

SANMINA CORP
Form 10-K
November 15, 2018
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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 September 29, 2018

or

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

For the transition period from _____ to _____.

Commission File Number 0-21272

Sanmina Corporation

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization) 77-0228183 (I.R.S. Employer Identification Number)

2700 N. First St., San Jose, CA

(Address of principal executive offices)

95134

(Zip Code)

Registrant's telephone number, including area code:

(408) 964-3500

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

Common Stock, \$0.01 Par Value

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

None

(Title of Class)

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

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 Securities 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 Exchange Act 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 (§232.405 of this chapter) is not contained herein, and will not be contained, to the best of the 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 definitions of “large accelerated filer,” “accelerated filer,” and “smaller reporting company” in Rule 12b-2 of the Exchange Act. (Check one):

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

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

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

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant was approximately \$1,580,526,475 as of March 31, 2018, based upon the last reported sale price of the common stock on the NASDAQ Global Select Market on March 29, 2018.

As of November 12, 2018, the number of shares outstanding of the registrant's common stock was 68,264,736.

DOCUMENTS INCORPORATED BY REFERENCE

Certain information is incorporated into Part III of this report by reference to the Proxy Statement for the registrant's 2019 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Form 10-K.

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Item 1. Business

Overview

Sanmina Corporation (“we” or “Sanmina”) is a leading global provider of integrated manufacturing solutions, components, products and repair, logistics and after-market services. We provide these comprehensive offerings primarily to original equipment manufacturers, or OEMs, in the following industries: industrial, medical, defense and aerospace, automotive, communications networks and cloud solutions. The combination of our advanced technologies, extensive manufacturing expertise and economies of scale enables us to meet the specialized needs of our customers. We were originally incorporated in Delaware in May 1989.

Our end-to-end solutions, combined with our global expertise in supply chain management, enable us to manage our customers' products throughout their life cycles. These solutions include:

- product design and engineering, including concept development, detailed design, prototyping, validation, preproduction services and manufacturing design release;
- manufacturing of components, subassemblies and complete systems;
- final system assembly and test;
- direct order fulfillment and logistics services;
- after-market product service and support; and
- global supply chain management.

We operate in the Electronics Manufacturing Services (EMS) industry and manage our operations as two businesses:

Integrated Manufacturing Solutions (IMS). Our IMS business consists of printed circuit board assembly and test, final system assembly and test, and direct-order-fulfillment. This segment generated approximately 80% of our total revenue in 2018.

Components, Products and Services (CPS). Components include interconnect systems (printed circuit board fabrication, backplane, cable assemblies and plastic injection molding) and mechanical systems (enclosures and precision machining). Products include memory, radio frequency (RF), optical and microelectronic, and enterprise solutions from our Viking Technology division; defense and aerospace products from SCI Technology; and cloud-based manufacturing execution software from our 42Q division. Services include design, engineering, logistics and repair services. CPS generated approximately 20% of our total revenue in 2018.

We have manufacturing facilities in 23 countries on six continents. We locate our facilities near our customers and their end markets in major centers for the electronics industry or in lower cost locations. Many of our operations located near our customers and their end markets are focused primarily on new product introduction, lower-volume, higher-complexity component and subsystem manufacturing and assembly, and final system assembly and test. Our operations located in lower cost areas engage primarily in higher-volume component and subsystem manufacturing and assembly for products ranging in complexity from lower complexity products to highly complex products.

We have become one of the largest global manufacturing solutions providers by capitalizing on our competitive strengths including our:

- end-to-end solutions;
- product design and engineering resources;

- vertically integrated manufacturing solutions;
- advanced component technologies;
- global manufacturing capabilities, supported by robust IT systems and a global supplier base;
- customer-focused organization;
- expertise in serving diverse end markets; and
- expertise in industry standards and regulatory requirements.

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Industry Overview

EMS companies are the principal beneficiaries of the increased use of outsourced manufacturing services by the electronics and other industries. Outsourced manufacturing refers to an OEM's use of EMS companies to manufacture their products, rather than using internal manufacturing resources. As the EMS industry has evolved, OEMs have increased their reliance on EMS companies for design services, core technology development and additional, more complex manufacturing services. Today, EMS companies manufacture and test complete systems and manage their customers' entire supply chains. Industry-leading EMS companies offer end-to-end services including product design and engineering, manufacturing, final system assembly and test, direct-order-fulfillment and logistics services, after-market product service and support, and global supply chain management.

We believe OEMs will continue to outsource manufacturing because it allows them to:

- focus on core competencies;
- access leading design and engineering capabilities;
- improve supply chain management and purchasing power;
- reduce operating costs and capital investment;
 - access global manufacturing services; and
- accelerate time to market.

Our Business Strategy

Our vision is to be the trusted leader in providing products, services and supply chain solutions to accelerate customer success. Key elements to deliver this vision include:

Capitalizing on Our Comprehensive Solutions. We intend to capitalize on our end-to-end solutions which we believe will allow us to sell additional solutions to our existing customers and attract new customers. Our end-to-end solutions include product design and engineering, manufacturing, final system assembly and test, direct order fulfillment and logistics services, after-market product service and support, and global supply chain management. Our vertically integrated manufacturing solutions enable us to manufacture additional system components and subassemblies for our customers. When we provide a customer with a number of services, such as component manufacturing or higher value-added solutions, we are often able to improve our margins and profitability. Consequently, our goal is to increase the number of manufacturing programs for which we provide multiple solutions. To achieve this goal, our sales and marketing organization seeks to cross-sell our solutions to customers.

Extending Our Technology Capabilities. We rely on advanced processes and technologies to provide our products, components and vertically integrated manufacturing solutions. We continually improve our manufacturing processes and develop more advanced technologies, providing competitive advantage to our customers. We work with our customers to anticipate their future product and manufacturing requirements and align our technology investment activities with their needs. We use our design expertise to develop product technology platforms that we can customize by incorporating other components and subassemblies to meet the needs of particular OEMs. These technologies enhance our ability to manufacture complex, high-value added products, enhancing our ability to continue to win business from existing and new customers.

Attracting and Retaining Long-Term Customer Partnerships. A core component of our strategy is to attract, build and retain long-term partnerships with companies in growth industries that will benefit from our global footprint and unique value proposition in advanced electronics manufacturing. As a result of this customer-centric approach, we have experienced business growth from both existing and new customers and will continue to cultivate these

partnerships with additional products and value-added solutions.

Promoting New Product Introduction (NPI) and Joint Design Manufacturing (JDM) Solutions. As a result of customer feedback, and our customers' desire to manage research and development expenses, we offer product design services to develop systems and components jointly with our customers. Our NPI services include quick-turn prototyping, supply chain readiness, functional test development and release-to-volume production. In a JDM model, our customers bring market knowledge and product requirements and we bring complete design engineering and NPI services. Our design engineering offerings include product architecture development, detailed design, simulation, test and validation, system integration, regulatory and qualification services.

Continuing to Penetrate Diverse End Markets. We focus our marketing and sales efforts on major end markets within the electronics technology industry. We target markets we believe offer significant growth opportunities and for which

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OEMs sell complex products that are subject to rapid technological change because the manufacturing of these products requires higher value-added services. We intend to continue to diversify our business across market segments and customers to reduce our dependence on any particular market or customer.

Pursuing Strategic Transactions. We seek to undertake strategic transactions that give us the opportunity to access new customers' products, manufacturing solutions, repair service capabilities, intellectual property, technologies and geographic markets. In addition, we plan to continue to pursue OEM divestiture transactions that will augment existing strategic customer relationships or build new relationships with customers in attractive end markets. In an OEM divestiture transaction, we purchase manufacturing assets from a customer and enter into a long-term supply agreement with such customer to provide products previously manufactured by them. Potential future transactions may include a variety of different business arrangements, including acquisitions, asset purchases, spin-offs, strategic partnerships, restructurings and divestitures.

Continuing to Seek Cost Savings and Efficiency Improvements. We seek to optimize our facilities to provide cost-effective services for our customers. We maintain extensive operations in lower cost locations, including Latin America, Eastern Europe, China, Southeast Asia and India, and we plan to expand our presence in these lower cost locations as appropriate to meet the needs of our customers. We believe we are well positioned to take advantage of future opportunities on a global basis as a result of our existing manufacturing footprint in 23 countries on six continents.

Our Competitive Strengths

We believe our competitive strengths differentiate us from our competitors and enable us to better serve the needs of OEMs. Our competitive strengths include:

End-to-End Solutions. We provide solutions throughout the world to support our customers' products during their entire life cycle, from product design and engineering, through manufacturing, to direct order fulfillment, logistics and after-market product service and support. Our end-to-end solutions are among the most comprehensive in the industry because we focus on adding value before and after the actual manufacturing of our customers' products. These solutions also enable us to 1) provide our customers with a single source of supply for their design, supply chain and manufacturing needs, 2) reduce the time required to bring products to market, 3) lower product costs and 4) allow our customers to focus on those activities they expect to add the highest value to their business. We believe our end-to-end solutions allow us to develop closer relationships with our customers and more effectively compete for their future business.

Product Design and Engineering Resources. We provide product design and engineering services for new product designs, cost reductions and Design-for-Manufacturability/Assembly/Test (DFx) reviews. Our engineers work with our customers during the complete product life cycle. Our design and NPI centers provide turnkey system design services including: electrical, mechanical, thermal, software, layout, simulation, test development, design verification, validation, regulatory compliance and testing services. We design high-speed digital, analog, radio frequency, mixed-signal, wired, wireless, optical and electro-mechanical modules and systems.

Our engineering engagement models include Joint Design Manufacturing (JDM), Contract Design Manufacturing (CDM) and consulting engineering for DFx, Value Engineering (cost reduction re-design), and design for global environmental compliance regulations such as the European Union's Restrictions of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE). We focus on industry segments that include industrial, medical, defense and aerospace, automotive, communications networks and cloud solutions. System solutions for these industry segments are supported by our vertically integrated component technologies, namely printed circuit boards, backplanes, enclosures, cable assemblies, precision machining, plastics, memory modules, and optical, RF and

microelectronics modules.

In these engagement models, our customers bring market knowledge and product requirements. We provide complete design engineering and new product introductions (NPI) services. For JDM products, typically the intellectual property is jointly owned by us and the customer, and we perform manufacturing and logistics services. For CDM projects, customers pay for all services and own the intellectual property.

Vertically Integrated Manufacturing Solutions. We provide a range of vertically integrated manufacturing solutions including high-technology components, new product introduction and test development services. These solutions are provided in every major region worldwide, with design and prototyping close to our customer's product development centers. Our customers benefit significantly from our experience in these areas, including product cost reduction, minimization of assets deployed for manufacturing, accelerated time-to-market and a simplified supply chain. Key system components we manufacture include high-technology printed circuit boards and printed circuit board assemblies, backplanes and backplane assemblies, enclosures, cable assemblies, plastic injection molded products, precision machined components, optical and RF

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modules and memory modules. These components and sub-assemblies are integrated into a final product or system, configured and tested to our customer's or the end-customer's specifications and delivered to the final point of use, with Sanmina managing the entire supply chain. By manufacturing system components and subassemblies ourselves, we enhance continuity of supply and reduce costs for our customers. In addition, we are able to have greater control over the supply chain of our customers' products.

Customers also benefit from our combined design, technology and manufacturing experience with specific products and markets. For example, in communications networks, we have over 30 years of experience in developing high-speed printed circuit boards ("PCBs") and backplanes. Examples of products for which our experience and vertically integrated model provide competitive advantage include wireless base stations, network switches, routers and gateways, optical switches, servers and storage appliances, automotive products, avionics and satellite systems, magnetic resonance imaging (MRI) and computer tomography (CT) scanners, and equipment used in semiconductor manufacturing processes, including equipment for photolithography, chemical mechanical polishing, vapor deposition and robotics for wafer transfer. For these and many other products, customers can gain competitive advantage with our manufacturing technology, while reducing the capital requirements associated with manufacturing and global supply chain management.

Advanced Component Technologies. We provide advanced component technologies which we believe allow us to differentiate ourselves from our competitors. These advanced technologies include the fabrication of complex printed circuit boards, backplanes, enclosures, precision machining and plastic components. For example, we produce some of the most advanced printed circuit boards and backplanes in the world, with up to 70 layers and process capabilities including a range of low signal loss, high performance materials, buried capacitance and thin-film resistors, high-density interconnects and micro via technology. We also manufacture high-density flex and rigid-flex printed circuit boards with up to 32 layers and 8 transition layers in support of defense and aerospace markets and high-end medical electronics.

Our printed circuit board assembly technologies include micro ball grid arrays, chip scale packages, fine-pitch discretes and small form factor radio frequency and optical components, chip on board, as well as advanced packaging technologies used in high pin count application for specific integrated circuits and network processors. We use innovative design solutions and advanced metal forming techniques to develop and fabricate high-performance indoor and outdoor chassis, enclosures, racks and frames. Our assembly services use advanced technologies including precision optical alignment, multi-axis precision stages and machine vision technologies. We use sophisticated procurement and production management tools to effectively manage inventories for our customers and ourselves. We have also developed build-to-order (BTO) and configure-to-order (CTO) systems and processes that enable us to manufacture and ship finished systems in as little as 8 hours after receipt of an order. We utilize a centralized Technology Council to coordinate the development and introduction of new technologies to meet our customers' needs in various locations and to increase technical collaboration among our facilities and divisions.

Global Manufacturing Capabilities. Most of our customers compete and sell their products on a global basis. As such, they require global solutions that include regional manufacturing for selected end markets, especially when time to market, local manufacturing or content and low cost solutions are critical objectives. Our global network of manufacturing facilities in 23 countries provides our customers a combination of sites to maximize both the benefits of regional and low cost manufacturing solutions and repair services. Our repair partners are located in an additional 27 countries.

We offer customers five regions in which all of our technology and components, integrated manufacturing and logistics solutions can be implemented and can serve both regional and global business needs. To manage and coordinate our global operations, we employ an enterprise-wide ERP system at substantially all of our manufacturing locations that operates on a single IT platform and provides us with company-wide information regarding component

inventories and orders. This system enables us to standardize planning and purchasing at the facility level and to optimize inventory management and utilization worldwide. Our systems also enable our customers to receive key information regarding the status of their programs.

We purchase large quantities of electronic components and other materials from a wide range of suppliers. Our primary supply chain goal is to consolidate our global spend to create the synergy and leverage to drive our supply base for better cost competitiveness, more favorable terms and leading-edge supply chain solutions. As a result, we often receive more favorable terms and supply chain solutions from suppliers, which generally enables us to provide our customers with greater total cost reductions than they could obtain themselves. Our strong supplier relationships often enable us to obtain electronic components and other materials that are in short supply and provide us the necessary support to optimize the use of our inventories.

Supply chain management also involves the planning, purchasing and warehousing of product components. A key objective of our supply chain management services is to reduce excess component inventory in the supply chain by scheduling

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deliveries of components at a competitive price and on a just-in-time basis. We use sophisticated production management systems to manage our procurement and manufacturing processes in an efficient and cost effective manner. We collaborate with our customers to enable us to respond to their changing component requirements and to reflect any changes in these requirements in our production management systems. These systems enable us to forecast future supply and demand imbalances and develop strategies to help our customers manage their component requirements and mitigate the impact of supply shortages that have recently affected our industry. Our enterprise-wide ERP systems provide us with company-wide information regarding component inventories and orders to optimize inventories, planning and purchasing at the facility level.

Customer-Focused Organization. We believe customer relationships are critical to our success and we are focused on providing a high level of customer service. Our key customer accounts are managed by dedicated account teams including a global account manager directly responsible for account management. Global account managers coordinate activities across divisions to effectively satisfy our customers' requirements and have direct access to our senior management to quickly address customer opportunities and needs. Local customer account teams further support the global teams.

Expertise in Serving Diverse End Markets. We have experience in serving our customers in the industrial, medical, defense and aerospace, automotive, communications networks and cloud solutions. Our diversification across end markets reduces our dependence upon any one customer or segment. In order to cater to the specialized needs of customers in particular market segments, we have dedicated personnel, and in some cases facilities, with industry-specific capabilities and expertise. We also maintain compliance with industry standards and regulatory requirements applicable to certain markets including, among others, medical, automotive, energy and defense and aerospace.

Our Products and Solutions

We offer our OEM customers a diverse set of products and solutions with a focus on wireless, wireline and optical communications and network infrastructure equipment, such as switches, routers and base stations, computing and storage systems, defense and commercial avionics and communications, medical imaging, diagnostic and patient monitoring systems, point-of-sale, gaming systems, semiconductor tools for metrology, lithography, dry and wet processing, industrial products including large format printers and automated teller machines, energy and clean technology products such as solar and wind products, LED lighting, smart meters and battery systems. These products may require us to use some or all of our end-to-end solutions including design, component technologies and logistics and repair services.

Integrated Manufacturing Solutions includes:

Printed Circuit Board Assembly and Test. Printed circuit board assembly involves attaching electronic components, such as integrated circuits, capacitors, microprocessors, resistors and memory modules, to printed circuit boards. The most common technologies used to attach components to printed circuit boards employ surface mount technology (SMT) and pin-through-hole assembly (PTH). SMT is an automated assembly system that places and solders components to the printed circuit board. In PTH, components are inserted into holes punched in the circuit board. Another method is press-fit-technology, in which components are pressed into holes on the printed circuit board. We use SMT, PTH, press-fit and other attachment technologies that are focused on miniaturization and increasing the density of component placement on printed circuit boards. These technologies, which support the needs of our customers to provide greater functionality in smaller products, include chip-scale packaging, ball grid array, direct chip attach and high density interconnect. We perform in-circuit and functional testing of printed circuit board assemblies. In-circuit testing verifies that all components are properly inserted and attached, and that electrical circuits are complete. We perform functional tests to confirm the board or assembly operates in accordance with its final

design and manufacturing specifications. We either design and procure test fixtures and develop our own test software, or we use our customers' test fixtures and test software. In addition, we provide environmental stress tests of the board or assembly that are designed to confirm that the board or assembly will meet the environmental stresses, such as heat, to which it will be subjected.

Final System Assembly and Test. We provide final system assembly and test in which assemblies and modules are combined to form complete, finished products. Products for which we currently provide final system assembly and test include wireless base stations, wireline communications switches, optical networking products, high-end servers, industrial and automotive products, LED lighting fixtures, diagnostic medical equipment, point of sale devices, and storage. We often integrate Sanmina-manufactured printed circuit board assemblies with enclosures, cables and memory modules. Our final assembly activities may also involve integrating components and modules that others manufacture. The complex, finished products we produce typically require extensive test protocols. We offer both functional and environmental test services. We also test products for conformity to applicable industry, product integrity and regulatory standards. Our test engineering expertise enables us to design functional test processes that

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assess critical performance elements including hardware, software and reliability. By incorporating rigorous test processes into the manufacturing process, we can help assure our customers that their products will function as designed.

Direct-Order-Fulfillment. We provide direct-order-fulfillment for our OEM customers. Direct-order-fulfillment involves receiving customer orders, configuring products to quickly fill the orders and delivering the products either to the OEM, a distribution channel, or directly to the end customer. We manage our direct-order-fulfillment processes using a core set of common systems and processes that receive order information from the customer and provide comprehensive supply chain management including procurement and production planning. These systems and processes enable us to process orders for multiple system configurations and varying production quantities including single units. Our direct-order-fulfillment services include BTO and CTO capabilities: in BTO, we build a system with the particular configuration ordered by the OEM customer; in CTO, we configure systems to an end customer's order, for example by installing software desired by the end customer. The end customer typically places this order by choosing from a variety of possible system configurations and options. Using advanced manufacturing processes and a real-time warehouse management and data control system on the manufacturing floor, we can meet a 48 to 72 hour turn-around-time for BTO and CTO requests. We support our direct-order-fulfillment services with logistics that include delivery of parts and assemblies to the final assembly site, distribution and shipment of finished systems and processing of customer returns.

Components, Products and Services includes:

Product Design and Engineering. Our design and engineering groups provide customers with comprehensive services from initial product design and detailed product development to prototyping and validation, production launch and end-of-life support for a wide range of products covering all our market segments. These groups complement our vertically integrated manufacturing capabilities by providing component level design services for printed circuit boards, backplanes and a variety of electro-mechanical systems. Our offerings in design engineering include product architecture, detailed development, simulation, test and validation, integration and regulatory and qualification services, and our NPI services include quick-turn prototypes, functional test development and release-to-volume production. We also offer post-manufacturing and end-of-life support including repair and sustaining engineering support through our Global Services division. We can also complement our customer's design team with our unique skills and services which can be used to develop custom, high-performance products that are manufacturable and cost optimized to meet product and market requirements. Such engineering services can help in improving a customer's time-to-market and cost-to-market objectives.

Printed Circuit Boards. We have the ability to produce multilayer printed circuit boards on a global basis with high layer counts and fine line circuitry. We have also developed several proprietary technologies and processes which improve electrical performance, connection densities and reliability of printed circuit boards. Our ability to support NPI and quick-turn fabrication followed by manufacturing in both North America and Asia allows our customers to accelerate their time-to-market as well as their time-to-volume. Standardized processes and procedures make transitioning of products easier for our customers. Our technology roadmaps provide leading-edge capabilities and high yielding processes. Our engineering teams are available on a worldwide basis to support designers in Design for Manufacturability (DFM) analysis and assemblers with field applications support.

Printed circuit boards are made of fiberglass/resin-laminated material layers and contain copper circuits which interconnect and transmit electrical signals among the components that make up electronic devices. Increasing the density of the circuitry in each layer is accomplished by reducing the width of the circuit traces and placing them closer together in the printed circuit board along with adding layers and via hole structures. We are currently capable of efficiently producing printed circuit boards with up to 70 layers and circuit trace widths as narrow as two mils (50 micron) in production volumes. Specialized production equipment along with an in-depth understanding of high

performance laminate materials allow us to fabricate some of the largest form factor and highest speed (frequencies in excess of 40 gigahertz or GHz) backplanes available in the industry.

Backplanes and Backplane Assemblies. Backplanes are very large printed circuit boards that serve as the backbones of sophisticated electronics products, such as internet routers. Backplanes provide interconnections for printed circuit board assemblies, integrated circuits and other electronic components. We fabricate backplanes in our printed circuit board plants. Backplane fabrication is significantly more complex than printed circuit board fabrication due to the large size and thickness of the backplanes. We manufacture backplane assemblies by press-fitting high density connectors into plated through-holes in the bare backplane. In addition, many of the newer, advanced technology backplanes require SMT attachment of passive discrete components as well as high-pin count ball grid

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array packages. These advanced assembly processes require specialized equipment and a strong focus on quality and process control. We also perform in-circuit and functional tests on backplane assemblies. We have developed proprietary technology and “know-how” which enable backplanes to run at data rates in excess of 40 Gbps. We currently have capabilities to manufacture backplanes with greater than 60 layers in sizes up to 26x40 and 22x52 inches and up to 0.425 inches in thickness, using a wide variety of high performance laminate materials. These are among the largest and most complex commercially manufactured backplanes and the test equipment we have to ensure the quality and performance of these backplane systems is “world class.” We are not only fully capable of the electronic integrity testing of these backplanes, but can also utilize state of the art x-ray equipment to verify defect-free installation of the new high density/high speed connectors. Lastly, performance of the backplane system is checked through a signal integrity tester to ensure the product will meet design intent. We are one of a limited number of manufacturers with these capabilities.

Cable Assemblies. Cable assemblies are used to connect modules, assemblies and subassemblies in electronic devices. We provide a broad range of cable assembly products and services, from cable assemblies and harnesses for automobiles, to complex harnesses for industrial products and semiconductor manufacturing equipment. We design and manufacture a broad range of high-speed data, radio frequency and fiber optic cabling products. Our cable assemblies are often used in large rack systems to interconnect subsystems and modules. Our manufacturing footprint with facilities in the U.S., Mexico, the EU and China enable us to support our customers NPI and volume production needs on a global basis.

Plastic Injection Molded Products. Plastic injection molded products are used to create a vast array of everyday items; from very small intricate mechanical components, to cosmetic enclosures designed to protect sensitive electronic equipment. Our diverse capability within the plastic injection molding space spans all major markets and industries. We are equipped with nearly 80 plastic injection molding machines with clamping pressure ranging from 28 tons to 1,000 tons. Our experienced tooling, process, quality and resin engineers work concurrently using a scientific molding approach to develop cost effective, highly reliable manufacturing solutions for medical, industrial, defense, multimedia, computing and data storage customers. We apply the principles of scientific molding, combined with strategic partnerships with U.S. and Asian toolmakers to enable delivery of cost effective high-quality plastic manufacturing solutions.

Mechanical Systems. Mechanical systems are used across all major markets to house and protect complex and fragile electronic components, modules and sub-systems so that the system's functional performance is not compromised due to mechanical, environmental or any other usage conditions. Our mechanical systems manufacturing services are capable of fabricating mechanical components, such as cabinets, chassis (soft tool and hard progressive tools), frames, racks, and data storage cabinets integrated with various electronic components and sub-systems for power management, thermal management, sensing functions and control systems.

We manufacture a broad range of enclosures for a wide range of products from set-top boxes, medical equipment, and storage, to large and highly complex mechanical systems, such as those used in indoor and outdoor wireless base station products and high precision vacuum chambers for the semiconductor industry.

Our mechanical systems expertise is available at several of our state-of-the-art facilities worldwide. Our operations provide metal fabrication by soft tools, high-volume metal stamping and forging by hard tools with stage and progressive tools, plastic injection molding, robotic welding, powder coating, wet painting, plating and cleaning processes.

We also offer a suite of world-class precision machining services in the U.S., Mexico and Israel. We use advanced numerically controlled machines enabling the manufacture of components to very tight tolerances and the assembly of these components in clean environments. Capabilities include complex medium and large format mill and lathe

machining of aluminum, stainless steel, plastics, ferrous and nonferrous alloys and exotic alloys. We also have helium and hydrostatic leak-test capabilities. By leveraging our established supply chain, we do lapping, anodizing, electrical discharge machining (EDM), heat-treating, cleaning, laser inspection, painting and packaging. We have dedicated facilities supporting machining and complex integration with access to a range of state-of-the-art, computer-controlled machining equipment that can satisfy rigorous demands for production and quality. This includes fully automated “lights-out” machinery that continues production in the absence of human operators. With some of the largest horizontal milling machines in the U.S., we are a supplier of vacuum chamber systems for the semiconductor, flat-panel display, LED equipment, industrial, medical and AS9100-certified aerospace markets.

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Viking Technology. Viking is our high-end product technology and engineering division that focuses on memory, RF, optical, microelectronics and enterprise solutions for the OEM's as well as cloud and communications service providers. Viking's mission and philosophy is to deliver leading-edge technology solutions that help optimize the value and performance of its customers' applications.

Viking RF, Optical and Microelectronics. Optical and radio frequency (RF) components are key building blocks of many systems. Viking produces both passive and active components as well as modules that are built from a combination of industry standard and/or custom components, interconnected using microelectronic and micro-optic technologies to achieve a unique function.

Based on its microelectronic design and manufacturing technologies, Viking provides RF and optical components, modules and systems for customers in the communications, networking, medical, industrial, military and aerospace markets. Viking's experience in RF and optical communication and networking products spans long-haul/ultra-long-haul and metro regions for transport/transmission, as well as access and switching applications, including last-mile solutions. Viking is currently supplying product to the 10G, 40G, 100G, 200G and 400G optical communication marketplace based on Viking's foundational IP within optical and RF technologies. In the medical market, Viking develops and manufactures components and subassemblies that support Sanmina's medical operations for products such as blood analyzers, food contamination analyzers, and specialized optical spectrometers and fluorometers utilizing the latest optical technologies. Viking's service offerings are designed to deliver end-to-end solutions with special focus on product design and industrialization, optical and RF components, module and blade manufacturing, as well as system integration and test.

Viking Memory Solutions. Viking supplies leading edge Non-Volatile DIMMs (NVDIMM), Solid State Drives (SSD) and DRAM solutions.

With a range of products that spans both SSD and DRAM technologies, Viking provides storage solutions ranging from high-performance computing SSDs tailored for the enterprise market to small form factor flash and DRAM modules optimized for industrial, telecommunications, and military markets. To continue its leadership in the memory space, Viking Technology is investing in several advanced technologies such as NVDIMM and new storage class memory. These investments will enable Viking to support the large and growing server market with products that optimize performance, capacity, and persistence in enhancing its customer's applications. In addition, Viking will continue to focus on the enterprise and embedded markets with a further emphasis on medical, military and automotive applications.

Viking's comprehensive memory product offerings include Enterprise Class & Industrial Grade SSDs available across a wide portfolio of standard and OEM customized form-factors (2.5", 1.8" SlimSATA, mSATA, M.2, PCIe/NVMe SSDs, SATADIMM™, DFC and eUSB). Viking also supports the broadest range of DDR4, DDR3, DDR2, DDR and SDRAM modules; from High-Density to Small-Form Factor with Error Checking and Correction (ECC Memory). In addition to its broad DRAM offering, Viking specializes in DRAM and Flash chip stacking, allowing for higher density Modules and drives ordinarily unachievable through normal chip manufacturing.

Viking's custom build capabilities, extended temperature ranges, locked BOM support, test, manufacturing and logistics, creates a unique combination of value adds. These capabilities have enabled Viking to further differentiate itself in an industry that is becoming increasingly competitive.

Viking Enterprise Solutions (formerly Newisys). Viking designs and manufactures both standard and custom storage and server products, including high performance SSD arrays, high performance HDD (Hard Disk Drive) arrays, cold storage, and cloud solutions including software to manage and provision storage across multiple fabrics. Some products are customized for streaming video applications. Viking provides complete rack scale solutions to customers.

SCI Technology Inc. (SCI). SCI has been providing engineering services, products, manufacturing, test, and depot and repair solutions to the global defense and aerospace industry for more than 55 years. SCI offers advanced products for aircraft systems and tactical communications and also provides products for nuclear and radiation detection and monitoring, as well as fiber optics capabilities for use in a variety of applications.

SCI's customers include U.S. government agencies, U.S. allies and major defense and aerospace prime contractors. SCI has the infrastructure and facility security clearance to support the stringent certifications, regulations, processes and procedures required by these customers.

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42Q. 42Q provides an innovative, world-class cloud-based manufacturing execution solution (MES) that is scalable, flexible, secure and easy to implement. Our solution provides customers advantages in efficiencies and costs relative to legacy systems and offers traceability and genealogy, multi-plant visibility, compliance management and on-demand work instructions.

Logistics and Repair Services. Our logistics and repair services provide significant value to our customers while helping protect their brand name. It also improves customer experience through the deployment of enhanced tools and the provision of real-time access to critical business information. Our solutions are designed to reduce the total cost of ownership and enable our customers to shift their services operations to a variable cost model that frees up cash, enabling them to focus on their core business initiatives.

Focusing on highly complex and mission-critical products and processes, we support the logistics and repair needs of customers in the communications, defense, embedded computing and medical markets worldwide. Through our operational infrastructure of 34 Sanmina sites and 28 repair partner sites, we provide a wide range of services including direct-order-fulfillment, configure-to-order, supplier, inventory and warranty management, reverse logistics, repair, asset recovery, sustaining engineering, test development and end-of-life management to embrace the most unique needs of our customers.

Drawing on a robust set of information systems, we offer configurable environments tailored to meet specific customer needs including customized web portals, order and serial number tracking, special routings and promotions. Local, regional and global solutions are supported by a robust set of business processes that focus on inventory reduction and risk mitigation. This can improve cycle times by leveraging infrastructure, people and technology to enable reliable shipments of products to end users worldwide generally within 24 to 72 hours, depending on our customer's requirements.

Logistics and repair services complement our end-to-end manufacturing strategy by integrating engineering, supply chain, manufacturing, logistics and repair into a seamless solution for customers around the world.

Our End Markets

We target markets that we believe offer significant growth opportunities and where OEMs sell complex products that are subject to rapid technological change. We believe that markets involving complex, rapidly changing products offer opportunities to produce products with higher margins because they require higher value-added manufacturing services and may also include our advanced vertically integrated components. Our diversification across market segments and customers helps mitigate our dependence on any particular market or customer.

Industrial/Medical/Defense/Automotive

Industrial. We utilize our end-to-end component, engineering and complex assembly services to support the industrial market. We support a wide range of segments including transportation, power management, industrial controls, instrumentation and test equipment, inspection and public safety equipment, capital equipment, and self service kiosk solutions. We have significant experience in manufacturing high precision components that are utilized in highly complex systems such as vacuum chambers, photolithography tools, etch tools, wafer handling systems, airport security, 3D printing, flat panel display test and repair equipment, chem-mech planarization tools, optical inspection and x-ray equipment, explosive detection equipment, and large format printing machines. We have specialized and dedicated facilities for the assembly of large / complex electro-mechanical, thermal and liquid-management equipment for applications including ATMs, beverage dispensing, cash-counting and management systems, electro-mechanical patient transfer tables, industrial printers and semiconductor capital equipment.

We also manufacture sub-assemblies for machine-control units, such as high-speed machining tools, liquid management equipment and complex hydraulic-electro-mechanical systems, for applications such as industrial-grade printing and liquid dispensing.

We are committed to serving companies leading the energy and clean technology revolution in the, solar, wind, battery systems, LED lighting fixtures (including indoor, outdoor, industrial-grade and construction lighting products), as well as smart infrastructure industries. We leverage traditional EMS for clean technology customers in areas related to power electronics, control and distribution, smart meters and full-system integration of complex industrial power inverters. Beyond traditional EMS, our extensive range of electro-mechanical design and complex system manufacturing capabilities are an excellent fit

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across all clean technology segments. Our design and manufacturing operations are strategically located in close proximity to clean technology business hubs.

Medical. We provide comprehensive manufacturing and related services to the medical industry including design, logistics and regulatory services. The manufacturing of products for the medical industry often requires compliance with domestic and foreign regulations including the Food and Drug Administration's (FDA's) quality system regulations and the European Union's medical device directive. In addition to complying with these standards, our medical manufacturing facilities comply with ISO 13485 (formerly EN 46002) and ISO 9001. We manufacture a broad range of medical devices including blood glucose meters, computed tomography scanner assemblies, respiration systems, blood analyzers, molecular diagnostics, cosmetic surgery systems, ultrasound imaging systems and a variety of patient monitoring equipment.

Defense. We offer our end-to-end services to the defense, aerospace and high-reliability electronics industry. We design, manufacture and support a comprehensive range of defense and aerospace products including avionics systems and processors, cockpit and wireless communications systems, tactical and secure network communications systems, radar subsystems, nuclear and radiation detection and monitoring systems for homeland defense and fiber-optic systems. We believe our experience in serving the defense, aerospace and high-reliability electronics industry, as well as our product design and engineering capabilities, are our key competitive strengths.