POWER INTEGRATIONS INC
Form 10-K
February 14, 2018
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549
FORM 10-K
(Mark One)
x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2017
or
o 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 0-23441
POWER INTEGRATIONS, INC.
(Exact name of registrant as specified in its charter)

DELAWARE	94-3065014
(State or other jurisdiction of Incorporation or organization)	(I.R.S. Employer Identification No.)
5245 Hellyer Avenue, San Jose, California	95138-1002
(Address of principal executive offices)	(Zip code)

(408) 414-9200
(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $0.001 Par Value	The NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES x NO o
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES o NO x
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES x NO o
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 during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES x NO o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K 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. o
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer x	Accelerated filer o
Non-accelerated filer o (Do not check if a smaller reporting company)	Smaller reporting company o

Emerging growth company o

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. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). YES o NO x

The aggregate market value of registrant's voting and non-voting common stock held by non-affiliates of registrant on June 30, 2017, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $1.8 billion, based upon the closing sale price of the common stock as reported on The NASDAQ Global Select Market. Shares of common stock held by each officer and director have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not a conclusive determination for other purposes.

Outstanding shares of registrant's common stock, $0.001 par value, as of February 9, 2018: 29,834,589.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this report, to the extent not set forth herein, is incorporated by reference from the Registrant's definitive proxy statement relating to the 2018 annual meeting of stockholders, which definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the fiscal year to which this Report relates.

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Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K includes a number of forward-looking statements that involve many risks and uncertainties. Forward-looking statements are identified by the use of the words “would,” “could,” “will,” “may,” “expect,” “believe,” “should,” “anticipate,” “if,” “future,” “intend,” “plan,” “estimate,” “potential,” “target,” “seek” or “continue” and sir phrases, including the negatives of these terms, or other variations of these terms, that denote future events. These statements reflect our current views with respect to future events and our potential financial performance and are subject to risks and uncertainties that could cause our actual results and financial position to differ materially and/or adversely from what is projected or implied in any forward-looking statements included in this Form 10-K. These factors include, but are not limited to: if demand for our products declines in our major end markets, our net revenues will decrease; our products are sold through distributors, which limits our direct interaction with our end customers, therefore reducing our ability to forecast sales and increasing the complexity of our business; we depend on third-party suppliers to provide us with wafers for our products, and if they fail to provide us sufficient quantities of wafers, our business may suffer; intense competition may lead to a decrease in our average selling price and reduced sales volume of our products; if our products do not penetrate additional markets, our business will not grow as we expect; we do not have long-term contracts with any of our customers and if they fail to place, or if they cancel or reschedule orders for our products, our operating results and our business may suffer; if we are unable to adequately protect or enforce our intellectual property rights, we could lose market share, incur costly litigation expenses, suffer incremental price erosion or lose valuable assets, any of which could harm our operations and negatively impact our profitability; and the other risks factors described in Item 1A of Part I -- “Risk Factors” of this Form 10-K. We make these forward looking statements based upon information available on the date of this Form 10-K, and expressly disclaim any obligation to update or alter any forward-looking statements, whether as a result of new information or otherwise, except as required by laws. In evaluating these statements, you should specifically consider the risks described under Item 1A of Part I -- “Risk Factors,” Item 7 of Part II -“Management’s Discussion and Analysis of Financial Condition and Results of Operations” and elsewhere in this Annual Report on Form 10-K.

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PART I.

Item 1. Business.

Overview

We design, develop and market analog and mixed-signal integrated circuits (ICs) and other electronic components and circuitry used in high-voltage power conversion. Our products are used in power converters that convert electricity from a high-voltage source (typically 48 volts or higher) to the type of power required for a specified downstream use. In most cases, this conversion entails, among other functions, converting alternating current (AC) to direct current (DC) or vice versa, reducing or increasing the voltage, and regulating the output voltage and/or current according to the customer's specifications.

A large percentage of our products are ICs used in AC-DC power supplies, which convert the high-voltage AC from a wall outlet to the low-voltage DC required by most electronic devices. Power supplies incorporating our products are used with all manner of electronic products including mobile phones, computing and networking equipment, appliances, electronic utility meters, power tools, industrial controls, and lighting applications that utilize light-emitting diodes (LEDs), and "smart-home," or "internet of things" applications such as networked thermostats, power strips and other building-automation and security devices.

We also offer high-voltage gate drivers - either standalone ICs or circuit boards containing ICs, electrical isolation components and other circuitry - used to operate high-voltage switches such as insulated-gate bipolar transistors (IGBTs). These combinations of switches and drivers are used for power conversion in high-power applications (i.e., power levels ranging from a few kilowatts up to one gigawatt) such as industrial motors, solar- and wind-power systems, electric vehicles and high-voltage DC transmission systems.

Our products bring a number of important benefits to the power-conversion market compared with less advanced alternatives, including reduced component count and design complexity, smaller size, higher reliability and reduced time-to-market. Our products also improve the energy efficiency of power converters, helping our customers meet the increasingly stringent efficiency standards that have been adopted around the world for many electronic products, and improving the efficacy of renewable-energy systems, electric vehicles and other high-power applications.

While the size of our addressable market fluctuates with changes in macroeconomic and industry conditions, the market has generally exhibited a modest growth rate over time as growth in the unit volume of power converters has been offset to a large degree by reductions in the average selling price of components in this market. Therefore, the growth of our business depends largely on increasing our penetration of the markets, that we serve and on further expanding our addressable market. Our growth strategy includes the following elements:

- Increase our penetration of the markets we serve. We currently address AC-DC power-supply applications with power outputs up to approximately 500 watts, and gate-driver applications of ten kilowatts and higher. Through our R&D efforts, we seek to introduce more advanced products for this market that offer higher levels of integration and performance compared to earlier products. We also continue to expand our sales and application-engineering staff and our network of distributors, as well as our offerings of technical documentation and design-support tools and services to help customers use our products. These tools and services include our PI Expert™ design software, which we offer free of charge, and our transformer-sample service.

Our market-penetration strategy also includes capitalizing on the importance of energy efficiency in the power conversion market. For example, our EcoSmart™ technology drastically reduces the amount of energy consumed by electronic products when they are not in use, helping our customers comply with regulations that seek to curb this so-called "standby" energy consumption. Also, our gate-driver products are critical components in energy-efficient DC motor drives, high-voltage DC transmission systems, renewable-energy installations and electric transportation applications.

- Increase the size of our addressable market. Prior to 2010 our addressable market consisted of AC-DC applications with up to about 50 watts of output, a served available market ("SAM") opportunity of approximately $1.5 billion. Since that time we have expanded our SAM to approximately $3 billion through a variety of means. These include the

introduction of products that enable us to address higher-power AC-DC applications (such as our Hiper™ product families, which address applications up to about 500 watts) and our entry into the gate-driver markets through the acquisition of CT-Concept Technologie AG in 2012. In 2016 we introduced the SCALE-iDriver™ family of gate-driver ICs, which enables us to address applications between approximately 10 kilowatts and 100 kilowatts, whereas previously our gate-driver products were primarily for applications above 100 kilowatts.

Also contributing to our SAM expansion has been the emergence of new applications within the power ranges that our products can address. For example, applications such as LED lighting, “smart” utility meters, battery-powered lawn equipment and bicycles, and USB power ports (installed alongside traditional AC wall outlets) can incorporate our products; the increased use of electronic intelligence and controls in consumer appliances has also enhanced our SAM. Finally, we have enhanced our SAM by increasing the level of integration of our products, which in turn increases their value. For example, our InnoSwitch™ ICs integrate circuitry from the secondary, or low-voltage, side of AC-DC power supplies, whereas earlier product families integrated circuitry only on the primary, or high-voltage side.

We intend to continue expanding our SAM in the years ahead through all of the means described above.

Industry Background

Virtually every electronic device that plugs into a wall socket requires a power supply to convert the high-voltage alternating current provided by electric utilities into the low-voltage direct current required by most electronic devices. A power supply may be located inside a device, such as a consumer appliance or flat-panel TV, or it may be outside the device as in the case of a mobile-phone charger or an adapter for a cordless phone or cable modem.

Until approximately 1970, AC-DC power supplies were generally in the form of line-frequency, or linear, transformers. These devices, consisting primarily of copper wire wound around an iron core, tend to be bulky and heavy, and typically waste a substantial amount of electricity. In the 1970s, the availability of high-voltage discrete semiconductors enabled the development of a new generation of power supplies known as switched-mode power supplies, or switchers. These switchers generally came to be cost-effective alternatives to linear transformers in applications requiring more than a few watts of power; in recent years the use of linear transformers has declined even further as a result of energy-efficiency standards and higher raw-material prices.

Switchers are generally smaller, lighter-weight and more energy-efficient than linear transformers. However, switchers designed with discrete components are highly complex, containing numerous components and requiring a high level of analog design expertise. Further, the complexity and high component count of discrete switchers make them relatively costly, difficult to manufacture and prone to failures. Also, some discrete switchers lack protection and energy-efficiency features; adding these features may further increase the component count, cost and complexity of the power supply.

In high-power systems such as industrial motor drives, electric locomotives and renewable-energy systems, power conversion is typically performed using arrays of high-power silicon transistors known as IGBT modules; these modules are operated by electronic circuitry known as gate drivers (or IGBT drivers), whose function is to ensure accurate, safe and reliable operation of the IGBT modules. Much like discrete power supplies, discrete gate drivers tend to be highly complex, requiring a large number of components and a great deal of design expertise.

Our Highly Integrated Approach

In 1994 we introduced TOPSwitch, the industry’s first cost-effective high-voltage IC for switched-mode AC-DC power supplies; we have since introduced a range of other product families such as TinySwitch, LinkSwitch, Hiper and InnoSwitch which have expanded the range of power-supply applications we can address. In 2012 we expanded our addressable market to include high-voltage gate drivers.

Our ICs and gate drivers drastically reduce the complexity and component count of power converters compared to typical discrete designs by integrating many of the functions otherwise performed by numerous discrete electronic components, and by eliminating (or reducing the size and cost of) additional components through innovative system design. As a result, our products enable power converters to have superior features and functionality at a total cost equal to or lower than that of many competing alternatives. Our products offer the following key benefits:

- Fewer Components, Reduced Size and Higher Reliability

Our highly integrated ICs and gate drivers enable designs with up to 70% fewer components than comparable discrete designs. This reduction in component count enhances reliability and efficiency, reduces size, accelerates time-to-market and results in lower manufacturing costs for our customers. Power supplies that incorporate our ICs are also lighter and more portable than comparable power supplies built with linear transformers, which are still used in some low-power applications.

- Reduced Time-to-Market, Enhanced Manufacturability

Because our products eliminate much of the complexity associated with the design of power converters, designs can typically be completed in much less time, resulting in more efficient use of our customers’ design resources and shorter

time-to-market for new designs. The lower component count and reduced complexity enabled by our products also makes designs more suitable for high-volume manufacturing. We also provide extensive hands-on design support as well as online design tools, such as our PI Expert design software, that further reduce time-to-market and product development risks.

- Energy Efficiency

Our patented EcoSmart technology, introduced in 1998, improves the energy efficiency of electronic devices during normal operation as well as standby and “no-load” conditions. This technology enables manufacturers to cost-effectively meet the growing demand for energy-efficient products, and to comply with increasingly stringent energy-efficiency requirements. Our gate drivers also enable very high efficiency in high-power systems; in many such systems, such as renewable-energy installations, even small efficiency gains can dramatically shorten the payback period over which the cost of a system is recovered through energy savings.

- Wide Power Range and Scalability

Products in our current IC families can address AC-DC power supplies with output power up to approximately 500 watts as well as some high-voltage DC-DC applications; our high-voltage gate drivers are used in applications with power levels as high as one gigawatt. Within each of our product families, designers can scale up or down in power to address a wide range of designs with minimal design effort.

Energy Efficiency

Power supplies often draw significantly more electricity than the amount needed by the devices they power. As a result, billions of dollars’ worth of electricity is wasted each year, and millions of tons of greenhouse gases are unnecessarily produced by power plants. Energy waste occurs during the normal operation of a device and in standby mode, when the device is plugged in but idle. For example: computers and printers waste energy while in “sleep” mode; TVs that are turned off by remote control consume energy while awaiting a remote-control signal to turn them back on; a mobile-phone charger left plugged into a wall outlet continues to draw electricity even when not connected to the phone (a condition known as “no-load”); and many common household appliances, such as microwave ovens, dishwashers and washing machines, also consume power when not in use. In fact, a 2015 study by the National Resources Defense Council found that devices that are “always-on” but inactive may be causing as much as $19 billion in annual energy waste in the U.S. alone.

Lighting is another major source of energy waste. Less than 5% of the energy consumed by traditional incandescent light bulbs is converted to light, while the remainder is wasted as heat. The Alliance to Save Energy has estimated that a conversion to efficient lighting technologies such as compact fluorescent bulbs and LEDs could save as much as $18 billion worth of electricity and 158 million tons of carbon dioxide emissions per year in the United States alone.

In response to concerns about the environmental impact of carbon emissions, policymakers are taking action to promote energy efficiency. For example, the ENERGY STAR® program and the European Union Code of Conduct encourage manufacturers of electronic devices to comply with voluntary energy-efficiency specifications. In 2007 the California Energy Commission (CEC) implemented mandatory efficiency standards for external power supplies. The CEC standards were implemented nationwide in the United States in July 2008 as a result of the Energy Independence and Security Act of 2007 (EISA); these federal standards were tightened in 2016. Similar standards for external power supplies took effect in the European Union in 2010 as part of the EU’s EcoDesign Directive for Energy-Related Products.

In 2009 the CEC announced mandatory efficiency standards for televisions, which took effect in 2011, and in January 2012 the CEC announced mandatory efficiency standards for battery-charging systems, which took effect in 2013.

In 2010, the EU EcoDesign Directive implemented standards limiting standby power consumption on a wide range of electronic products; the limit was reduced by 50 percent beginning in 2013, with many products now limited to 500 milliwatts of standby usage. The EISA legislation also required substantial improvements in the efficiency of lighting technologies beginning in 2012; as of 2014, traditional 100-, 75-, 60- and 40-watt bulbs may no longer be manufactured or sold in the United States. Plans to eliminate conventional incandescent bulbs have also been announced or enacted in other geographies such as Canada, Australia and Europe.

We believe we offer products that enable manufacturers to meet or exceed these regulations, and all other such regulations of which we are aware. Our EcoSmart technology, introduced in 1998, dramatically reduces waste in both operating and standby modes; we estimate that this technology has saved billions of dollars’ worth of standby power worldwide since 1998. In 2010 we introduced our CapZero and SenZero IC families, which eliminate additional sources of standby waste in some power supplies; we have also introduced a range of product families designed specifically for LED-lighting applications.

Products

Below is a brief description of our products:

- AC-DC power conversion products

TOPSwitch, our first commercially successful product family, was introduced in 1994. Since that time we have introduced a wide range of products (such as our TinySwitch, LinkSwitch and Hiper families) to increase the level of integration and improve upon the functionality of the original TOPSwitch, and to broaden the range of power levels we can address. In 2010 we introduced

our CapZero and SenZero families, which reduce standby power consumption in certain applications by eliminating waste caused by so-called bleed resistors and sense resistors. We also offer a range of high-performance, high-voltage diodes known as Qspeed diodes.

In 2014 we introduced our InnoSwitch product family, the first-ever power-supply ICs to combine primary, secondary and feedback circuits into a single package. These ICs employ a proprietary technology known as FluxLink to enable precise control without the need for optical components, which tend to add cost and diminish the reliability of power supplies.

In January 2015 we further expanded our product portfolio with the acquisition of Cambridge Semiconductor Ltd., a producer of controller ICs for low-power AC-DC applications. Since 2010 we have also introduced products designed specifically for LED-lighting applications, including our LYTSwitch family.

This portfolio of power-conversion products generally addresses power supplies ranging from less than one watt of output up to approximately 500 watts of output, a market we refer to as the “low-power” market. This market consists of an extremely broad range of applications including mobile-device chargers, consumer appliances, utility meters, LCD monitors, main and standby power supplies for desktop computers and TVs, LED lamps, and numerous other consumer and industrial applications.

- High-voltage gate drivers

We offer a range of high-voltage gate-driver products sold primarily under the SCALE and SCALE-2 product-family names. These products are fully assembled circuit boards incorporating multiple ICs, electrical isolation components and other circuitry. We offer both ready-to-operate “plug-and-play” drivers designed specifically for use with particular IGBT modules, as well as “driver cores,” which provide more basic driver functionality that customers can customize to their own specifications after purchase. In May 2016 we introduced the SCALE-iDriver family of standalone ICs, which enables us to address applications between approximately 10 kilowatts and 100 kilowatts, whereas previously our sales of high-power products were primarily for applications above 100 kilowatts.

- High-voltage DC-DC products

The DPA-Switch family of products, introduced in June 2002, was the first monolithic high-voltage DC-DC power conversion IC designed specifically for use in distributed power architectures. Applications include power-over-Ethernet powered devices such as voice-over-IP phones and security cameras, as well as network hubs, line cards, servers, digital PBX phones, DC-DC converter modules and industrial controls.

Other Product Information

TOPSwitch, TinySwitch, LinkSwitch, DPA-Switch, EcoSmart, Hiper, Qspeed, InnoSwitch, SCALE, SCALE-II, SCALE-III, SCALE-iDriver, PeakSwitch, CAPZero, SENZero, ChiPhy, FluxLink, CONCEPT and PI Expert are trademarks of Power Integrations, Inc.

End Markets and Applications

Our net revenues consist primarily of sales of the products described above. When evaluating our net revenues, we categorize our sales into the following four major end-market groupings: communications, computer, consumer, and industrial.

The table below provides the approximate mix of our net sales by end market:

	Year Ended December 31,		
End Market	2017	2016	2015
Communications	24%	27%	24%
Computer	5%	6%	7%
Consumer	38%	36%	36%
Industrial	33%	31%	33%

Our products are used in a vast range of power-conversion applications in the above-listed end-market categories. The following chart lists the most prominent applications for our products in each category.

Market Category	Primary Applications
Communications	Mobile-phone chargers, routers, cordless phones, broadband modems, voice-over-IP phones, other network and telecom gear
Computer	Desktop PCs, LCD monitors, servers, LCD projectors, adapters for notebook computers
Consumer	Major and small appliances, air conditioners, TV set-top boxes, digital cameras, TVs, video-game consoles
Industrial	LED lighting, industrial controls, utility meters, motor controls, uninterruptible power supplies, tools, networked thermostats, power strips and other “smart home” devices, industrial motor drives, renewable energy systems, electric locomotives, electric buses and other electric vehicles, high-voltage DC transmission systems

Sales, Distribution and Marketing

We sell our products to original equipment manufacturers, or OEMs, and merchant power-supply manufacturers through our direct sales staff and a worldwide network of independent sales representatives and distributors. We have sales offices in the United States, United Kingdom, Germany, Italy, India, China, Japan, South Korea, the Philippines, Singapore and Taiwan. Direct sales to OEMs and merchant power supply manufacturers represented approximately 23%, 25% and 24% of our net product revenues in 2017, 2016 and 2015, while sales to distributors accounted for the remainder in each of the corresponding years. Most of our distributors are entitled to return privileges based on revenues and are protected from price reductions affecting their inventories. Our distributors are not subject to minimum purchase requirements, and sales representatives and distributors can discontinue marketing our products at any time.

Our top ten customers, including distributors that resell to OEMs and merchant power supply manufacturers, accounted for approximately 54%, 60% and 61% of net revenues in 2017, 2016, and 2015, respectively.

The following customers, both distributors, accounted for 10% or more of total net revenues in 2017, 2016 and 2015:

	Year Ended December 31,		
Customer	2017	2016	2015
Avnet	16%	18%	21%
Powertech Distribution Ltd.	*	10%	11%

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* Total customer revenue was less than 10% of net revenues

No other customers accounted for more than 10% of net revenues in these periods.

Sales to customers outside of the United States accounted for approximately 96% of our net revenues in each of 2017, 2016 and 2015, with sales to customers within the United States accounting for the remainder in each of the corresponding years. See Note 8, “Significant Customers and Geographic Net Revenues,” in our Notes to Consolidated Financial Statements in this Annual Report on Form 10-K regarding sales to customers located in foreign countries. See our consolidated financial statements in Item 8 regarding total revenues and profits for the last three fiscal years, and total assets.

We are subject to risks stemming from the fact that most of our manufacturing and most of our customers are located in foreign jurisdictions. Risks related to our foreign operations are set forth in Item 1A of this Annual Report on Form 10-K, and include: potential weaker intellectual property rights under foreign laws, the burden of complying with foreign laws and foreign-currency exchange risk. See, in particular, the risk factor “Our international sales activities account for a substantial portion of our net revenues, which subjects us to substantial risks” in Item 1A of this Form 10-K.

Backlog

Our sales are primarily made pursuant to standard purchase orders. The quantity of products purchased by our customers as well as shipment schedules are subject to revisions that reflect changes in both the customers' requirements and in manufacturing availability. Historically, our business has been characterized by short-lead-time orders and quick delivery schedules; for this reason, and because orders in backlog are subject to cancellation or postponement, backlog is not necessarily a reliable indicator of future revenues.

Research and Development

Our research and development efforts are focused on improving our technologies, introducing new products to expand our addressable markets, reducing the costs of existing products, and improving the cost-effectiveness and functionality of our customers' power converters. We have assembled teams of highly skilled engineers to meet our research and development goals. These engineers have expertise in high-voltage device structure and process technology, analog and digital IC design, system architecture and packaging.

In 2017, 2016 and 2015, we incurred costs of $68.5 million, $62.3 million and $57.5 million, respectively, for research and development (R&D). R&D expenses increased in 2017 compared to 2016 reflecting increased salary and related expense from the expansion of headcount, and greater equipment and product-development expenses, all in support of our product-development efforts. R&D expenses increased in 2016 compared to 2015, primarily due to increased stock-based compensation expense related to performance-based stock awards as a result of our 2016 performance. The expansion of headcount in support of our product-development efforts also contributed to the increase in 2016.

Intellectual Property and Other Proprietary Rights

We use a combination of patents, trademarks, copyrights, trade secrets and confidentiality procedures to protect our intellectual-property rights. In 2017 we received 55 U.S. and 31 foreign patents. As of December 31, 2017, we held 667 U.S. patents and 326 foreign patents. The U.S. patents have expiration dates ranging from 2018 to 2037. While our patent portfolio as a whole is important to the success of our business, we are not materially dependent upon any single patent. We also hold trademarks in the U.S. and various other geographies including Taiwan, Korea, Hong Kong, China, Europe and Japan.

We regard as proprietary some equipment, processes, information and knowledge that we have developed and used in the design and manufacture of our products. Our trade secrets include a high-volume production process used in the manufacture of our high-voltage ICs. We attempt to protect our trade secrets and other proprietary information through non-disclosure agreements, proprietary-information agreements with employees and consultants, and other security measures.

Long-lived Assets

Our long-lived assets consist of property and equipment as well as intangible assets. Our intangible assets consist of developed and in-process technology, licenses, patents, customer relationships, trade name, domain name, in-place leases and goodwill. Approximately 38% of our long-lived assets were located in the United States in 2017 and 40% in each of 2016 and 2015, while the remainder was held outside of the United States in each of the corresponding years. Approximately 19% of our total long-lived assets were located in Switzerland in 2017, and 18% in each of 2016 and 2015, respectively.

Manufacturing

We contract with three foundries for the manufacture of the vast majority of our silicon wafers: (1) ROHM Lapis Semiconductor Co., Ltd., or Lapis, (formerly OKI Electric Industry), (2) Seiko Epson Corporation, or Epson, (3) X-FAB Semiconductor Foundries AG, or X-FAB. These contractors manufacture wafers using our proprietary high-voltage process technologies at fabrication facilities located in Japan, Germany and the United States.

Our ICs are assembled, packaged and tested by independent subcontractors in China, Malaysia, Thailand and the Philippines; a small percentage of our ICs are tested at our headquarters facility in California. Our IGBT-driver boards are assembled and tested by independent subcontractors in Sri Lanka and Thailand; some of the boards are tested at our facility in Switzerland.

Our fabless manufacturing model enables us to focus on our engineering and design strengths, minimize capital expenditures and still have access to high-volume manufacturing capacity. We utilize both proprietary and standard IC packages for assembly. Some of the materials used in our packages and certain aspects of the assembly process are specific to our products. We require our assembly manufacturers to use high-voltage molding compounds which are more difficult to process than industry standard molding compounds. We work closely with our contractors on a continuous basis to maintain and improve our manufacturing processes.

Our proprietary high-voltage processes do not require leading-edge geometries, which enables us to use our foundries' older, lower-cost facilities for wafer manufacturing. However, because of our highly sensitive high-voltage process, we must interact closely with our foundries to achieve satisfactory yields. Our wafer supply agreements with Lapis, Epson and X-FAB expire in April 2028, December 2025 and December 2020, respectively. Under the terms of the Lapis and Epson agreements, each supplier has agreed to reserve a specified amount of production capacity and to sell wafers to us at fixed prices, which are subject to periodic review jointly by the supplier and us. In addition, Lapis and Epson require us to supply them with a rolling six-month forecast on a monthly basis. Our agreements with Lapis and Epson each provide for the purchase of wafers in U.S. dollars, with mutual sharing of the impact of the fluctuations in the exchange rate between the Japanese yen and the U.S. dollar. Under the terms of the X-FAB agreement, X-FAB

has agreed to reserve a specified amount of production capacity and to sell wafers to us at fixed prices, which are subject to periodic review jointly by X-FAB and us. The agreement with X-FAB also requires us to supply them with rolling six-month forecasts on a monthly basis. Our purchases of wafers from X-FAB are denominated in U.S. dollars. Although some aspects of our relationships with Lapis, Epson and X-FAB are contractual, some important aspects of these relationships are not written in binding contracts and depend on the suppliers' continued cooperation. We cannot assure that we will continue to work successfully with Lapis, Epson or X-FAB in the future, that they will continue to provide us with sufficient capacity at their foundries to meet our needs, or that any of them will not seek an early termination of their wafer supply agreement with us. Our operating results could suffer in the event of a supply disruption with one or more of our foundries if we were unable to quickly qualify alternative manufacturing sources for existing or new products or if these sources were unable to produce wafers with acceptable manufacturing yields.

We typically receive shipments from our foundries approximately four to six weeks after placing orders, and lead times for new products can be substantially longer. To provide sufficient time for assembly, testing and finishing, we typically need to receive wafers four weeks before the desired ship date to our customers. As a result of these factors and the fact that customers' orders can be placed with little advance notice, we have only a limited ability to react to fluctuations in demand for our products. We try to carry a substantial amount of wafer and finished-goods inventory to help offset these risks and to better serve our markets and meet customer demand.

Competition

Competing alternatives to our high-voltage ICs for the power-supply market include monolithic and hybrid ICs from companies such as ON Semiconductor, STMicroelectronics, Infineon, and Sanken Electric Company, as well as PWM-controller chips paired with discrete high-voltage bipolar transistors and MOSFETs; such controller chips are produced by a large number of vendors, including those listed above as well as such companies as NXP Semiconductors, Diodes Inc., On-Bright Electronics and Dialog Semiconductor. Self-oscillating switchers, built with discrete components supplied by numerous vendors, are also commonly used. For some applications, line-frequency transformers are also a competing alternative to designs utilizing our products. Our IGBT-driver products compete with alternatives from such companies as Avago, Infineon and Semikron, as well as driver circuits made up of discrete devices.

Generally, our products enable customers to design power converters with total bill-of-materials (BOM) costs similar to those of competing alternatives. As a result, the value of our products is influenced by the prices of discrete components, which fluctuate in relation to market demand, raw-material prices and other factors, but have generally decreased over time.

While we vary the pricing of our ICs in response to fluctuations in prices of alternative solutions, we also compete based on a variety of other factors. Most importantly, the highly integrated nature of our products enables designs that utilize fewer total components than comparable discrete designs or designs using other integrated or hybrid products. This enables power converters to be designed more quickly and manufactured more efficiently and reliably than competing designs. We also compete on the basis of product functionality such as safety features and energy-efficiency features and on the basis of the technical support we provide to our customers. This support includes hands-on design assistance as well as a range of design tools and documentation such as software and reference designs. We also believe that our record of product quality and history of delivering products to our customers on a timely basis serve as additional competitive advantages.

Warranty

We generally warrant that our products will substantially conform to the published specifications for 12 months from the date of shipment. Under the terms and conditions of sale, our liability is limited generally to either a credit equal to the purchase price or replacement of the defective part.

Employees

As of December 31, 2017, we employed 646 full-time personnel, consisting of 85 in manufacturing, 229 in research and development, 276 in sales, marketing and applications support, and 56 in finance and administration.

Investor Information

We make available, free of charge, copies of our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after filing this material electronically or otherwise furnishing it to the SEC. Investors may obtain free electronic copies or request paper copies of these reports via the "For Investors" section of our website, www.power.com. Our website address is provided solely for informational purposes. We do not intend, by this reference, that our website should be deemed to be part of this Annual Report. The reports filed with the SEC are also available at www.sec.gov.

Our corporate governance guidelines, the charters of our board committees, and our code of business conduct and ethics, including ethics provisions that apply to our principal executive officer, principal financial officer, controller and senior financial officers, are also available via the investor website listed above. These items are also available in print to any stockholder who requests them by calling (408) 414-9200.

Power Integrations, Inc. was incorporated in California on March 25, 1988, and reincorporated in Delaware in December 1997.

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Executive Officers of the Registrant

As of January 31, 2018, our executive officers, who are appointed by and serve at the discretion of the board of directors, were as follows:

Name	Position With Power Integrations	Age
Balu Balakrishnan	President, Chief Executive Officer and Director	63
Douglas Bailey	Vice President, Marketing	51
Radu Barsan	Vice President, Technology	65
David “Mike” Matthews	Vice President, Product Development	53
Sandeep Nayyar	Vice President, Finance and Chief Financial Officer	58
Ben Sutherland	Vice President, Worldwide Sales	46
Raja Petrakian	Vice President, Operations	53
Clifford Walker	Vice President, Corporate Development	66

Balu Balakrishnan has served as president and chief executive officer and as a director of Power Integrations since January 2002. He served as president and chief operating officer from April 2001 to January 2002. From January 2000 to April 2001, he was vice president of engineering and strategic marketing. From September 1997 to January 2000, he was vice president of engineering and new business development. From September 1994 to September 1997, Mr. Balakrishnan served as vice president of engineering and marketing. Prior to joining Power Integrations in 1989, Mr. Balakrishnan was employed by National Semiconductor Corporation.

Douglas Bailey has served as our vice president of marketing since November 2004. From March 2001 to April 2004, he served as vice president of marketing at ChipX, a structured ASIC company. His earlier experience includes serving as business management and marketing consultant for Sapiential Prime, Inc., director of sales and business unit manager for 8x8, Inc., and serving in application engineering management for IIT, Inc. and design engineering roles with LSI Logic, Inmos, Ltd. and Marconi.

Radu Barsan has served as our vice president of technology since January 2013, leading our foundry engineering, technology development and quality organizations. Prior to joining Power Integrations, Mr. Barsan served as chairman and CEO at Redfern Integrated Optics, Inc., a supplier of single frequency narrow linewidth lasers, modules, and subsystems, from 2001 to 2013,where he was responsible for overall operations. Previously, he served in a succession of engineering-management and technology-development roles at Phaethon Communications, Inc., a photonics technology company, Cirrus Logic, Inc., a high-precision analog and digital signal processing company, Advanced Micro Devices, a semiconductor design company, Cypress Semiconductor, Inc., a semiconductor company and Microelectronica a semiconductor company. Mr. Barsan has more than 30 years of commercial experience in semiconductor and photonic components development, engineering and operations.

Mike Matthews has served as our vice president of product development since August 2012. Mr. Matthews joined Power Integrations in 1992, managing our European application-engineering group and then our European sales organization as managing director of Power Integrations (Europe). He has led our product-definition team since 2000, serving as director of strategic marketing prior to assuming his current role. Prior to joining Power Integrations, Mr. Matthews worked at several electric motor-drive companies and then at Siliconix, a semiconductor company, as a motor-control applications specialist.

Sandeep Nayyar has served as our vice president and chief financial officer since June 2010. Previously Mr. Nayyar served as vice president of finance at Applied Biosystems, Inc., a developer and manufacturer of life-sciences products, from 2002 to 2009. Mr. Nayyar was a member of the executive team with world-wide responsibilities for finance. From 1990 to 2001, Mr. Nayyar served in a succession of financial roles including vice president of finance at Quantum Corporation, a computer storage company. Mr. Nayyar also worked for five years in the public-accounting field at Ernst & Young LLP. Mr. Nayyar is a Certified Public Accountant, Chartered Accountant and has a Bachelor of Commerce from the University of Delhi, India.

Ben Sutherland has served as our vice president, worldwide sales since July 2011. Mr. Sutherland joined our company in May 2000 as a member of our sales organization in Europe. From May 2000 to July 2011, Mr. Sutherland served in various sales positions responsible primarily for our international sales, and more recently for domestic sales. From 1997 to 2000, Mr. Sutherland served in various product marketing and sales roles at Vishay Intertechnology, Inc., a manufacturer and supplier of discrete semiconductors and passive electronic components.

Raja Petrakian has served as vice president of operations since May 2015. From 1995 to 2015, Dr. Petrakian served in a succession of roles in operations and supply chain management, most recently as senior vice president of worldwide operations, at Xilinx Inc. where he was responsible for manufacturing, supply chain management (fabrication through delivery), customer service, supplier relationships, purchasing, import/export compliance, new product introduction operations, and logistics. Prior to joining Xilinx he was a research staff member at the IBM T.J. Watson Research Center.

Clifford Walker has served as our vice president, corporate development since June 1995. From September 1994 to June 1995, Mr. Walker served as vice president of Reach Software Corporation, a software company. From December 1993 to September 1994, Mr. Walker served as president of Morgan Walker International, a consulting company.

Item 1A. Risk Factors.

In addition to the other information in this report, the following factors should be considered carefully in evaluating our business before purchasing shares of our stock.

Our operating results are volatile and difficult to predict. If we fail to meet the expectations of public market analysts or investors, the market price of our common stock may decrease significantly. Our net revenues and operating results have varied significantly in the past, are difficult to forecast, are subject to numerous factors both within and outside of our control, and may fluctuate significantly in the future. As a result, our operating results could fall below the expectations of public market analysts or investors. If that occurs, the price of our stock may decline.

Some of the factors that could affect our operating results include the following:

- the demand for our products declining in the major end markets we serve, which may occur due to competitive factors, supply-chain fluctuations or changes in macroeconomic conditions;
- our products are sold through distributors, which limits our direct interaction with our end customers, which reduces our ability to forecast sales and increases the complexity of our business;
- the volume and timing of delivery of orders placed by us with our wafer foundries and assembly subcontractors, and their ability to procure materials;
- competitive pressures on selling prices;
- the ability of our products to penetrate additional markets;
- the volume and timing of orders received from customers;
- the inability to adequately protect or enforce our intellectual property rights;
- reliance on international sales activities for a substantial portion of our net revenues;
- fluctuations in exchange rates, particularly the exchange rate between the U.S. dollar and the Japanese yen, the Euro and the Swiss franc;
- expenses we are required to incur (or choose to incur) in connection with our intellectual property litigations;
- our ability to develop and bring to market new products and technologies on a timely basis;
- earthquakes, terrorists acts or other disasters;
- continued impact of changes in securities laws and regulations, including potential risks resulting from our evaluation of our internal controls over financial reporting;
- the lengthy timing of our sales cycle;
- undetected defects and failures in meeting the exact specifications required by our products;
- changes in tax rules and regulations, changes in interpretation of tax rules and regulations, or unfavorable assessments from tax audits may increase the amount of taxes we are required to pay;
- our ability to attract and retain qualified personnel;
- risks associated with acquisitions and strategic investments;
- our ability to successfully integrate, or realize the expected benefits from, our acquisitions;
- changes in environmental laws and regulations, including with respect to energy consumption and climate change;
- interruptions in our information technology systems; and
- uncertainties arising out of economic consequences of current and potential military actions or terrorist activities and associated political instability.

If demand for our products declines in our major end markets, our net revenues will decrease. A limited number of applications of our products, such as cellphone chargers, LED lights, desktop PCs and consumer appliances make up a significant percentage of our net revenues. We expect that a significant level of our net revenues and operating results will continue to be dependent upon

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these applications in the near term. The demand for these products has been highly cyclical and has been impacted by economic downturns in the past. Any economic slowdown in the end markets that we serve could cause a slowdown in demand for our ICs. When our customers are not successful in maintaining high levels of demand for their products, their demand for our ICs decreases, which adversely affects our operating results. Any significant downturn in demand in these markets would cause our net revenues to decline and could cause the price of our stock to fall.

Our products are sold through distributors, which limits our direct interaction with our end customers, therefore reducing our ability to forecast sales and increasing the complexity of our business. Sales to distributors accounted for approximately 77%, 75% and 76% of net revenues in the years ended December 31, 2017, 2016 and 2015, respectively. Selling through distributors reduces our ability to forecast sales and increases the complexity of our business, requiring us to:

- manage a more complex supply chain;
- monitor the level of inventory of our products at each distributor, and
- monitor the financial condition and credit-worthiness of our distributors, many of which are located outside of the United States and are not publicly traded.

Since we have limited ability to forecast inventory levels at our end customers, it is possible that there may be significant build-up of inventories in the distributor channel, with the OEM or the OEM's contract manufacturer. Such a buildup could result in a slowdown in orders, requests for returns from customers, or requests to move out planned shipments. This could adversely impact our revenues and profits. Any failure to manage these complexities could disrupt or reduce sales of our products and unfavorably impact our financial results.

We depend on third-party suppliers to provide us with wafers for our products and if they fail to provide us sufficient quantities of wafers, our business may suffer. Our primary supply arrangements for the production of wafers are with Epson, Lapis, and X-FAB. Our contracts with these suppliers expire on varying dates, with the earliest to expire in December 2020. Although some aspects of our relationships with Lapis, X-FAB and Epson are contractual, many important aspects of these relationships depend on their continued cooperation. We cannot assure that we will continue to work successfully with Epson, Lapis and X-FAB in the future, and that the wafer foundries' capacity will meet our needs. Additionally, one or more of these wafer foundries could seek an early termination of our wafer supply agreements. Any serious disruption in the supply of wafers from Epson, Lapis and X-FAB could harm our business. We estimate that it would take 12 to 24 months from the time we identified an alternate manufacturing source to produce wafers with acceptable manufacturing yields in sufficient quantities to meet our needs.

Although we provide our foundries with rolling forecasts of our production requirements, their ability to provide wafers to us is ultimately limited by the available capacity of the wafer foundry. Any reduction in wafer foundry capacity available to us could require us to pay amounts in excess of contracted or anticipated amounts for wafer deliveries or require us to make other concessions to meet our customers' requirements, or may limit our ability to meet demand for our products. Further, to the extent demand for our products exceeds wafer foundry capacity, this could inhibit us from expanding our business and harm relationships with our customers. Any of these concessions or limitations could harm our business.

If our third-party suppliers and independent subcontractors do not produce our wafers and assemble our finished products at acceptable yields, our net revenues may decline. We depend on independent foundries to produce wafers, and independent subcontractors to assemble and test finished products, at acceptable yields and to deliver them to us in a timely manner. The failure of the foundries to supply us wafers at acceptable yields could prevent us from selling our products to our customers and would likely cause a decline in our net revenues and gross margin. In addition, our IC assembly process requires our manufacturers to use a high-voltage molding compound that has been available from only a few suppliers. These compounds and their specified processing conditions require a more exacting level of process control than normally required for standard IC packages. Unavailability of assembly materials or problems with the assembly process can materially and adversely affect yields, timely delivery and cost to manufacture. We may not be able to maintain acceptable yields in the future.

In addition, if prices for commodities used in our products increase significantly, raw material costs would increase for our suppliers which could result in an increase in the prices our suppliers charge us. To the extent we are not able

to pass these costs on to our customers; this would have an adverse effect on our gross margins.

Intense competition in the high-voltage power supply industry may lead to a decrease in our average selling price and reduced sales volume of our products. The high-voltage power supply industry is intensely competitive and characterized by significant price sensitivity. Our products face competition from alternative technologies, such as linear transformers, discrete switcher power supplies, and other integrated and hybrid solutions. If the price of competing solutions decreases significantly, the cost effectiveness of our products will be adversely affected. If power requirements for applications in which our products are currently utilized go outside the cost-effective range of our products, some of these alternative technologies can be used more cost effectively. In addition, as our patents expire, our competitors could legally begin using the technology covered by the expired patents in their products, potentially increasing the performance of their products and/or decreasing the cost of their products, which may enable our competitors

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to compete more effectively. Our current patents may or may not inhibit our competitors from getting any benefit from an expired patent. Our U.S. patents have expiration dates ranging from 2018 to 2037. We cannot assure that our products will continue to compete favorably or that we will be successful in the face of increasing competition from new products and enhancements introduced by existing competitors or new companies entering this market. We believe our failure to compete successfully in the high-voltage power supply business, including our ability to introduce new products with higher average selling prices, would materially harm our operating results.

If our products do not penetrate additional markets, our business will not grow as we expect. We believe that our future success depends in part upon our ability to penetrate additional markets for our products. We cannot assure that we will be able to overcome the marketing or technological challenges necessary to penetrate additional markets. To the extent that a competitor penetrates additional markets before we do, or takes market share from us in our existing markets, our net revenues and financial condition could be materially adversely affected.

We do not have long-term contracts with any of our customers and if they fail to place, or if they cancel or reschedule orders for our products, our operating results and our business may suffer. Our business is characterized by short-term customer orders and shipment schedules, and the ordering patterns of some of our large customers have been unpredictable in the past and will likely remain unpredictable in the future. Not only does the volume of units ordered by particular customers vary substantially from period to period, but also purchase orders received from particular customers often vary substantially from early oral estimates provided by those customers for planning purposes. In addition, customer orders can be canceled or rescheduled without significant penalty to the customer. In the past, we have experienced customer cancellations of substantial orders for reasons beyond our control, and significant cancellations could occur again at any time. Also, a relatively small number of distributors, OEMs and merchant power supply manufacturers account for a significant portion of our revenues. Specifically, our top ten customers, including distributors, accounted for 54% and 60% of our net revenues in each of the years ended December 31, 2017 and 2016, respectively. However, a significant portion of these revenues are attributable to sales of our products through distributors of electronic components. These distributors sell our products to a broad, diverse range of end users, including OEMs and merchant power supply manufacturers, which mitigates the risk of customer concentration to a large degree.

If we are unable to adequately protect or enforce our intellectual property rights, we could lose market share, incur costly litigation expenses, suffer incremental price erosion or lose valuable assets, any of which could harm our operations and negatively impact our profitability. Our success depends upon our ability to continue our technological innovation and protect our intellectual property, including patents, trade secrets, copyrights and know-how. We are currently engaged in litigation to enforce our intellectual property rights, and associated expenses have been, and are expected to remain, material and have adversely affected our operating results. We cannot assure that the steps we have taken to protect our intellectual property will be adequate to prevent misappropriation, or that others will not develop competitive technologies or products. From time to time, we have received, and we may receive in the future, communications alleging possible infringement of patents or other intellectual property rights of others. Costly litigation may be necessary to enforce our intellectual property rights or to defend us against claimed infringement. The failure to obtain necessary licenses and other rights, and/or litigation arising out of infringement claims could cause us to lose market share and harm our business.

As our patents expire, we will lose intellectual property protection previously afforded by those patents. Additionally, the laws of some foreign countries in which our technology is or may in the future be licensed may not protect our intellectual property rights to the same extent as the laws of the United States, thus limiting the protections applicable to our technology.

Our international sales activities account for a substantial portion of our net revenues, which subjects us to substantial risks. Sales to customers outside of the United States of America account for, and have accounted for a large portion of our net revenues, including approximately 96% of our net revenues for each of the years ended December 31, 2017, and 2016. If our international sales declined and we were unable to increase domestic sales, our revenues would decline and our operating results would be harmed. International sales involve a number of risks to us, including:

- potential insolvency of international distributors and representatives;

- reduced protection for intellectual property rights in some countries;
- the impact of recessionary environments in economies outside the United States;
- tariffs and other trade barriers and restrictions;
- the burdens of complying with a variety of foreign and applicable U.S. Federal and state laws; and
- foreign-currency exchange risk.

Our failure to adequately address these risks could reduce our international sales and materially and adversely affect our operating results. Furthermore, because substantially all of our foreign sales are denominated in U.S. dollars, increases in the value

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of the dollar cause the price of our products in foreign markets to rise, making our products more expensive relative to competing products priced in local currencies.

Fluctuations in exchange rates, particularly the exchange rate between the U.S. dollar and the Japanese yen, Swiss franc and euro, may impact our gross margin and net income. Our exchange rate risk related to the Japanese yen includes two of our major suppliers, Epson and Lapis, with which we have wafer supply agreements based in U.S. dollars; however, these agreements also allow for mutual sharing of the impact of the exchange rate fluctuation between Japanese yen and the U.S. dollar. Each year, our management and these suppliers review and negotiate pricing; the negotiated pricing is denominated in U.S. dollars but is subject to contractual exchange rate provisions. The fluctuation in the exchange rate is shared equally between Power Integrations and each of these suppliers. We maintain cash denominated in Swiss francs and euros to fund the operations of our Swiss subsidiary. The functional currency of our Swiss subsidiary is the U.S. dollar; gains and losses arising from the re-measurement of non-functional currency balances are recorded in other income in our consolidated statements of income, and material unfavorable exchange-rate fluctuations with the Swiss franc could negatively impact our net income.

If we do not prevail in our litigation, we will have expended significant financial resources, potentially without any benefit, and may also suffer the loss of rights to use some technologies. We are currently involved in a number of patent litigation matters and the outcome of the litigation is uncertain. See Note 13, Legal Proceedings and Contingencies, in our Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K. For example, in one of our patent suits the infringing company has been found to infringe four of our patents. Despite the favorable court finding, the infringing party filed an appeal to the damages awarded. In another matter, we are being sued in an ongoing case for patent infringement. Should we ultimately be determined to be infringing another party's patents, or if an injunction is issued against us while litigation is pending on those claims, such result could have an adverse impact on our ability to sell products found to be infringing, either directly or indirectly. In the event of an adverse outcome, we may be required to pay substantial damages, stop our manufacture, use, sale, or importation of infringing products, or obtain licenses to the intellectual property we are found to have infringed. We have also incurred, and expect to continue to incur, significant legal costs in conducting these lawsuits, including the appeal of the case we won, and our involvement in this litigation and any future intellectual property litigation could adversely affect sales and divert the efforts and attention of our technical and management personnel, whether or not such litigation is resolved in our favor. Thus, even if we are successful in these lawsuits, the benefits of this success may fail to outweigh the significant legal costs we will have incurred.

If our efforts to enhance existing products and introduce new products are not successful, we may not be able to generate demand for our products. Our success depends in significant part upon our ability to develop new ICs for high-voltage power conversion for existing and new markets, to introduce these products in a timely manner and to have these products selected for design into products of leading manufacturers. New product introduction schedules are subject to the risks and uncertainties that typically accompany development and delivery of complex technologies to the market place, including product development delays and defects. If we fail to develop and sell new products in a timely manner then our net revenues could decline.

In addition, we cannot be sure that we will be able to adjust to changing market demands as quickly and cost-effectively as necessary to compete successfully. Furthermore, we cannot assure that we will be able to introduce new products in a timely and cost-effective manner or in sufficient quantities to meet customer demand or that these products will achieve market acceptance. Our failure, or our customers' failure, to develop and introduce new products successfully and in a timely manner would harm our business. In addition, customers may defer or return orders for existing products in response to the introduction of new products. When a potential liability exists we will maintain reserves for customer returns, however we cannot assure that these reserves will be adequate.

In the event of an earthquake, terrorist act or other disaster, our operations may be interrupted and our business would be harmed. Our principal executive offices and operating facilities are situated near San Francisco, California, and most of our major suppliers, which are wafer foundries and assembly houses, are located in areas that have been subject to severe earthquakes, such as Japan. Many of our suppliers are also susceptible to other disasters such as tropical storms, typhoons or tsunamis. In the event of a disaster, such as the earthquake and tsunami in Japan, we or

one or more of our major suppliers may be temporarily unable to continue operations and may suffer significant property damage. Any interruption in our ability or that of our major suppliers to continue operations could delay the development and shipment of our products and have a substantial negative impact on our financial results.

Securities laws and regulations, including potential risk resulting from our evaluation of internal controls over financial reporting, will continue to impact our results. Complying with the requirements of the federal securities laws and NASDAQ's conditions for continued listing have imposed significant legal and financial compliance costs, and are expected to continue to impose significant costs and management burden on us. These rules and regulations also may make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These rules and regulations could also make it more difficult for us to attract and retain qualified executive officers and members of our board of directors, particularly qualified members to serve on our audit committee. Further, the rules and regulations

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under the Dodd-Frank Wall Street Reform and Consumer Protection Act, which became effective in 2011, may impose significant costs and management burden on us.

Additionally, because these laws, regulations and standards are expected to be subject to varying interpretations, their application in practice may evolve over time as new guidance becomes available. This evolution may result in continuing uncertainty regarding compliance matters and additional costs necessitated by ongoing revisions to our disclosure and governance practices.

Because the sales cycle for our products can be lengthy, we may incur substantial expenses before we generate significant revenues, if any. Our products are generally incorporated into a customer's products at the design stage. However, customer decisions to use our products, commonly referred to as design wins, can often require us to expend significant research and development and sales and marketing resources without any assurance of success. These significant research and development and sales and marketing resources often precede volume sales, if any, by a year or more. The value of any design win will largely depend upon the commercial success of the customer's product. We cannot assure that we will continue to achieve design wins or that any design win will result in future revenues. If a customer decides at the design stage not to incorporate our products into its product, we may not have another opportunity for a design win with respect to that product for many months or years.

Our products must meet exacting specifications, and undetected defects and failures may occur which may cause customers to return or stop buying our products. Our customers generally establish demanding specifications for quality, performance and reliability, and our products must meet these specifications. ICs as complex as those we sell often encounter development delays and may contain undetected defects or failures when first introduced or after commencement of commercial shipments. We have from time to time in the past experienced product quality, performance or reliability problems. If defects and failures occur in our products, we could experience lost revenue, increased costs, including warranty expense and costs associated with customer support and customer expenses, delays in or cancellations or rescheduling of orders or shipments and product returns or discounts, any of which would harm our operating results.

Changes in tax rules and regulations, changes in interpretation of tax rules and regulations, or unfavorable assessments from tax audits may increase the amount of taxes we are required to pay. Our operations are subject to income and transaction taxes in the United States and in multiple foreign jurisdictions and to review or audit by the U.S. Internal Revenue Service (IRS) and state, local and foreign tax authorities. In addition, the United States, countries in Asia and other countries where we do business have recently enacted or are considering changes in relevant tax, accounting and other laws, regulations and interpretations, including changes to tax laws applicable to multinational companies. These potential changes could adversely affect our effective tax rates or result in other costs to us.

Recently enacted U.S. tax legislation will significantly change the taxation of U.S.-based multinational corporations, by, among other things, reducing the U.S. corporate income tax rate, adopting elements of a territorial tax system, assessing a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, and the creation of new taxes on certain foreign-sourced earnings. The legislation is unclear in some respects and will require interpretations and implementing regulations by the Internal Revenue Service, as well as state tax authorities, and the legislation could be subject to potential amendments and technical corrections, any of which could lessen or increase certain adverse impacts of the legislation. A significant portion of our earnings are earned by our subsidiaries outside the U.S. Changes to the taxation of certain foreign earnings resulting from the newly enacted U.S. tax legislation, along with the state tax impact of these changes and potential future cash distributions, may have an adverse effect on our effective tax rate. Furthermore, changes to the taxation of undistributed foreign earnings could change our future intentions regarding reinvestment of such earnings. The foregoing items could have a material effect on our business, cash flow, results of operations or financial conditions.

We must attract and retain qualified personnel to be successful and competition for qualified personnel is intense in our market. Our success depends to a significant extent upon the continued service of our executive officers and other key management and technical personnel, and on our ability to continue to attract, retain and motivate qualified personnel, such as experienced analog design engineers and systems applications engineers. The competition for these employees is intense, particularly in Silicon Valley. The loss of the services of one or more of our engineers,

executive officers or other key personnel could harm our business. In addition, if one or more of these individuals leaves our employ, and we are unable to quickly and efficiently replace those individuals with qualified personnel who can smoothly transition into their new roles, our business may suffer. We do not have long-term employment contracts with, and we do not have in place key person life insurance policies on, any of our employees.

We are exposed to risks associated with acquisitions and strategic investments. We have made, and in the future intend to make, acquisitions of, and investments in, companies, technologies or products in existing, related or new markets. Acquisitions involve numerous risks, including but not limited to:

- inability to realize anticipated benefits, which may occur due to any of the reasons described below, or for other unanticipated reasons
- the risk of litigation or disputes with customers, suppliers, partners or stockholders of an acquisition target arising from a proposed or completed transaction;

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- impairment of acquired intangible assets and goodwill as a result of changing business conditions, technological advancements or worse-than-expected performance, which would adversely affect our financial results; and
- unknown, underestimated and/or undisclosed commitments, liabilities or issues not discovered in our due diligence of such transactions.

We also in the future may have strategic relationships with other companies, which may decline in value and/or not meet desired objectives. The success of these strategic relationships depends on various factors over which we may have limited or no control and requires ongoing and effective cooperation with strategic partners. Moreover, these relationships are often illiquid, such that it may be difficult or impossible for us to monetize such relationships.

Our inability to successfully integrate, or realize the expected benefits from, our acquisitions could adversely affect our results. We have made, and in the future intend to make, acquisitions of other businesses and with these acquisitions there is a risk that integration difficulties may cause us not to realize expected benefits. The success of the acquisitions could depend, in part, on our ability to realize the anticipated benefits and cost savings (if any) from combining the businesses of the acquired companies and our business, which may take longer to realize than expected.

Changes in environmental laws and regulations may increase our costs related to obsolete products in our existing inventory. Changing environmental regulations and the timetable to implement them continue to impact our customers' demand for our products. As a result there could be an increase in our inventory obsolescence costs for products manufactured prior to our customers' adoption of new regulations. Currently we have limited visibility into our customers' strategies to implement these changing environmental regulations into their business. The inability to accurately determine our customers' strategies could increase our inventory costs related to obsolescence.

Interruptions in our information technology systems could adversely affect our business. We rely on the efficient and uninterrupted operation of complex information technology systems and networks to operate our business. Any significant system or network disruption, including but not limited to new system implementations, computer viruses, security breaches, or energy blackouts could have a material adverse impact on our operations, sales and operating results. We have implemented measures to manage our risks related to such disruptions, but such disruptions could still occur and negatively impact our operations and financial results. In addition, we may incur additional costs to remedy any damages caused by these disruptions or security breaches.

Uncertainties arising out of economic consequences of current and potential military actions or terrorist activities and associated political instability could adversely affect our business. Like other U.S. companies, our business and operating results are subject to uncertainties arising out of economic consequences of current and potential military actions or terrorist activities and associated political instability, and the impact of heightened security concerns on domestic and international travel and commerce. These uncertainties could also lead to delays or cancellations of customer orders, a general decrease in corporate spending or our inability to effectively market and sell our products. Any of these results could substantially harm our business and results of operations, causing a decrease in our revenues.

Item 1B. Unresolved Staff Comments.

Not applicable.

Item 2. Properties.

We own our principal executive, administrative, manufacturing and technical offices which are located in San Jose, California. We also own an R&D facility in New Jersey and a test facility in Biel, Switzerland. We lease administrative office space in Singapore and Switzerland, R&D facilities in Canada, United Kingdom and Malaysia and a design center in Germany, in addition to sales offices in various countries around the world to accommodate our sales force. We believe that our current facilities are sufficient for our Company; however, if headcount increases above capacity we may need to lease additional space.

Item 3. Legal Proceedings.

Information with respect to this item may be found in Note 13, Legal Proceedings and Contingencies, in our Notes to Consolidated Financial Statements included later in this Annual Report on Form 10-K, which information is incorporated herein by reference.

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Item 4. Mine Safety Disclosures.

Not applicable.

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PART II

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

Our common stock trades on the NASDAQ Global Select Market under the symbol "POWI". The following table shows the high and low closing sales prices per share of our common stock as reported on the NASDAQ Global Select Market for the periods indicated during which our common stock traded on the NASDAQ Global Select Market.

	Year Ended December 31, 2017		Year Ended December 31, 2016	
	High	Low	High	Low
First Quarter	$72.50	$62.45	$49.75	$41.63
Second Quarter	$75.25	$62.70	$54.36	$45.04
Third Quarter	$82.20	$67.10	$63.03	$48.91
Fourth Quarter	$84.35	$71.15	$69.55	$61.97

As of February 9, 2018, there were approximately 37 stockholders of record. Because brokers and other institutions hold many of our shares on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

Dividends Declared Per Common Share

The following table presents the quarterly dividends declared per share of our common stock for the periods indicated:

	Year Ended December 31,	
	2017	2016
First Quarter	$0.14	$0.13
Second Quarter	$0.14	$0.13
Third Quarter	$0.14	$0.13
Fourth Quarter	$0.14	$0.13

We paid a total of $16.6 million and $15.1 million in cash dividends during 2017 and 2016, respectively.

Issuer Purchases of Equity Securities

Over the years our board of directors has authorized the use of funds to repurchase shares of our common stock, including $30.0 million in each of July 2015, October 2015 and July 2017, with repurchases to be executed according to pre-defined price/volume guidelines. In 2015, we purchased 1.3 million shares for approximately $53.7 million. In 2016, we purchased 146,000 shares for approximately $6.4 million. In 2017, we purchased 129,000 shares for approximately $9.2 million. As of December 31, 2017, we had $44.4 million available for future stock repurchases, which has no expiration date. In January 2018, our board of directors authorized the use of an additional $30.0 million for the repurchase of our common stock, with repurchases to be executed according to pre-defined price/volume guidelines. Authorization of future stock repurchase programs is at the discretion of the board of directors and will depend on our financial condition, results of operations, capital requirements and business conditions as well as other factors.

The following table summarizes repurchases of our common stock during the fourth quarter of fiscal 2017:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly	Approximate Dollar Value of Shares that May Yet be Repurchased Under the

			Announced Plans or Programs	Plans or Programs (in millions)
October 1, 2017, to October 31, 2017	18,719	$ 73.24	18,719	$ 45.5
November 1, 2017, to November 30, 2017	—	—	—	$ 45.5
December 1, 2017, to December 31, 2017	14,518	$ 74.58	14,518	$ 44.4
Total	33,237		33,237	

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Performance Graph (1)

The following graph shows the cumulative total stockholders return of an investment of $100 in cash on December 31, 2012, through December 31, 2017, in our common stock, the NASDAQ Composite Index and the NASDAQ Electronic Components Index and assuming that all dividends were reinvested. The stockholder return shown on the graph below is not necessarily indicative of future performance, and we do not make or endorse any predictions as to future stockholder returns.

Company/Index	12/31/12	12/31/13	12/31/14	12/31/15	12/31/16	12/31/17
Power Integrations, Inc.	100.00	167.22	156.26	148.34	208.96	228.34
NASDAQ Composite	100.00	141.63	162.09	173.33	187.19	242.29
NASDAQ Electronic Components	100.00	142.79	190.07	186.91	241.21	341.27

(1) This Section is not “soliciting material,” is not deemed “filed” with the SEC and is not to be incorporated by reference in any filing of Power Integrations under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

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Item 6. Selected Financial Data.

The following selected consolidated financial data should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations'' and the consolidated financial statements and the notes thereto included elsewhere in this Annual Report on Form 10-K to fully understand factors that may affect the comparability of the information presented below.

Consolidated Statement of Income Data	Year Ended December 31,				
(in thousands, except per share amounts)	2017[1][2]	2016[1]	2015[1][3]	2014	2013
Net revenues	$431,755	$389,668	$344,609	$348,797	$347,089
Income from operations	57,637	48,874	38,906	55,796	54,066
Provision for (benefit from) income taxes	32,690	1,054	179	(2,730)	(1,839)
Net income	$27,609	$48,898	$39,152	$59,544	$57,266
Earnings per share:					
Basic	$0.93	$1.69	$1.35	$1.99	$1.95
Diluted	$0.90	$1.65	$1.32	$1.93	$1.88
Shares used in per share calculation:					
Basic	29,674	28,925	29,001	29,976	29,421
Diluted	30,545	29,619	29,696	30,829	30,420
Dividends per share	$0.56	$0.52	$0.48	$0.44	$0.32

Consolidated Balance Sheet Data	Year Ended December 31,				
(in thousands)	2017[1][2]	2016[1]	2015[1][3]	2014	2013
Cash and cash equivalents	$93,655	$62,134	$90,092	$60,708	$92,928
Short-term marketable securities	189,236	188,323	83,769	114,575	109,179
Cash, cash equivalents and short-term marketable securities	282,891	250,457	173,861	175,283	202,107
Working capital	313,483	274,318	203,050	210,752	227,004
Total assets	621,074	554,410	486,707	493,663	501,421
Long-term liabilities	22,341	7,380	6,925	7,827	14,317
Stockholders' equity	$547,682	$503,084	$442,590	$430,676	$436,686

(1) In 2017 we adopted Accounting Standards Update 2014-09, Revenue from Contracts with Customers, which amended the accounting standards for revenue recognition. The standards were applied on a retrospective basis to 2015 and 2016 (refer to Note 2, Significant Accounting Policies and Recent Accounting Pronouncements, in our Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for details), but not to 2013 and 2014.

(2) In December 2017 the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (Refer to Note 11, Provision for Income Taxes, in our Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for details).

(3) In 2015 we acquired Cambridge Semiconductor Limited (CamSemi), a UK company (refer to Note 14, Acquisitions, in our Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for details).

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Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of our financial condition and results of our operations should be read in conjunction with the consolidated financial statements and the notes to those statements included elsewhere in this Annual Report on Form 10-K. This discussion contains forward-looking statements that involve risks and uncertainties. See "Cautionary Note Regarding Forward-Looking Statements" at the beginning of this Form 10-K. Our actual results could differ materially from those contained in these forward-looking statements due to a number of factors, including those discussed in Part I, Item 1A "Risk Factors" and elsewhere in this report.

Business Overview

We design, develop and market analog and mixed-signal integrated circuits (ICs) and other electronic components and circuitry used in high-voltage power conversion. Our products are used in power converters that convert electricity from a high-voltage source (typically 48 volts or higher) to the type of power required for a specified downstream use. In most cases, this conversion entails, among other functions, converting alternating current (AC) to direct current (DC) or vice versa, reducing or increasing the voltage, and regulating the output voltage and/or current according to the customer's specifications.

A large percentage of our products are ICs used in AC-DC power supplies, which convert the high-voltage AC from a wall outlet to the low-voltage DC required by most electronic devices. Power supplies incorporating our products are used with all manner of electronic products including mobile phones, computing and networking equipment, appliances, electronic utility meters, power tools, industrial controls, and lighting applications that utilize light-emitting diodes (LEDs), and "smart-home," or "internet of things" applications such as networked thermostats, power strips and other building-automation and security devices.

We also offer high-voltage gate drivers- either standalone ICs or circuit boards containing ICs, electrical isolation components and other circuitry- used to operate high-voltage switches such as insulated-gate bipolar transistors (IGBTs). These combinations of switches and drivers are used for power conversion in high-power applications (i.e., power levels ranging from a few kilowatts up to one gigawatt) such as industrial motors, solar- and wind-power systems, electric vehicles and high-voltage DC transmission systems.

Our net revenues were $431.8 million, $389.7 million and $344.6 million in 2017, 2016 and 2015, respectively. In 2017 revenues increased by $42.1 million due to higher unit sales into the industrial and consumer end-markets, driven by growth from a broad range of industrial and consumer-appliance applications. In 2016 revenues increased by $45.1 million due primarily to higher unit sales into the communications end-market, largely as a result of the success of our InnoSwitch products in mobile-device chargers. In addition, higher unit sales into the consumer market, particularly the consumer-appliance market, contributed to the increase in 2016. The increases in both 2017 and 2016 were partially offset by lower unit sales into the computer end-market, reflecting reduced demand for power supplies for desktop computers.

Our top ten customers, including distributors that resell to OEMs and merchant power supply manufacturers, accounted for approximately 54%, 60% and 61% of net revenues in 2017, 2016 and 2015, respectively. In 2017 our top customer, a distributor of our products, accounted for approximately 16% of our net revenues. In 2016 and 2015 our top two customers, also distributors, collectively accounted for approximately 28% and 32% of our net revenues. International sales represented approximately 96% of net revenues in each of 2017, 2016, and 2015.

Because our industry is intensely price-sensitive, our gross margin (gross profit divided by net revenues) is subject to change based on the relative pricing of solutions that compete with ours. Variations in product mix, end-market mix and customer mix can also cause our gross margin to fluctuate. Also, because we purchase a large percentage of our silicon wafers from foundries located in Japan, our gross margin is influenced by fluctuations in the exchange rate between the U.S. dollar and the Japanese yen. All else being equal, a 10% change in the value of the U.S. dollar compared to the Japanese yen would eventually result in a corresponding change in our gross margin of approximately 1.0%; this sensitivity may increase or decrease depending on the percentage of our wafer supply that we purchase from Japanese suppliers. Also, although our wafer fabrication and assembly operations are outsourced, as are most of our test operations, a portion of our production costs are fixed in nature. As a result, our unit costs and gross profit margin are impacted by the volume of units we produce.

Our gross profit, defined as net revenues less cost of revenues, was $213.7 million or 49% of net revenues in 2017, compared to $192.2 million or 49% of net revenues in 2016, and $173.3 million or 50% of net revenues in 2015. Our gross margin in 2017 was flat compared to 2016 as a favorable change in end-market mix was offset by higher manufacturing costs stemming from a decline in the value of the U.S. dollar versus the Japanese yen in 2016, which subsequently increased the cost of silicon wafers purchased from our Japanese wafer-fabrication foundries. The decrease in gross margin in 2016 was due primarily to a change in end-market mix, with a greater percentage of revenues coming from lower-margin end-markets, particularly communications.

Total operating expenses in 2017, 2016 and 2015 were $156.0 million, $143.3 million and $134.4 million, respectively. The increase in operating expenses in 2017 was due primarily to higher salary and related expenses due to the expansion of our workforce, increased legal expenses in connection with our litigation with ON Semiconductor, and increased stock-based compensation expense. Operating expenses increased in 2016 due primarily to increased stock-based compensation expense related to annual performance-based awards, and the expansion of headcount in support of our product-development efforts.

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Critical Accounting Policies and Estimates

The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America, or U.S. GAAP, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, we evaluate our estimates, including those listed below. We base our estimates on historical facts and various other assumptions that we believe to be reasonable at the time the estimates are made. Actual results could differ from those estimates.

Our critical accounting policies are as follows:
- revenue recognition;
- stock-based compensation;
- estimating write-downs for excess and obsolete inventory;
- income taxes;
- business combinations; and
- goodwill and intangible assets.

Our critical accounting policies are important to the portrayal of our financial condition and results of operations, and require us to make judgments and estimates about matters that are inherently uncertain. A brief description of these critical accounting policies is set forth below. For more information regarding our accounting policies, see Note 2, Summary of Significant Accounting Policies and Recent Accounting Pronouncements, in our Notes to Consolidated Financial Statements in this Annual Report on Form 10-K.

Revenue recognition

Product revenues consist of sales to original equipment manufacturers, or OEMs, merchant power supply manufacturers and distributors. Approximately 77% of our net product sales were made to distributors in 2017. We apply the provisions of Accounting Standards Codification (ASC) 606-10, Revenue from Contracts with Customers, and all related appropriate guidance. We recognize revenue under the core principle to depict the transfer of control to our customers in an amount reflecting the consideration we expect to be entitled. In order to achieve that core principle, we apply the following five-step approach: (1) identify the contract with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract, and (5) recognize revenue when a performance obligation is satisfied.

Product revenues consist of sales to original equipment manufacturers, or OEMs, merchant power supply manufacturers and distributors. We consider customer purchase orders, which in some cases are governed by master sales agreements, to be the contracts with a customer. In situations where sales are to a distributor, we have concluded that our contracts are with the distributor as we hold contracts bearing enforceable rights and obligations with only the distributor. As part of our consideration of the contract, we evaluate certain factors including the customer's ability to pay (or credit risk). For each contract, we consider the promise to transfer products, each of which is distinct, to be the identified performance obligations. In determining the transaction price we evaluate whether the price is subject to refund or adjustment to determine the net consideration to which we expect to be entitled. As our standard payment terms are less than one year, we elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component. We allocate the transaction price to each distinct product based on their relative standalone selling price. We consider the product price as specified on the purchase order the standalone selling price as it is an observable input which depicts the price as if sold to a similar customer in similar circumstances. We recognize revenue when control of the product is transferred to the customer (i.e., when our performance obligation is satisfied), which typically occurs at shipment. Further, in determining whether control has transferred, we consider if there is a present right to payment and legal title, along with risks and rewards of

ownership having transferred to the customer.

Frequently, we receive orders for products to be delivered over multiple dates that may extend across several reporting periods. We invoice for each delivery upon shipment and recognize revenue for each distinct product delivered, assuming transfer of control has occurred. As scheduled delivery dates are within one year, under the optional exemption provided by ASC 606-10-50-14 revenues allocated to future shipments of partially completed contracts are not disclosed. We have also elected the practical expedient under ASC 340-40-25-4 to expense commissions when incurred as the amortization period of the commission asset we would have otherwise recognized is less than one year.

Sales to international customers that are shipped from our facility outside of the United States are pursuant to EX Works, or EXW, shipping terms, meaning that control of the product transfers to the customer upon shipment from our foreign warehouse. Sales to international customers that we ship from our facility in California are pursuant to Delivered at Frontier, or DAF, shipping

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terms. As such, control of the product passes to the customer when the shipment reaches the destination country and we recognize revenue upon the arrival of the product in that country. Shipments to customers in the Americas are pursuant to Free on Board, or FOB, point of origin shipping terms meaning that we pass control to the customer upon shipment.

Sales to most distributors are made under terms allowing certain price adjustments and limited rights of return (known as "stock rotation") of our products held in their inventory or upon sale to their end customers. We recognize revenue from sales to distributors upon the transfer of control to the distributor. Frequently, distributors need to sell at a price lower than the standard distribution price in order to win business. At the time the distributor invoices its customer or soon thereafter, the distributor submits a "ship and debit" price adjustment claim to us to adjust the distributor's cost from the standard price to the pre-approved lower price. After we verify that the claim was pre-approved, we issue a credit memo to the distributor for the ship and debit claim. In determining the transaction price, we consider ship and debit price adjustments to be variable consideration. Such price adjustments are estimated using the expected value method based on an analysis of actual ship and debit claims, at the distributor and product level, over a period of time considered adequate to account for current pricing and business trends. Historically, actual price adjustments for ship and debit claims relative to those estimated and included when determining the transaction price have not materially differed. To the extent future ship and debit claims significantly exceed amounts estimated, there could be a material impact on our revenues and results of operations. Stock rotation rights grant the distributor the ability to return certain specified amounts of inventory. Stock rotation adjustments are an additional form of variable consideration and are also estimated using the expected value method based on historical return rates. Historically, these distributor stock rotation adjustments have not been material.

Sales to certain distributors are made under terms that do not include rights of return or price concessions after the product is shipped to the distributor. Accordingly, upon application of steps one through five above, product revenue is recognized upon shipment and transfer of control.

We generally provide an assurance warrant that our products will substantially conform to the published specifications for twelve months from the date of shipment. Our liability is limited to either a credit equal to the purchase price or replacement of the defective part. Returns under warranty have historically been immaterial. As such, we do not record a specific warranty reserve or consider activities related to such warranty, if any, to be a separate performance obligation.

Stock-based compensation

We apply the provisions of ASC 718-10, Share-Based Payment. Under the provisions of ASC 718-10, we recognize the fair value of stock-based compensation in our financial statements over the requisite service period of the individual grants, which generally equals a four-year vesting period. We use estimates of volatility, expected term, risk-free interest rate, dividend yield and forfeitures in determining the fair value of these awards and the amount of compensation expense to recognize. Changes in the estimated forfeiture rate could result in changes to our current compensation charges for historical grants.

For awards with performance conditions, we recognize compensation expense when it becomes probable that the performance target will be achieved. A probability assessment is performed on a quarterly basis and requires significant assumptions and estimates made by management related to the projected achievement of the performance targets, which consist of non-GAAP operating earnings, strategic goals and/or net revenues. Changes in the probability assessment of achieving the performance targets are accounted for in the period of change by recording a cumulative catch-up adjustment as if the new estimate had been applied since the service inception date. If the actual performance targets achieved differ significantly from those projected by management, additional compensation expense may be recorded for the performance-based awards due to the cumulative catch-up adjustment, which could have an adverse impact on our results of operations.

Estimating write-downs for excess and obsolete inventory

When evaluating the adequacy of our valuation adjustments for excess and obsolete inventory, we identify excess and obsolete products and also analyze historical usage, forecasted production based on demand forecasts, current economic trends and historical write-offs. This write-down is reflected as a reduction to inventory in the consolidated balance sheets and an increase in cost of revenues. If actual market conditions are less favorable than our assumptions, we may be required to take additional write-downs, which could adversely impact our cost of revenues and operating results.

Income taxes

Income tax expense is an estimate of current income taxes payable or refundable in the current fiscal year based on reported income before income taxes. Deferred income taxes reflect the effect of temporary differences and carry-forwards that are recognized for financial reporting and income tax purposes.

We account for income taxes under the provisions of ASC 740, Income Taxes. Under the provisions of ASC 740, deferred tax assets and liabilities are recognized based on the differences between the financial statement carrying amounts of existing assets

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and liabilities and their respective tax bases, utilizing the tax rates that are expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. We recognize valuation allowances to reduce any deferred tax assets to the amount that we estimate will more likely than not be realized based on available evidence and management's judgment. We limit the deferred tax assets recognized related to some of our officers' compensation to amounts that we estimate will be deductible in future periods based upon Internal Revenue Code Section 162(m). In the event that we determine, based on available evidence and management judgment, that all or part of the net deferred tax assets will not be realized in the future, we would record a valuation allowance in the period the determination is made. In addition, the calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with our expectations could have a material impact on our results of operations and financial position.

As of December 31, 2017, we continue to maintain a valuation allowance on our California deferred tax assets as we believe that it is not more likely than not that the deferred tax assets will be fully realized. We also maintain a valuation allowance with respect to some of our deferred tax assets relating primarily to tax credits in Canada and the state of New Jersey as well as Federal capital loss carryforwards.

Business combinations

The purchase price of an acquisition is allocated to the underlying assets acquired and liabilities assumed based upon their estimated fair values at the date of acquisition. To the extent the purchase price exceeds the fair value of the net identifiable tangible and intangible assets acquired and liabilities assumed, such excess is allocated to goodwill. We determine the estimated fair values after review and consideration of relevant information, including discounted cash flows, quoted market prices and estimates made by management. We adjust the preliminary purchase price allocation, as necessary, during the measurement period of up to one year after the acquisition closing date as we obtain more information as to facts and circumstances existing at the acquisition date impacting asset valuations and liabilities assumed. Acquisition-related costs are recognized separately from the acquisition and are expensed as incurred.

Goodwill and intangible assets

In accordance with ASC 350-10, Goodwill and Other Intangible Assets, we evaluate goodwill for impairment on an annual basis, or as other indicators of impairment emerge. Under the amendments of Accounting Standards Update (ASU) 2017-04, Intangibles - Goodwill and Other (Topic 350), we compare the fair value of our single reporting unit to the carrying amount, including goodwill. If the fair value of our single reporting unit exceeds the carrying amount no impairment adjustment is required. If the carrying amount of our reporting unit exceeds the fair value, then we record an impairment loss equal to the difference, but not in excess of the carrying amount of the goodwill. Under ASC 350-10, we have the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If, we elect this option and after assessing the totality of events or circumstances, we determine it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then comparing the fair value of a reporting unit to its carrying amount is unnecessary. We have not elected this option to date. We evaluated goodwill for impairment in the fourth quarters of 2017 and 2016, and concluded that no impairment existed as of December 31, 2017, and December 31, 2016.

ASC 350-10 also requires that intangible assets with estimable useful lives be amortized over their respective estimated useful lives, and reviewed for impairment in accordance with ASC 360-10, Accounting for the Impairment or Disposal of Long-Lived Assets. We review long-lived assets, such as acquired intangibles and property and equipment, for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. We measure recoverability of assets to be held and used by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, we recognize an impairment charge by the amount by which the carrying amount of the asset exceeds the fair value of the asset.

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Results of Operations

The following table sets forth statement of income data as a percentage of net revenues for the periods indicated:

	Year Ended December 31,		
	2017	2016	2015
Net revenues	100.0%	100.0%	100.0%
Cost of revenues	50.5	50.7	49.7
Gross profit	49.5	49.3	50.3
Operating expenses:			
Research and development	15.9	16.0	16.7
Sales and marketing	11.9	12.3	13.6
General and administrative	8.4	8.5	8.7
Total operating expenses	36.2	36.8	39.0
Income from operations	13.3	12.5	11.3
Other income	0.6	0.3	0.1
Income before income taxes	13.9	12.8	11.4
Provision for income taxes	7.5	0.3	0.1
Net income	6.4 %	12.5 %	11.3 %

Comparison of Years Ended December 31, 2017, 2016 and 2015

Net revenues. Net revenues consist of revenues from product sales, which are calculated net of returns and allowances. In 2017 revenues increased by $42.1 million due to higher unit sales into the industrial and consumer end-markets, driven by growth from a broad range of industrial and consumer-appliance applications. These increases were partially offset by lower unit sales into the computer end-market, reflecting reduced demand for power supplies for desktop computers. In 2016 revenues increased by $45.1 million due primarily to higher unit sales into the communications end-market, largely as a result of the success of our InnoSwitch products in mobile-device chargers as well as the consumer market, particularly the consumer-appliance market. These increases were partially offset by lower unit sales into the computer end-market, reflecting reduced demand for power supplies for desktop computers.

Our approximate net revenue mix by end-markets served in 2017, 2016 and 2015 is as follows:

End Market	2017	2016	2015
Communications	24%	27%	24%
Computer	5 %	6 %	7 %
Consumer	38%	36%	36%
Industrial	33%	31%	33%

Sales to customers outside of the United States were $415.1 million in 2017, compared to $374.7 million in 2016 and $329.9 million in 2015, representing approximately 96% of net revenues in each of 2017, 2016 and 2015. Although power supplies using our products are designed and distributed worldwide, most of these power supplies are manufactured by our customers in Asia. As a result, sales to this region accounted for approximately 79%, 81% and 80% of our net revenues in 2017, 2016 and 2015, respectively. We expect international sales to continue to account for a large portion of our net revenues for the foreseeable future.

Sales to distributors accounted for 77%, 75% and 76% of our net revenues in 2017, 2016 and 2015, respectively, with direct sales to OEMs and merchant power supply manufacturers accounting for the remainder in each of the corresponding years. In 2017 one distributor accounted for more than 10% of revenues. In 2016 and 2015, two distributors each accounted for more than 10% of revenues.

The following customers each accounted for 10% or more of net revenues during these years:

Customer	2017	2016	2015
Avnet	16%	18%	21%
Powertech Distribution Ltd.	*	10%	11%

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* Total customer revenue was less than 10% of net revenues.
No other customers accounted for 10% or more of net revenues during these years.

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Gross profit. Gross profit is net revenues less cost of revenues. Our cost of revenues consists primarily of the purchase of wafers from our contracted foundries, the assembly, packaging and testing of our products by sub-contractors, product testing performed in our own facility, overhead associated with the management of our supply chain and the amortization of acquired intangible assets. Gross margin is gross profit divided by net revenues. The following table compares gross profit and gross margin for the years ended December 31, 2017, 2016 and 2015:

(dollars in millions)	2017	Change	2016	Change	2015
Gross profit	$213.7	11.2 %	$192.2	10.9 %	$173.3
Gross margin	49.5 %		49.3 %		50.3 %

Our gross margin was essentially flat in 2017 compared to 2016 as a favorable change in end-market mix was largely offset by higher costs stemming from a decline in the value of the U.S. dollar versus the Japanese yen in 2016, which subsequently increased the cost of silicon wafers purchased from our Japanese foundries. The decrease in gross margin in 2016 was due primarily to a change in end-market mix, with a greater percentage of revenue coming from lower-margin end-markets, particularly the communications market.

Research and development expenses. Research and development (R&D) expenses consist primarily of employee-related expenses including stock-based compensation and expensed material and facility costs associated with the development of new processes and new products. We also record R&D expenses for prototype wafers related to new products until the products are released to production. The following table compares R&D expenses for the years ended December 31, 2017, 2016 and 2015:

(dollars in millions)	2017	Change	2016	Change	2015
R&D expenses	$68.5	9.9 %	$62.3	8.3 %	$57.5
Percentage of net revenues	15.9 %		16.0 %		16.7 %

R&D expenses increased in 2017 compared to 2016, reflecting increased salary and related expenses from the expansion of headcount, and greater equipment and product-development expenses, all in support of our product-development efforts. R&D expenses increased in 2016 as compared to 2015 primarily due to increased stock-based compensation expense related to performance-based stock awards as a result of our 2016 performance. The expansion of headcount in support of our product-development efforts also contributed to the 2016 increase.

Sales and marketing expenses. Sales and marketing expenses consist primarily of employee-related expenses, including stock-based compensation, commissions to sales representatives, amortization of acquired intangible assets and facilities expenses, including expenses associated with our regional sales and support offices. The following table compares sales and marketing expenses for the years ended December 31, 2017, 2016 and 2015:

(dollars in millions)	2017	Change	2016	Change	2015
Sales and marketing expenses	$51.4	7.1 %	$48.0	2.6 %	$46.8
Percentage of net revenues	11.9 %		12.3 %		13.6 %

Sales and marketing expenses increased in 2017 compared to 2016 primarily due primarily to the expansion of our sales force, resulting in higher salary and related expenses. Sales and marketing expenses increased in 2016 compared to 2015 primarily due to increased stock-based compensation expense related to performance-based stock awards as a result of our 2016 performance. Higher bonus and sales commissions also contributed to the 2016 increase.

General and administrative expenses. General and administrative (G&A) expenses consist primarily of employee-related expenses, including stock-based compensation expenses for administration, finance, human resources and general management, as well as consulting, professional services, legal and auditing expenses. The table below compares G&A expenses for the years ended December 31, 2017, 2016 and 2015:

(dollars in millions)	2017	Change	2016	Change	2015
G&A expenses	$36.1	9.4 %	$33.0	10.0 %	$30.0
Percentage of net revenues	8.4 %		8.5 %		8.7 %

G&A expenses increased in each of 2017 and 2016 due primarily to increased expenses related to our litigation with ON Semiconductor, as well as increased stock-based compensation expense.

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Other income. Other income consists primarily of interest income earned on cash and cash equivalents, marketable securities and other investments, and the impact of foreign exchange gains or losses. The following table compares other income for the years ended December 31, 2017, 2016 and 2015:

(dollars in millions)	2017	Change	2016	Change	2015
Other income	$2.7	146.9%	$1.1	153.6%	$0.4
Percentage of net revenues	0.6 %		0.3 %		