TTM TECHNOLOGIES INC
Form 10-K
February 27, 2015
Table of Contents

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)

OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 29, 2014

Commission file number 0-31285

TTM TECHNOLOGIES, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**91-1033443**
(State or Other Jurisdiction of Incorporation or Organization)	*(I.R.S. Employer Identification No.)*
1665 Scenic Avenue Suite 250, Costa Mesa, California	**92626**
(Address of Principal Executive Offices)	*(Zip Code)*

(714) 327-3000

(Registrant s telephone number, including area code)

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

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, $0.001 par value	Nasdaq Global Select Market

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

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

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 þ No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes þ 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. þ

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 þ Non-accelerated filer ¨ Smaller reporting company ¨
(Do not check if a smaller reporting company)

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

The aggregate market value of Common Stock held by non-affiliates of the registrant (based on the closing price of the registrant s Common Stock as reported on the Nasdaq Global Select Market on June 30, 2014, the last business day of the most recently completed second fiscal quarter), was $450,468,386. For purposes of this computation, all officers, directors, and 10% beneficial owners of the registrant are deemed to be affiliates of the registrant. Such determination should not be deemed to be an admission that such officers, directors, or 10% beneficial owners are, in fact, affiliates of the registrant.

As of February 23, 2015, there were outstanding 83,624,804 shares of the registrant s Common Stock, $0.001 par value.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant s definitive Proxy Statement for its 2015 Annual Meeting of Stockholders are incorporated by reference into Part III of this report. Such Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

Table of Contents

TTM TECHNOLOGIES, INC.

ANNUAL REPORT ON FORM 10-K

TABLE OF CONTENTS

Table of Contents

PART I

Statement Regarding Forward-Looking Statements

This report on Form 10-K contains forward-looking statements regarding future events or our future financial and operational performance. Forward-looking statements include statements regarding markets for our products; trends in net sales, gross profits and estimated expense levels; liquidity and anticipated cash needs and availability; and any statement that contains the words anticipate, believe, plan, forecast, foresee, estimate, project, expect, seek, target, intend, goal and other similar expressions. The forward-looking statements included reflect our current expectations and beliefs, and we do not undertake publicly to update or revise these statements, even if experience or future changes make it clear that any projected results expressed in this annual report or future quarterly reports to stockholders, press releases or company statements will not be realized. In addition, the inclusion of any statement in this report does not constitute an admission by us that the events or circumstances described in such statement are material. Furthermore, we wish to caution and advise readers that these statements are based on assumptions that may not materialize and may involve risks and uncertainties, many of which are beyond our control, that could cause actual events or performance to differ materially from those contained or implied in these forward-looking statements. These risks and uncertainties include the business and economic risks described in Item 1A Risk Factors .

Unless otherwise indicated or unless the context requires otherwise, all references in this document to TTM, our company, we, us, our, and similar names refer to TTM Technologies, Inc. and its subsidiaries.

ITEM 1. *BUSINESS*
General

We are a leading global provider of time-critical and technologically complex printed circuit board (PCB) products and backplane assemblies (i.e., PCBs populated with electronic components), which serve as the foundation of sophisticated electronic products. We are the largest PCB manufacturer in North America and one of the largest PCB manufacturers in the world, in each case based on revenue, according to the 2012 and 2013 rankings from N.T. Information LTD (NTI), respectively. In 2014 we generated $1.3 billion in net sales and ended the year with 16,857 employees worldwide. We operate a total of 13 specialized facilities in the United States and the People s Republic of China (China). We focus on providing time-to-market and advanced technology products and offer a one-stop manufacturing solution to our customers from engineering support to prototype development through final volume production. This one-stop manufacturing solution allows us to align technology development with the diverse needs of our customers and to enable them to reduce the time required to develop new products and bring them to market. We serve a diversified customer base consisting of approximately 1,000 customers in various markets throughout the world, including manufacturers of networking/communications infrastructure products, smartphones, and touchscreen tablets, as well as the aerospace and defense, high-end computing, and industrial/medical industries. Our customers include both original equipment manufacturers (OEMs) and electronic manufacturing services (EMS) providers.

We manage our worldwide operations based on two geographic operating segments: (1) *Asia Pacific*, which consists of five PCB fabrication plants, and (2) *North America*, which consists of seven domestic PCB fabrication plants, including a facility that provides follow-on value-added services primarily for one of the PCB fabrication plants, and one backplane assembly plant in Shanghai, China, which is managed in conjunction with our U.S. operations. Each segment operates predominantly in the same industry with production facilities that produce customized products for our customers and use similar means of product distribution.

Acquisition of Viasystems Group, Inc.

On September 21, 2014, TTM, Viasystems Group, Inc. (Viasystems), and Vector Acquisition Corp. (Merger Sub) entered into an Agreement and Plan of Merger (the Merger Agreement) under which, subject to the satisfaction of certain conditions, we expect to acquire all outstanding shares of Viasystems (the Merger) for a combined consideration of $11.33 in cash and 0.706 shares of TTM common stock per outstanding share of

Table of Contents

Viasystems common stock, which based on the closing market price on December 31, 2014 was valued at $16.65 per share of Viasystems common stock, or approximately $361.7 million. The total purchase price of the transaction, including debt assumed, is approximately $992.5 million, which is based on the closing market price on December 31, 2014 and is subject to change prior to the consummation of the Merger.

Viasystems is a worldwide provider of complex multi-layer rigid, flexible, and rigid-flex PCBs and electro-mechanical solutions (E-M Solutions). Viasystems products are found in a wide variety of commercial products, including automotive engine controls, hybrid converters, automotive electronics for navigation, safety, and entertainment, telecommunications switching equipment, data networking equipment, computer storage equipment, semiconductor test equipment, wind and solar energy applications, off-shore drilling equipment, communications applications, flight control systems, and complex industrial, medical, and other technical instruments. Viasystems E-M Solutions services can be bundled with its PCBs to provide an integrated solution to customers. Viasystems operates 15 manufacturing facilities worldwide: eight in the United States, five in China, one in Canada, and one in Mexico. Viasystems serves a diversified customer base of over 1,000 customers in various markets throughout the world.

The Merger Agreement provides that Viasystems is entitled to receive a reverse breakup fee of $40 million from us in the event that the Merger Agreement is terminated following specific conditions.

Since the public announcement on September 22, 2014 of the execution of the Merger Agreement, TTM, Viasystems, Merger Sub, and the members of the Viasystems board of directors (the Viasystems Board) have been named as defendants in two putative class action complaints challenging the Merger. The first lawsuit, filed in the Circuit Court of St. Louis County, Missouri on September 30, 2014 (the Missouri Lawsuit), and the second lawsuit, filed in the Court of Chancery of the State of Delaware on October 13, 2014 (the Delaware Lawsuit and, together with the Missouri Lawsuit, the Lawsuits), generally allege that the Merger fails to properly value Viasystems, that the individual defendants breached their fiduciary duties in approving the Merger Agreement, and that those breaches were aided and abetted by TTM, Merger Sub, and Viasystems. On January 6, 2015, the parties to the Missouri Lawsuit entered into a Memorandum of Understanding (MOU) with respect to a proposed settlement that will terminate both Lawsuits upon entry of the final judgment. The parties are in the process of negotiating this settlement agreement. Pursuant to the MOU, the settlement agreement will provide for payment of attorneys fees and reimbursement of expenses, and releases of all claims and relief sought in both Lawsuits. For additional information, see Item 3. Legal Proceedings.

Industry Overview

PCBs are manufactured in panels from sheets of laminated material. Each panel is typically subdivided into multiple PCBs, each consisting of a pattern of electrical circuitry etched from copper to provide an electrical connection between the components mounted to it. PCBs serve as the foundation for virtually all electronic products, ranging from consumer electronics products (such as cameras, smartphones, and touchscreen tablets) to high-end commercial electronic equipment (such as medical instruments, data communications equipment and servers) and aerospace and defense electronic systems.

Traditionally, consumer electronics products utilized commodity-type PCBs with lower layer counts, less complexity, and larger production runs. However, recent advances in consumer electronics products are driving a transition to more complex PCBs. High-end commercial equipment and aerospace and defense products typically require customized, multilayer PCBs using advanced technologies. Most high-end commercial and aerospace and defense end markets have low volume requirements that demand a highly flexible manufacturing environment.

In recent years, the demand for smaller sized electronic devices with more features and functionality has been increasing. Products designed to offer faster data transmission, thinner and more lightweight packaging, and reduced power consumption generally require increasingly complex PCBs to meet these criteria. By using High Density Interconnect (HDI) technology, circuit densities can be increased, thereby providing for smaller products with higher packaging densities. Furthermore, flexible circuits technology, which includes flexible circuits, rigid-flex circuits, flex assemblies, and substrate PCBs, can be found in small and lightweight end products, such as smartphones and touchscreen tablets and increasingly in other end markets such as automotive, medical, and aerospace and defense. We collectively refer to these new technologies as advanced technologies, and they have growth rates higher than conventional technologies.

Table of Contents

According to estimates in a November 2014 report by Prismark Partners LLC (Prismark Partners), worldwide demand for PCBs was approximately $57.5 billion in 2014, and worldwide PCB revenue is expected to increase at a rate of 2.7% in 2015. Of the worldwide demand for production in 2014, the Americas accounted for approximately 5% (approximately $3 billion), China accounted for approximately 46% (approximately $26.3 billion), and the rest of the world accounted for approximately 49% (approximately $28.2 billion), according to estimates by Prismark Partners. While Prismark Partners expects long-term growth to occur in all PCB technologies, they forecast more robust growth in the HDI, flex and substrate segments. This growth expectation stems from the increase in the number of applications that can utilize, and in many cases require, smaller, denser interconnects.

The PCB manufacturing business is highly fragmented. According to a report by NTI, a PCB industry research firm, there were approximately 2,800 PCB manufacturers worldwide at the end of the first half of 2014, with the top 20 companies representing approximately 45% of the global market (by revenue) in 2013. As a result of global economic trends, the number of PCB producers operating in China has increased significantly since 2000. This corresponds with a significant decline in the number of North American and European PCB producers during the same time period.

Industry Trends

We believe that several trends are impacting the PCB manufacturing industry. These trends include:

Shorter electronic product life cycles. Rapid advances in technology have shortened the life cycles of complex commercial electronic products, placing greater pressure on OEMs to quickly bring new products to market. The accelerated time-to-market and ramp-to-volume needs of OEMs for high-end commercial equipment create opportunities for PCB manufacturers that can offer engineering support in the prototype stage and manufacturing scalability throughout the production life cycle.

Increasing complexity of electronic products. OEMs continue to design higher performance electronic products which take advantage of advances in semiconductor technology. In turn, this requires technologically complex PCBs that can accommodate higher speeds and component densities, including HDI, flexible, and substrate PCBs. These complex PCBs can require very high layer counts, miniaturized circuit connections, advanced manufacturing processes and materials, and high-mix production capabilities, which involve processing small lots in a flexible manufacturing environment.

Increasing concentration of global PCB production in Asia. In recent years, many electronics manufacturers have moved their commercial production to Asia to take advantage of its large and relatively lower cost labor pool and well-developed electronics infrastructure. In particular, the trend has favored China, which is expected to have the largest PCB market in terms of revenue in 2015 according to NTI. In addition, China has emerged as a global production center for cellular phones, smartphones, touchscreen tablets, computers and computer peripherals, and high-end consumer electronics. According to Prismark Partners, approximately 91% of the world s PCB production for 2014 was forecast to come from Asia, in part due to proximity to the region s expansive electronic manufacturing operations. We believe that the expected continued concentration of consumer electronic production in China should result in additional commercial market share potential for PCB manufacturers with a strong presence and reputation in China.

Decreased reliance on multiple PCB manufacturers by commercial OEMs. Commercial OEMs traditionally have relied on multiple PCB manufacturers to provide different services as an electronic product progresses through its life cycle. The physical transfer of a product among different PCB manufacturers often results in increased costs and inefficiencies due to potentially incompatible technologies and manufacturing processes, which results in production delays. In addition, commercial OEMs generally find it easier and less costly to manage fewer PCB manufacturers. As a result, commercial OEMs are reducing the number of PCB manufacturers and backplane assembly service providers on which they rely, presenting an opportunity for those that can offer one-stop manufacturing capabilities from prototype to volume production.

Table of Contents

Our Strategy

Our goal is to be the leading global provider of time-critical, one-stop manufacturing services for highly complex PCBs. Our core strategy includes the following elements:

Maintain our customer-driven culture. Our customer-oriented culture is designed to achieve extraordinary service, competitive differentiation, and superior execution. Our customer-oriented strategies include engaging in co-development of new products, capturing new technology products for next generation equipment, and continuing to invest in and enhance our broad offering of PCB technologies. Our ability to anticipate and meet customers needs is critical to retaining existing customers and attracting leading companies as new customers.

Drive operational efficiency and productivity. We are constantly focused on improving our operational execution to increase efficiency, productivity and yields. We strongly believe in the benefits of sharing best practices across our extensive manufacturing footprint and rely on stringent goals for throughput, quality and customer satisfaction to measure our effectiveness. The fast paced nature of our business requires a disciplined approach to manufacturing that is rooted in continuous improvement.

Accelerate customer and end market diversification through strategic mergers and acquisitions. TTM has a history of successful acquisitions that have been key to our growth and profitability. We continuously look for strategic opportunities that could facilitate our efforts to diversify into other growing end markets including automotive and medical/industrial/instrumentation end markets. As discussed above, our proposed acquisition of Viasystems would contribute to our ongoing diversification efforts.

Expand advanced technologies to differentiate our operations. With rising requirements for faster data transmission, shrinking features (*i.e.*, lightweight and thin), and lower power consumption, many PCB designs have migrated to more complex HDI PCBs from conventional multi-layer PCB technologies. This is especially true for PCBs used in portable devices such as smartphones and touchscreen tablets and is an increasing trend in other end markets, such as automotive, networking/communications, industrial, and aerospace and defense. We intend to continue to address the growing demand for complex PCBs by delivering time critical and highly complex solutions to our customers. We manufacture PCBs with layer counts in excess of 30 layers, and we believe that our HDI, flex, rigid-flex, substrate, and other high technology capabilities provide an attractive market position for our company. As a leading manufacturer, we intend to continue to invest in advanced technologies and the use of best practices across our global footprint in order to further reduce our delivery times, improve quality, increase yields, and decrease costs.

Address customer needs in all stages of the product life cycle. By providing a one-stop solution, we work to service our customers needs from the earliest stages of product development through volume production. We believe that by servicing our customers early in the development process, we are able to demonstrate our capabilities and establish an incumbent position early in the product development cycle, which translates into additional opportunities as our customers move into volume production. Our expertise is enhanced by our ability to deliver highly complex PCBs to customers in significantly compressed lead times. This rapid delivery service enables OEMs to develop sophisticated electronic products more quickly and reduce their time to market.

Deliver strong financial performance and delever the balance sheet. Our strategy is to be a company that delivers industry-leading financial performance. We expect to achieve this by servicing our customers needs in higher-growth end markets meeting their product needs in a cost-efficient and effective manner. We believe that this strategy will allow us to generate strong cash flows which will enable us to reduce financial leverage while at the same time providing us with the financial flexibility to continue to invest in our business.

Products and Services

We offer a wide range of PCB products, including HDI PCBs, conventional PCBs, flexible PCBs, rigid-flex PCBs, backplane assemblies, and IC substrates. We also offer certain value-added services to support our customers needs. These include design for manufacturability (DFM) support during new product introduction stages; PCB layout design; simulation and testing services; QTA production; and drilling and routing services. By providing these value-added services to customers, we are able to provide our customers with a one-stop manufacturing solution, which enhances our relationships with our customers.

Table of Contents

Conventional PCBs

A conventional PCB is a board containing a pattern of conducting material, such as copper, which becomes an electrical circuit when electrical components are attached to it. It is the basic platform used to interconnect electronic components and can be found in most electronic products, including computers and computer peripherals, communications equipment, cellular phones, high-end consumer electronics, automotive components and medical and industrial equipment. Conventional PCBs are more product-specific than other electronic components because generally they are unique for a specific electronic device or appliance. Conventional PCBs can be classified as single-sided, double-sided and multi-layer boards.

A multi-layer PCB can accommodate more complex circuitry than a double-sided PCB. It has more than two copper circuit layers with pieces of laminate bonded by resin between layers. Multi-layer PCBs require more sophisticated production techniques compared to single and double-sided PCBs, as, among other things, they require high precision manufacturing and more stringent product quality. The number of layers comprising a PCB generally increases with the complexity of the end product. For example, a simple consumer device such as a garage door controller may use a single-sided or double-sided PCB, while a high-end network router or computer server may use a PCB with 20 layers or more.

High density interconnect or HDI PCBs

Our North America and Asia Pacific operating segments produce HDI PCBs, which are PCBs with higher interconnect density per unit area requiring more sophisticated technology and manufacturing processes for their production than conventional PCB products. HDI PCBs are boards with high-density characteristics including micro-sized holes, or microvias (diameter at or less than 0.15 mm), fine lines (circuit line width and spacing at or less than 0.075 mm) and can be constructed with thin high performance materials, thereby enabling more interconnection functions per unit area. HDI PCBs generally are manufactured using a sequential build-up process in which circuitry is formed in the PCB one layer at a time through successive drilling, plating and lamination cycles. In general, a board s complexity is a function of interconnect and circuit density, layer count, laminate material type and surface finishes. As electronic devices have become smaller and more portable with higher functionality, demand for advanced HDI PCB products has increased dramatically. We define advanced HDI PCBs as those having more than one layer of microvia interconnection structure.

Flexible PCBs

Flexible PCBs are printed circuits produced on a flexible laminate, allowing it to be folded or bent to fit the available space or allow relative movement. We manufacture circuits on flexible substrates that can be installed in three-dimensional applications for electronic packaging systems. Use of flexible circuitry can enable improved reliability, improved electrical performance, reduced weight and reduced assembly costs when compared with traditional wire harness or ribbon cable packaging. Flexible PCBs can provide flexible electronic connectivity of an electrical device s apparatus such as printer heads, cameras, camcorders, TVs, mobile handsets, and touchscreen tablets. For some of our flexible PCB customers we also assemble components onto the flexible PCBs we manufacture.

Rigid-flex PCBs

Rigid-flex circuitry provides a simple means to integrate multiple PCB assemblies and other elements such as display, input or storage devices without wires, cables or connectors, replacing them with thin, light composites that integrate wiring in ultra-thin, flexible ribbons between sections. In rigid-flex packaging, a flexible circuit substrate provides a backbone of wiring with rigid multilayer circuit sections built up as modules where needed.

Since the ribbons can be bent or folded, rigid-flex provides a means to compactly package electronics in three dimensions with dynamic or static bending functions as required, enabling miniaturization and thinness of product design. The simplicity of rigid-flex integration also generally reduces the number of parts required, which can improve reliability. The increasing popularity of mobile electronics coupled with the design trend of developing increasingly thinner, lighter and more feature-rich products is expected to further drive growth in the rigid-flex and flex sector, where these PCBs are the backbone of miniaturization.

Table of Contents

Rigid-flex technology is essential to a broad range of applications including aerospace, industrial and transportation systems requiring high reliability; hand-held and wearable electronics such as mobile phones, video cameras and music players where thinness and mechanical articulation are essential; and ultra-miniaturized products such as headsets, medical implants and semiconductor packaging where size and reliability are paramount.

Backplane assemblies

A backplane is an interconnecting device that has circuitry and connectors into which PCBs or other additional electronic devices can be plugged. In a computer, these may be referred to as a motherboard . The manufacture of backplane assemblies involves mounting various electronic components to large PCBs. Components include, but are not limited to, connectors, capacitors, resistors, diodes, integrated circuits, hardware and a variety of other parts. We can assemble backplanes and sub-systems and provide full system integration of backplane assemblies, cabling, power, thermal, and other complex electromechanical parts into chassis and other enclosures. In addition to assembly services, we provide inspection and testing services such as automated optical inspection (AOI) and X-ray inspection to ensure that all components have been properly placed and electrical circuits are complete. Our focus is to provide backplane and sub-system assembly products primarily as an extension of our commercial and aerospace and defense PCB offerings.

IC substrates

IC substrates are mounts that are used to connect very small ICs (integrated circuits or semiconductors) to comparatively larger PCBs for assembly into electronic end products such as memory modules, cellular phones, digital cameras, automotive GPS and engine controls. IC substrates, also known as IC carriers, are highly miniaturized circuits manufactured by a process largely similar to that for PCBs but requiring the use of ultra-thin materials and including micron-scale features, as they must bridge the gap between sub-micron IC features and millimeter scale PCBs. Consequently, IC substrates are generally manufactured in a semiconductor-grade clean room environment to ensure products are free of defects and contamination.

IC substrates are a basic component of IC packages which, combined with other electronic components in an assembly, control functions of an electronic appliance. IC packages can be broadly divided into single chip modules (or SCMs) and multi-chip modules (or MCMs), with the former containing one IC chip, and the latter containing multiple chips and other electronic components.

Quick turnaround services

We refer to our rapid delivery services as quick turnaround or QTA , because we provide custom-fabricated PCBs to our customers within as little as 24 hours to ten days. As a result of our ability to rapidly and reliably respond to the critical time requirements of our customers, we generally receive premium pricing for our QTA services as compared to standard lead time prices.

Prototype production. In the design, testing, and launch phase of a new electronic product s life cycle, our customers typically require limited quantities of PCBs in a very short period of time. We satisfy this need by manufacturing prototype PCBs in small quantities, with delivery times ranging from as little as 24 hours to ten days.

Ramp-to-volume production. After a product has successfully completed the prototype phase, our customers introduce the product to the market and require larger quantities of PCBs in a short period of time. This transition stage between low-volume prototype production and volume production is known as ramp-to-volume. Our ramp-to-volume services typically include manufacturing up to a few hundred PCBs per order with delivery times ranging from five to 15 days.

RF and microwave circuits

We have the ability to produce and test specialized circuits used in radio-frequency or microwave emission and collection applications. These products are typically used for radar, transmit/receive antennas and similar wireless applications. Markets for these products include defense, avionics, satellite, and commercial. The

Table of Contents

manufacture of these products requires advanced materials, equipment, and methods that are highly specialized and distinct from conventional printed circuit manufacturing techniques. We also offer specialized radio-frequency assembly and test services.

Thermal management

Increased component density on circuit boards often requires improved thermal dissipation to reduce operating temperatures. We have the ability to produce printed circuits with heavy copper cores. In addition, we produce printed circuit boards with electrically passive heat sinks laminated externally on a circuit board or between two circuit boards, as well as printed circuit boards with electrically active thermal cores.

Manufacturing Technologies

The market for our products is characterized by rapidly evolving technology. In recent years, the trend in the electronic products industry has been to increase the speed, complexity, and performance of components while reducing their size. We believe our technological capabilities allow us to address the needs of manufacturers to bring complicated electronic products to market faster.

To manufacture PCBs, we generally receive circuit designs directly from our customers in the form of computer data files, which we review to ensure data accuracy and product manufacturability. Processing these computer files with computer aided manufacturing (CAM) technology, we generate images of the circuit patterns that we then physically develop on individual layers, using advanced photographic processes. Through a variety of plating and etching processes, we selectively add and remove conductive materials to form horizontal layers of thin circuitry, which are separated by electrical insulating material. A multilayer circuit board is produced by laminating together multiple layers of circuitry, using intense heat and pressure under vacuum. Vertical connections between layers are achieved by drilling and plating through small holes, called vias. Vias are made by highly specialized drilling equipment capable of achieving extremely fine tolerances with high accuracy. We specialize in high layer count PCBs with extremely fine geometries and tolerances. Because of the tolerances involved, we employ clean rooms in certain manufacturing processes where tiny particles might otherwise create defects on the circuit patterns. We also use automated optical inspection systems and electrical testing systems to ensure consistent quality of the circuits we produce.

We believe that our highly specialized equipment and advanced manufacturing processes enable us to reliably produce PCBs with the following characteristics:

High layer count. Manufacturing PCBs with a large number of layers is difficult to accomplish due to the accumulation of manufacturing tolerances and registration systems required. In our North America operating segment, we regularly manufacture PCBs with more than 30 layers on a quick-turn and volume basis. Approximately 64% of our 2014 North America PCB revenue involved the manufacture of PCBs with at least 12 layers or more, compared to 66% in 2013. Printed circuit boards with at least 20 layers or more represented 36% of North America PCB revenue in both 2014 and 2013. Approximately 25% and 24% of our 2014 and 2013 Asia Pacific net sales, respectively, involved the manufacture of PCBs with at least 12 layers or more.

Blind and buried vias. Vias are drilled holes that provide electrical connectivity between layers of circuitry in a PCB. Blind vias connect the surface layer of the PCB to an internal layer and terminate at the internal layer. Buried vias are holes that do not reach either surface of the PCB but allow inner layers to be interconnected. Products with blind and buried vias can be made thinner, smaller, lighter and with higher component density and more functionality than products with traditional vias.

Microvias. HDI technology utilizes microvias, which are small vias with diameters generally less than 0.005 inches after plating. Advanced HDI products may also require the microvias to be fully filled using a specialized plating process so that additional microvia structures can be stacked on top to form more complex interconnections. These microvias consume much less space on the layers they interconnect, thereby providing for greater wiring densities and flexibility, and also providing closer spacing of components and their attachment pads. The fabrication of PCBs with microvias requires specialized equipment, such as laser drills, and highly developed process knowledge. Applications such as handheld wireless devices employ microvias to obtain a higher degree of functionality from a given surface area. Total HDI PCBs represented approximately 41% of our Asia Pacific net sales in both 2014 and 2013.

Table of Contents

Embedded passives. Embedded passive technology involves embedding either the capacitive or resistive elements inside the PCB, which allows for removal of passive components from the surface of the PCB and thereby leaves more surface area for active components. Use of this technology provides greater surface area for surface-mounted ICs and better signal performance, as well as increased functionality of products with higher component density.

Fine line traces and spaces. Traces are the connecting copper lines between the different components of the PCB, and spaces are the distances between traces. The smaller the traces and the tighter the spaces, the higher the density on the PCB and the greater the expertise required to achieve a desired final yield on an order. We are able to manufacture PCBs with traces and spaces less than 0.002 inches.

High aspect ratios. The aspect ratio is the ratio between the thickness of the PCB and the diameter of a drilled hole. As the aspect ratio increases, it becomes difficult to reliably form, electroplate and finish all the holes on a PCB. In production, we are able to provide aspect ratios of up to 30:1.

Thin core processing. A core is the basic inner-layer building block material from which PCBs are constructed. A core consists of a flat sheet of material comprised of glass-reinforced resin with copper foil laminated on either side. The thickness of inner-layer cores is typically determined by the overall thickness of the PCB and the number of layers required. The demand for thinner cores derives from the requirements for thinner PCBs, higher layer counts and various electrical parameters. Core thickness in our PCBs ranges from as little as 0.002 inches up to 0.062 inches.

Advanced hole fill process. Our advanced hole fill processes provide designers the opportunity to increase the density of component placements by reducing the surface area required to place many types of components. In traditional design, components are routed from their surface interfaces through via connections in order to access power and ground connections and the internal circuitry used to connect to other discrete components. Our advanced hole fill processes provide methods to allow for vias to be placed inside their respective surface mount pads by filling the vias with a thermoset epoxy and plating flat copper surface mount pads directly over the filled hole.

Advanced materials. We manufacture circuit boards using a wide variety of advanced insulating materials. These high-performance materials offer electrical, thermal, and long-term reliability advantages over conventional materials but are more difficult to manufacture. We are certified by Underwriters Laboratories to manufacture PCBs using many types and combinations of these specialty materials. This wide offering allows us to manufacture complex boards for niche and high-end commercial and aerospace and defense markets.

Customers and Markets

Our customers include both OEMs and EMS companies that primarily serve the networking/communications, cellular phone, computing, aerospace and defense, and medical/industrial/instrumentation end markets of the electronics industry. Included in the end markets that our OEM and EMS customers serve is the U.S. government. As a result, we are a supplier, primarily as a subcontractor, to the U.S. government.

The following table shows the percentage of our net sales in each of the principal end markets we served for the periods indicated:

End Markets(1)	2014	2013	2012
Aerospace and Defense	16%	15%	15%
Cellular Phone(2)	23	20	16
Computing/Storage/Peripherals(2)	13	20	23
Medical/Industrial/Instrumentation	9	8	9
Networking/Communications	33	32	31
Other(2)	6	5	6

Total	100%	100%	100%

Table of Contents

(1) Sales to EMS companies are classified by the end markets of their OEM customers.
(2) Smartphones are included in the Cellular Phone end market, touchscreen tablets are included in the Computing/Storage/Peripherals end market and other mobile devices such as e-readers are included in the Other end market.

Sales attributable to our five largest OEM customers, which can vary from year to year, collectively accounted for 44%, 41%, and 33%, of our net sales in 2014, 2013 and 2012, respectively. Our five largest OEM customers in 2014 were, in alphabetical order, Apple Inc., Cisco Systems, Inc., Ericsson, Huawei Technology Co. Ltd., and Juniper Networks, Inc. For the year ended December 29, 2014, Apple accounted for 21% of our net sales. Sales attributed to OEMs include sales made through EMS providers. Sales to EMS providers comprised approximately 39%, 38% and 40% of our net sales in 2014, 2013 and 2012, respectively. Although our contractual relationships are with the EMS companies, we typically negotiate price and volume requirements directly with the OEMs. In addition, we are on the approved vendor lists of several of our EMS providers. This positions us to participate in business that is awarded at the discretion of the EMS provider. Our five largest EMS customers in 2014 were, in alphabetical order, Celestica, Inc., Flextronics International Ltd., Hon Hai Precision Industry Co., Ltd., Jabil Circuit, Inc., and Plexus Corp.

During 2014, 2013 and 2012, our net sales by country invoiced were as follows:

Country	2014	2013	2012
United States	43%	42%	36%
China	27	29	32
Other	30	29	32
Total	100%	100%	100%

Net sales to other countries, individually, for the years ended 2014, 2013 and 2012, did not exceed 10% of total net sales.

Our marketing strategy focuses on building long-term relationships with our customers engineering and new product introduction personnel early in the product development phase, frequently through strategic account management teams. As the product moves from the prototype stage through ramp-to-volume and volume production, we shift our focus to the customers procurement departments in order to capture sales at each point in the product s life cycle.

Our staff of engineers, sales support personnel, and managers assists our sales representatives in advising customers with respect to manufacturing feasibility, design review, and technological capabilities through direct communication and visits. We combine our sales efforts with customer service at each facility to better serve our customers. Each large customer is typically assigned an account manager to coordinate all of the company s services across all of our facilities. Additionally, the largest and most strategic customers are also supported by selected program management and engineering resources. Our sales force is comprised of direct sales personnel, complemented by commission-based independent representatives.

Our domestic U.S. footprint comprises most of our North America operating segment and its seven PCB fabrication plants in California, Connecticut, Utah and Wisconsin, which include a facility that provides follow-on value-added assembly services primarily to our Connecticut PCB fabrication plant; and primary customer inventory hubs in Connecticut, New York, Texas and Wisconsin.

Our international footprint includes our Asia Pacific operating segment and its five PCB fabrication plants in Hong Kong, Dongguan, Guangzhou and Shanghai, China; a backplane and sub-system assembly operation in Shanghai, China that is part of our North America operating segment; and customer inventory hubs in France, Poland, Hong Kong, China, Mexico, Malaysia and Thailand. Our international sales force services customers throughout North America, Europe, Asia, and the Middle East. We believe our international reach enables us to access new customers and allows us to better serve existing customers.

Table of Contents

For information about net sales, income before income taxes, depreciation, total assets and capital expenditures of each of our segments, and geographical segment information, including net sales to customers and long-lived assets, see Note 18 of the Notes to Consolidated Financial Statements.

Suppliers

The primary raw materials we use in PCB manufacturing include copper-clad laminate; chemical solutions such as copper and gold for plating operations; photographic film; carbide drill bits; and plastic for testing fixtures. Although we have preferred suppliers for some raw materials used in the manufacture of PCBs, most of our raw materials are generally readily available in the open market from numerous other potential suppliers.

The primary raw materials we use in backplane assembly are manufactured components such as PCBs, connectors, capacitors, resistors, diodes, integrated circuits and formed sheet metal, many of which are custom made and controlled by our customers approved vendors. These components for backplane assemblies in some cases have limited or sole sources of supply. For example, in some instances our customers will require us to use a specific component from a particular supplier or require us to use a component provided by the customer itself, in which case we may have a single or limited number of suppliers for these specific components.

We typically use just-in-time procurement practices to maintain our raw materials inventory at low levels and work closely with our suppliers to obtain technologically advanced raw materials. In addition, we periodically seek alternative supply sources to ensure that we are receiving competitive pricing and service. Adequate amounts of all raw materials have been available in the past, and we believe this availability will continue into the foreseeable future.

Competition

Despite industry consolidation, the PCB industry remains fragmented and characterized by intense competition. Our principal PCB and substrate competitors include Unimicron Technology Corp., IBIDEN Co., Ltd., Compeq Manufacturing Co., Ltd., Tripod Technology Corp., ISU Petasys Co., Ltd., Viasystems Group, Inc., Sanmina Corporation, Multek Corporation, Wus Printed Circuit Co., Ltd., and AT & S Austria Technologie & Systemtechnik AG. Our principal backplane assembly competitors include Amphenol Corp, Sanmina Corporation, TT Electronics PLC, and Viasystems Group, Inc.

We believe we compete favorably based on the following competitive factors:

- status as a top global PCB manufacturer;
- capability and flexibility to produce technologically complex products;
- ability to offer a one-stop manufacturing solution;
- specialized and integrated manufacturing facilities;
- ability to offer time-to-market capabilities;
- leading edge aerospace and defense capabilities;
- flexibility to manufacture low volume, high-mix products;

consistent high-quality product; and

outstanding customer service.

In addition, we believe our continuous evaluation and early adoption of new manufacturing and production technologies give us a competitive advantage. We believe that our ability to manufacture PCBs using advanced technologies, including our HDI and substrate capabilities, provides us with a competitive advantage over manufacturers that do not possess this advanced technological expertise. Our future success will depend in large part on our ability to maintain and enhance our manufacturing capabilities and production technologies.

Seasonality

Our Asia Pacific operating segment experiences revenue fluctuations, caused in part by seasonal patterns in the computer and cellular phone industry, which together have become a significant portion of the end markets

Table of Contents

that we serve. This seasonality typically results in higher net sales in the third and fourth quarters due to end customer demand in the fourth quarter for consumer electronics products. Seasonal fluctuations also include the Chinese New Year holidays in the first quarter, which typically results in lower net sales. We attribute this decline to shutdowns of our customers manufacturing facilities surrounding the Chinese New Year public holidays, which normally occur in January or February of each year.

Backlog

Backlog consists of purchase orders received, including, in some instances, demand agreements released for production under customer contracts. We obtain firm purchase orders from our customers for all products. However, for some of these purchase orders, customers do not make firm schedules for delivery more than 90 days in advance. Therefore, we measure backlog as orders with deliveries scheduled over the next 90 days. At December 29, 2014, total backlog was $201.0 million, compared with $175.0 million at the end of 2013. Substantially all backlog at December 29, 2014 is expected to be converted to sales in 2015. Additionally, we typically experience a higher amount of backlog in the second half of the year due to increased end customer demand for consumer electronics products in the fourth quarter, which is consistent with our seasonal patterns as discussed above.

Intellectual Property

We believe our business depends on the effectiveness of our fabrication techniques and our ability to continue to improve our manufacturing processes. We have limited patent or trade secret protection for our manufacturing processes. We rely on the collective experience of our employees in the manufacturing process to ensure that we continuously evaluate and adopt the new technologies available in our industry. In addition, we depend on training, recruiting, and retaining our employees, who are required to have sufficient know-how to operate advanced equipment and to conduct complicated manufacturing processes.

National Security Matters

A portion of our business consists of manufacturing defense and defense-related items for various departments and agencies of the U.S. government, including the U.S. Department of Defense, or the DoD, which requires that we maintain facility security clearances under the National Industrial Security Program Operating Manual, or NISPOM. The NISPOM requires that a corporation maintaining a facility security clearance take steps to mitigate foreign ownership, control or influence, referred to as FOCI. Pursuant to these laws and regulations, effective October 2010, we entered into a Special Security Agreement with the DoD; Su Sih (BVI) Limited, or Su Sih (a significant foreign owner of our capital stock); and Mr. Tang Hsiang Chien (as the beneficial owner of Su Sih). The purpose of the Special Security Agreement is to deny Mr. Tang, Su Sih, and other persons affiliated with our Asia Pacific operating segment, from unauthorized access to classified and controlled unclassified information and influence over our business or management in a manner that could result in the compromise of classified information or could adversely affect the performance of classified contracts.

Other Governmental Regulations

Our operations, particularly those in North America, are subject to a broad range of regulatory requirements relating to export control, environmental compliance, waste management, and health and safety matters. In particular, we are subject to the following:

- U.S. Department of State regulations, including the Arms Export Control Act (AECA) and International Traffic In Arms Regulations (ITAR) located at 22 CFR Parts 120-130;
- U.S. Department of Commerce regulations, including the Export Administration Regulations (EAR) located at 15 CFR Parts 730-744;
- Office of Foreign Asset Control (OFAC) regulations located at 31 CFR Parts 500-599;
- U.S. Occupational Safety and Health Administration (OSHA), and state OSHA and Department of Labor laws pertaining to health and safety in the workplace;

13

Table of Contents

U.S. Environmental Protection Agency regulations pertaining to air emissions; wastewater discharges; and the use, storage, discharge, and disposal of hazardous chemicals used in the manufacturing processes; the reporting of chemical releases to the environment; and the reporting of chemicals manufactured in by-products that are beneficially recycled,