITORS

Deloitte & Touche LLP
San Jose, California

TRANSFER AGENT

Computershare Trust Company, N.A.
250 Royal Street
Canton, MA 02021
800-962-4284
www.computershare.com

INVESTOR INFORMATION

Current and prospective SMART investors may access information at: www.smartgh.com. Requests may also be made to Suzanne Schmidt at +1 (510) 360-8596 or ir@smartm.com.

MARKET INFORMATION

NASDAQ Global Select Market
Stock Symbol: SGH

EXECUTIVE MANAGEMENT

Ajay Shah
Chairman of the Board, President & Chief Executive Officer

Jack Pacheco
Executive Vice President, Chief Operating Officer and
Chief Financial Officer

Bruce Goldberg
Vice President, Chief Legal and Chief Compliance Officer

Alan Marten
Senior Vice President, Specialty Memory

KiWan Kim
Senior Vice President, Emerging Markets and
President, SMART Brazil

Tom Coull
Senior Vice President, Specialty Compute
& Storage Solutions, and President & CEO
of Penguin Computing, Inc.

ANNUAL GENERAL MEETING OF SHAREHOLDERS

January 29, 2019 at 10:00 a.m. (PST)
Doubletree Hotel
39900 Balentine Drive
Newark, CA 94560

CORPORATE HEADQUARTERS

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