ALPHA & OMEGA SEMICONDUCTOR Ltd
Form 10-K
August 30, 2013
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

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FORM 10-K

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(MARK ONE)
x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended June 30, 2013
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 001-34717

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Alpha and Omega Semiconductor Limited
(Exact name of Registrant as Specified in its Charter)

| | |
|---|---|
| Bermuda | 77-0553536 |
| (State or Other Jurisdiction of Incorporation or Organization) | (I.R.S. Employer Identification Number) |
| Clarendon House, 2 Church Street<br>Hamilton HM 11, Bermuda<br>(Address of Principal Registered Offices including Zip Code) | |
| (408) 830-9742<br>(Registrant's Telephone Number, Including Area Code) | |

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

| Title of each class | Name of each exchange on which registered |
|---|---|
| Common Shares, $0.002 par value per share | The NASDAQ Global 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 o No x
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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes 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. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or smaller reporting company. See definitions of “large accelerated filer,” “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act. (Check one):

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

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

The aggregate market value of the voting shares held by non-affiliates of the registrant as of December 31, 2012 was approximately $176 million based on the closing price of the registrant's common share as reported on The NASDAQ Global Market on December 31, 2012 (the last business day of the registrant's most recently completed second quarter). The common shares of the registrant held by each executive officer and director and certain affiliated shareholders who beneficially owned 10% or more of the outstanding common stock of the registrant have been excluded in such calculation as such persons and entities may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

There were 25,666,025 shares of the registrant's common shares outstanding as of July 31, 2013.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the registrant's 2013 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K to the extent stated herein. The Definitive Proxy Statement will be filed within 120 days of the registrant's fiscal year ended June 30, 2013.

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PART I

Item 1. Business

Forward Looking Statements

This Annual Report on Form 10-K and the documents incorporated herein by reference contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are subject to the “safe harbor” created by those sections. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “intend,” “would,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “project,” “predict,” “potential” and expressions intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors, which may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. We discuss many of these risks, uncertainties and other factors in this Annual Report on Form 10-K in greater detail in Item 1A.“Risk Factors.” Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this filing. You should read this Annual Report on Form 10-K completely and with the understanding that our actual future results may be materially different from what we expect. We hereby qualify our forward-looking statements by these cautionary statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

Overview

We are a designer, developer and global supplier of a broad portfolio of power semiconductors. Our portfolio of power semiconductors includes over 1,300 products, and has grown rapidly with the introduction of over 195 new products during the fiscal year 2013, and over 240 and 190 new products in the fiscal years 2012 and 2011, respectively. Our teams of scientists and engineers have developed extensive intellectual properties and technical knowledge that encompass major aspects of power semiconductors, which we believe enables us to introduce and develop innovative products to address the increasingly complex power requirements of advanced electronics. We have an extensive patent portfolio that consists of 329 patents and 209 patent applications in the United States as of June 30, 2013. We differentiate ourselves by integrating our expertise in technology, design and advanced packaging to optimize product performance and cost. Our portfolio of products targets high-volume applications, including personal computers, flat panel TVs, LED lighting, smart phones, battery packs, consumer and industrial motor controls and power supplies for TVs, computers, servers and telecommunications equipment.

During the fiscal year ended June 30, 2013, we continued our diversification program by introducing new silicon and packaging platforms to expand our serviceable available market ("SAM") and offer higher performance products. Our metal-oxide-semiconductor field-effect transistors ("MOSFET") portfolio expanded significantly across a full range of voltage applications. In response to the rapid decline of the personal computer (“PC”) markets, we have developed new technologies and products designed to penetrate into other markets, including the consumer, communications and industrial markets. For example, for the power discrete products, since mid 2012 we have been shipping high volume of our Gen5 series low-voltage MOSFET silicon platform introduced in the September quarter of 2011. During the December quarter of 2012, we released the new high voltage AlphaMOSII MOSFET platform that features a 35% reduction of on-resistance when compared to prior-generation products. In the same quarter, we also released the XSFET technology platform to provide a high performance option to the current solutions targeting the advanced computing and high efficiency telecommunications and industrial applications. In addition, we expanded our recently developed AlphaIGBT technology platform with low power and high power products that meet the growing demand for energy efficient switching devices for motor control and power conversion applications in household appliances, renewable energy systems and advanced power supplies. We have also expanded our portfolio of medium voltage

MOSFETs with new 80V, 100V and 150V products, thus enabling a full portfolio of products that allows significant improvements in power supply efficiency. For the power IC products, we continue to expand the product family by introducing new solutions to LED lighting and LED back lighting for LCD-TV. We also released high efficiency EZBuck II Converters and our new DrMOS product family targeting Ultrabook and advanced computing.

Our business model leverages global resources, including research and development and manufacturing in the United States and Asia. Our sales and technical support teams are localized in several growing markets. We operate a 200mm wafer fabrication facility located in Hillsboro, Oregon, ("the Oregon fab") which is critical for us to accelerate proprietary technology development, new product introduction and improve our financial performance in the long run. For example, in calendar year 2012, we were able to triple the number of new technology platforms released as compared to prior years. These platforms

have allowed us to develop a new generation of low voltage MOSFET products, our Gen 5 AlphaMOS, and introduce AlphaMOSII high voltage technology and new medium voltage products. To meet the market demand for the more mature high volume products, we also utilize the wafer manufacturing capacity of selected third party foundries. For assembly and test, we primarily rely upon our in-house facilities in China. In addition, we utilize subcontracting partners for industry standard packages. We believe our in-house packaging and testing capability provides us with a competitive advantage in proprietary packaging technology, product quality, cost and cycle time.

We were incorporated in Bermuda on September 27, 2000 as an exempted limited liability company. The address of our registered office is Clarendon House, 2 Church Street, Hamilton HM 11, Bermuda. Our agent for service of process in the U.S. for the purpose of our securities filings is our Chief Executive Officer, Mike F. Chang, c/o Alpha and Omega Semiconductor Incorporated, 475 Oakmead Parkway, Sunnyvale, CA 94085. Telephone number of our agent is (408) 830-9742.

We have incorporated various wholly-owned subsidiaries in different jurisdictions. Please refer to Exhibit 21.1 for a complete list of our subsidiaries.

Our industry

Semiconductors are electronic devices that perform a variety of functions, such as converting or controlling signals, processing data and delivering or managing power. With advances in semiconductor technology, the functionality and performance of semiconductors have generally increased over time, while size and cost have generally decreased. These advances have led to a proliferation of more complex semiconductors being used in a wide variety of consumer, computing, communications and industrial markets and have contributed to the growth of the semiconductor industry.

Analog semiconductors

The semiconductor industry is segmented into analog and digital. Analog semiconductors process light, sound, motion, radio waves and electrical currents and voltages. In contrast, digital semiconductors process binary signals represented by a sequence of ones and zeros.

As a result of these fundamental differences, the analog semiconductor industry is distinct from the digital semiconductor industry in terms of the complexity of design and the length of product cycle. Improper interactions between analog circuit elements can potentially render an electronic system inoperable. Experienced engineers engaged in the design process are necessary because computer-aided design cannot fully model the behavior of analog circuitry. Therefore, experienced analog engineers with requisite knowledge are in great demand but short supply worldwide. In addition, analog semiconductors tend to have a longer product life cycle, usually three to five years, because original design manufacturers, or ODMs and original equipment manufacturers, or OEMs typically design the analog portions of a system to span multiple generations of their products. Once designed into an application, the analog portion is rarely modified because even a slight change to the analog portion can cause unexpected interactions with other components, resulting in system instability.

Power semiconductors

Power semiconductors are a subset of the analog semiconductor sector with their own set of characteristics unique to power architecture and function. Power semiconductors transfer, manage and switch electricity to deliver the appropriate amount of voltage or current to a broad range of electronic systems and also protect electronic systems from damage resulting from excessive or inadvertent electrical charges.

Power semiconductors can be either discrete devices, which typically comprise only a few transistors or diodes, or ICs, which incorporate a greater number of transistors. The function of power discretes is power delivery by switching, transferring or converting electricity. Power transistors comprise the largest segment of the power discrete market. Power ICs, sometimes referred to as power management ICs, perform power delivery and power management functions, such as controlling and regulating voltage and current and controlling power discretes.

The rapid growth of the power semiconductor market in recent years has several key drivers. The proliferation of computer and consumer electronics, such as desktop computers, notebooks, tablets, smartphones, flat panel displays and portable media players created the need for sophisticated power management to improve power efficiency and extend battery life. The evolution of these products is characterized by increased functionality, thinner or smaller form factors and decreasing prices. Our Power IC and low voltage (5-40v) MOSFET products address this market. In the area of AC-DC power supplies for electronic equipment, data centers and servers, the market is characterized by a

continuous demand for energy conservation through higher efficiency, which is driving the need for our high voltage (500-1000V) and medium voltage (40-400V) MOSFET products. The increased application of power semiconductors to control motors in white goods and industrial applications, is driving demand for Insulated Gate Bipolar Transistors, or IGBTs. IGBTs are also being used in renewable energy and automotive applications.

The evolution toward smaller form factors and complex power requirements in the low voltage areas has driven further integration in power semiconductors, resulting in power ICs that incorporate the functionalities of both power management and power delivery functions in a single device. Power ICs can be implemented by incorporating all necessary power functions either on one piece of silicon or multiple silicon chips encapsulated into a single device. Additionally, the advancement in semiconductor packaging technology enables increased power density and shrinking form factors.

Power semiconductor suppliers develop and manufacture their products using various approaches which tend to fall across a wide spectrum of balancing low-costs with proprietary technology advantages. At one end of the spectrum are integrated design manufacturers, or IDMs, which own and operate the equipment used in the manufacturing process and design and manufacture products at their in-house facilities. IDMs exercise full control over the implementation of process technologies and have maximum flexibility in setting priorities for their production and delivery schedules. At the other end of the spectrum are completely-outsourced fabless semiconductor companies, which rely entirely on off-the-shelf technologies and processes provided by their manufacturing partners. These companies seek to reduce or eliminate fixed costs by outsourcing both product manufacturing and development of process technologies to third parties. The “fab-lite” model seeks to achieve the best balance between technological advancement and cost effectiveness by using a dedicated in-house technology laboratory to drive rapid new product developments, while utilizing third-party foundry capacity for mature products. This is particularly important in the development of power semiconductor products due to the unique nature of their technology. While digital technologies are highly standardized in leading foundries, power semiconductor technologies tend to be more unique as they seek to accommodate a wider range of voltage applications. Accordingly, third-party foundries, which are primarily setup for digital technologies, can be limited when it comes to the development of new power semiconductor technologies.

Our strategies

Our strategy is to advance our position as a designer, developer and global supplier of a broad portfolio of power semiconductors utilizing a fab-lite business model.

The fab-lite business model allows us to accelerate the development of our proprietary technology at our Oregon fab, to bring new products to market faster, and improve our financial performance in the long run. We also expect this “fab-lite” model to provide quicker response to our customer demands, enhance relationships with strategic customers, provide flexibility in capacity management and geographic diversification of our wafer supply chain. This approach allows us to retain a higher level of control over the development and application of our proprietary process technology, thereby reducing certain operational risks and costs associated with utilizing third-party foundries. In recent years, the PC market has declined significantly due to the increasing popularity of tablets and smartphones. Because a significant portion of our revenue was dependent upon the PC market, such decline resulted in lower utilization of our Oregon fab and packaging facilities in China. The lower utilization had significant negative impact on our financial performance, especially gross margins. In response to this trend, we have been and are continuing to execute our strategies to diversify our product portfolio and penetrate into other market segments, including the consumer, communications and industrial markets, which we believe would mitigate and eventually overcome the reduced demand from the declining PC markets. Although we will gradually reduce our reliance on the computing market, we are also committed to continue to support our computing business and capitalize on the opportunity with a more focused PC product strategy.

The success in ramping up and integrating the Oregon fab into our operations during fiscal year 2013 has accelerated our product development. The pace has more than tripled, as compared to prior calendar years, with 6 technology platforms released, and expedited the execution of our diversification strategy. During fiscal year 2013, we introduced 101 medium and high voltage MOSFET products, targeting the consumer, communication and industrial markets, as well as 34 low voltage MOSFET products for the computing market.

We plan to further expand the breadth of our product portfolio to increase our total bill-of-materials within an electronic system and to address the power requirements of additional electronic systems. Our product portfolio currently consists of over 1,300 products and we have introduced over 195 new products in this past fiscal year. We will continue to leverage our power expertise to further increase our product lines, including higher performance power ICs, IGBTs and high and medium voltage MOSFETs, in order to expand our addressable market and improve our margin profile. We also believe that our expanding product offerings will allow us to penetrate new end-market

applications and will provide us with an important competitive advantage. OEMs and ODMs generally prefer to limit their supplier base to a smaller set of vendors capable of providing a comprehensive menu of products across multiple electronic platforms.

Leverage our power semiconductor expertise to drive new technology platforms

We believe that the ever-increasing demand for power efficiency in power semiconductors requires expertise in and a deep understanding of the interrelationship among device physics, process technologies, design and packaging. We also believe

that engineers with experience and understanding of these multiple disciplines are in great demand but short supply. Within this context, we believe that we are well positioned to be a leader in providing total power management solutions due to our extensive pool of experienced scientists and engineers and our strong IP portfolio. Accordingly, we intend to leverage our expertise to increase the number of power discrete technology platforms and power IC designs to expand our product offerings and deliver complete power solutions for our targeted applications.

Increase direct relationships and product penetration with OEM and ODM customers

We have developed direct relationships with key OEMs who are responsible for branding, designing and marketing a broad array of electronic products, as well as ODMs who have traditionally been responsible for manufacturing these products. While OEMs typically focus their design efforts on their flagship products, as the industry has evolved, ODMs are increasingly responsible for designing portions, or entire systems, of the products they manufacture for the OEMs. In addition, several ODMs are beginning to design, manufacture and brand their own proprietary products which they sell directly to consumers. We intend to strengthen our existing relationships and form new ones with both OEMs and ODMs by aligning our product development efforts with their product requirements, increasing the number of our products used within their systems, and leveraging our relationships to penetrate their other products.

Leverage global business model for cost-effective growth

We intend to continue to leverage our global resources and regional strengths. We will continue to deploy marketing, sales and technical support teams in close proximity to our end customers. We plan to further expand and align our technical marketing and application support teams along with our sales team to better understand and address the needs of our end customers and their end-market applications, in particular for those with the new technology platforms developed in this past year and in the future. This will assist us in identifying and defining new technology trends and products and to help us gain additional design wins.

Our products

To serve the large and diverse analog market for power semiconductors, we have created a broad product portfolio consisting of two major categories: power discretes and power ICs.

Our power discretes products consist primarily of low, medium and high voltage power MOSFETs. During fiscal 2012, we introduced our fifth generation low-voltage product lines based on our proprietary AlphaMOS technology, which offers increased efficiency and performance by reducing on-resistance by 56% compared to previous generations. During the December quarter of 2012, we released the new high voltage AlphaMOSII MOSFET platform that features a 35% reduction of on-resistance when compared to prior-generation products. In the same quarter, we also released the XSFET technology platform to provide a high performance option to the current solutions targeting the advanced computing and high efficiency telecommunications and industrial applications. Our mid-voltage portfolio offers high performance on-resistance and efficiency performance solutions for telecommunications and industrial power supply applications. Our high-voltage portfolio includes our proprietary insulated-gate bipolar transistor ("IGBT") technology, which we developed highly robust and easy-to-use solutions designed for industrial motor control and white goods applications.

Our power ICs deliver power as well as control and regulate the power management variables, such as the flow of current and level of voltage. We continued to expand our EZBuck power IC family with products that feature lower on-resistance, small footprint and thermally enhanced packages. While we derive the majority of our revenue from the sales of power discretes products, sales of power ICs have been gaining traction during the past years.

The following table lists our product families and the principal end uses of our products:

| Product Family | Description | Product Categories within Product Type | Typical Application |
|---|---|---|---|
| Power Discretes | Low on-resistance switch used for routing current and switching voltages in power control circuits<br>High power switches used for power circuits | DC-AC conversion<br>AC-DC conversion<br>Load switching<br>Motor control<br>Battery protection<br>Power factor correction | Notebooks, Ultrabooks, desktop and tablet PC's, servers, flat panel displays, TVs, graphics cards, game boxes, chargers, battery packs, AC adapters, power supplies, E-bikes, motor control, smart phones and other portable devices, white goods and industrial motor drives, UPS systems, wind turbines, solar inverters and industrial welding |
| Power ICs | Integrated devices used for power management and power delivery | DC-DC Buck conversion<br>DC-DC Boost conversion<br>Smart load switching | Flat panel displays, TVs, Notebooks, Ultrabooks, servers, DVD/Blu-Ray players, set-top boxes, and networking equipment |
| | Analog power devices used for circuit protection and signal switching | Transient voltage protection<br>Analog switch<br>Electromagnetic interference filter | Notebooks, Ultrabooks, desktop PCs, tablets, flat panel displays, TVs, smartphones, and portable electronic devices |

Power discrete products

Power discretes are used across a wide voltage and current spectrum, requiring them to operate efficiently and reliably under harsh conditions. Due to this wide applicability across diverse end-market applications, we market general purpose MOSFETs that are used in multiple applications as well as MOSFETs targeted for specific applications. Our current power discrete product line includes industry standard trench MOSFETs, SRFETs, XSFET, electrostatic discharge, protected MOSFETs, high and mid-voltage MOSFETs and IGBTs.

Power IC products

In addition to the traditional monolithic or single chip design, we employ a multi-chip approach for the majority of our power ICs. This multi-chip technique leverages our proprietary MOSFET and advanced packaging technologies to offer integrated solutions to our customers. This allows us to update a product by interchanging only the MOSFETs without changing the power management IC, thereby reducing the time required for new product introduction. We believe that our power IC products improve our competitive position by enabling us to provide higher power density solutions to our end customers than our competitors.

The incorporation of both power delivery and power management functions tends to make power ICs more application specific because these two functions have to be properly matched to a particular end product. We have local technical marketing and applications engineers who closely collaborate with our end customers to help ensure that power IC specifications are properly defined at the beginning of the design stage.

Distributors and customers

We have developed direct relationships with key OEMs, most of which we serve through our distributors and ODMs. They include Dell Inc., Hewlett-Packard Company, LG Electronics, Inc. and Samsung Group. We sell to Samsung Group directly which accounted for 13.0%, 13.9% and 11.5% of our revenue for the fiscal years ended June 30, 2013, 2012 and 2011, respectively. In addition, based on our historical design win activities, our power semiconductors are

also incorporated into products sold to OEMs, including Lenovo Group and Acer Group.

Through our distributors, we provide products to ODMs who traditionally are contract manufacturers for OEMs. As the industry has evolved, ODMs are increasingly responsible for designing portions, or entire systems, of the products they manufacture for the OEMs. In addition, several ODMs are beginning to design, manufacture and brand their own proprietary

products, which they sell directly to consumers. Our ODM customers include Compal Electronics, Inc., Foxconn, Quanta Computer Incorporated, Pegatron,Wistron Corporation and AOC International. In order to take advantage of the expertise of end-customer fulfillment logistics and shorter payment cycles, we sell most of our products to distributors. Under the agreements with our distributors, they have limited rights to return unsold merchandise, subject to time and volume limitations. As of June 30, 2013 and June 30, 2012, the two largest distributors of our products are WPG Holdings Limited, or WPG, and Promate Electronic Co. Ltd., or Promate. Sales to these two distributors accounted for 41.6% and 24.4% of our revenue for the fiscal year ended June 30, 2013, respectively, 40.9% and 24.0% of our revenue for the fiscal year ended June 30, 2012, respectively, and 36.7% and 30.6% of our revenue for fiscal year ended June 30, 2011, respectively.

Sales and marketing

Our marketing department is responsible for identifying high growth markets and applications where we believe our technology can be effectively deployed. We believe that the technical background of our marketing team, including technical marketing engineers, helps us better define new products and identify potential end customers and geographic and product market opportunities. For example, we have deployed and plan to recruit more for the new market segments, field application engineers, or FAEs, who provide real-time and on-the-ground responses to our end customer needs, work with our end customers to understand their requirements, resolve technical problems, strive to anticipate future customer needs and facilitate the design-in of our products into the end products of our customers. We believe this strategy increases our share of revenue opportunities within the applications we currently serve, as well as in new end-market applications.

Our sales team consisted of sales persons, field application engineers, customer service representatives and customer quality engineers who are responsible for key accounts. We strategically position our team near our end customers through our offices in Taipei, Hong Kong, Shenzhen, Shanghai, Tokyo, Seoul and Sunnyvale, California, complemented by our applications centers in Sunnyvale and Shanghai. In addition, our distributors and sales representatives assist us in our sales and marketing efforts by identifying potential customers, sourcing additional demand and promoting our products, in which case we may pay a sales commission to these distributors.

A typical sales cycle takes six to nine months and is comprised of the following steps:

- identification of a customer design opportunity;
- qualification of the design opportunity by our FAEs through comparison of the power requirements against our product portfolio;
- provision of a product sample to the end customer to be included in the customer's pre-production model with the goal of being included in the final bill of materials; and
- placement by the customer, or through its distributor, of a full production order as the end customer increases to full volume production.

Seasonality

As we provide power semiconductors used in consumer electronic products, our business is subject to seasonality. Our sales seasonality is affected by a number of factors, including global and regional economic conditions as well as the PC market conditions, revenue generated from new products, changes in distributor ordering patterns in response to channel inventory adjustments and end customer demand for our products and fluctuations in consumer purchase patterns prior to major holiday seasons. In recent periods, broad fluctuations in the semiconductor markets and the global and regional economic conditions, in particular the decline of the PC market conditions, have had a more significant impact on our results of operations than seasonality.

Backlog

Our sales are made primarily pursuant to standard purchase orders from distributors and direct customers. The amount of backlog to be shipped during any period depends on various factors, and all orders are subject to cancellation or modification, usually with no penalty to customers. The quantities actually purchased by customers, as well as shipment schedules, are frequently revised to reflect changes in both the customers' requirements and in manufacturing availability. Therefore, our backlog at any point in time is not a reliable indicator of our future revenue.

Research and development

Because we view technology as a competitive advantage, we invest heavily in research and development to address the technology intensive needs of our end customers. Our research and development expenditures primarily consist of

staff

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compensation, prototypes, engineering materials, simulation and design tools and test and analyzer equipment. Following the acquisition of the Oregon fab in 2012, we were able to accelerate the development and implementation of our proprietary process technologies, thus enhancing our research and development efforts. To execute our strategies to diversify our product portfolio and penetrate into other market segments, including the consumer, communications and industrial markets, we have significantly increased the development of new technology platforms such as AlphaIGBT and AlphaMOSII.

We have research and development employees in our Silicon Valley facility, Oregon facility, our Taiwan design center as well as our supporting centers in Shanghai. We believe that this diverse research and development talent enables us to develop leading edge technology platforms and new products. Our areas of research and development focus include:

Packaging technologies: Consumer demand for smaller and more compact electronic devices with higher power density is driving the need for advanced packaging technology. Our group of dedicated packaging engineers focuses on smaller form factor, higher power output with efficient heat dissipation and cost-effectiveness. We have invested significant resources to develop and enhance our proprietary packaging technologies, including the establishment of our in-house packaging and testing facilities. For example, we have developed co-packaging technology in which multiple chips are incorporated into a single device without bondwires, allowing higher performance levels to be achieved. We have expanded our expertise in small packages for portable applications, and recently introduced a proprietary molded chip scale package. We believe that our efforts to develop innovative packaging technologies will continue to provide new and cost-effective solutions with higher power density to our customers.

Process technology and device physics: We focus on specialized process technology in the manufacturing of our products, including vertical DMOS, Shielded Gate Trench, Trench field stop IGBTs, charge-balance high voltage MOSFETs, Schottky Diode and BCDMOS processes. Our process engineers work closely with our design team to deploy and implement our proprietary manufacturing processes at our Oregon fab as well as the third-party foundries that fabricate our wafers. To improve our process technology, we continue to develop and enhance our expertise in device physics in order to better understand the physical characteristics of materials and the interactions among these materials during the manufacturing process.

New products and new technology platforms: We also invest significantly in the development of new technology platforms and introduction of new products. Because power management affects all electronic systems, we believe that developing a wide portfolio of products enables us to target new applications in addition to expanding our share of power management needs served within existing applications. For example, for the power discrete products, in the September quarter of 2011, we introduced our Gen5 series low-voltage MOSFET silicon platform, especially in the consumer and computing markets. During the December quarter of 2012, we released the new high voltage AlphaMOSII MOSFET platform that features a 35% reduction of on-resistance when compared to prior-generation products. In the same quarter, we also released the XSFET technology platform to provide a high performance option to the current solutions targeting the advanced computing and high efficiency telecommunications and industrial applications. In addition, we expanded our recently developed AlphaIGBT technology platform with low power and high power products that meet the growing demand for energy efficient switching devices for motor control and power conversion applications in household appliances, renewable energy systems and advanced power supplies. We have also expanded our portfolio of medium voltage MOSFETs with new 80V, 100V and 150V products, thus enabling a full portfolio of products that allows significant improvements in power supply efficiency. For the power IC products, we continue to expand the product family by introducing new solutions to LED lighting and LED back lighting for LCD-TV. We also released high efficiency EZBuck II Converters and our new DrMOS product family targeting Ultrabook and advanced computing.

As a technology company, we will continue our significant investment in research and development in our low voltage and high voltage power discretes and power ICs by developing new technology platforms and new products that allow for better product performance, more efficient packages and higher levels of integration.

Operations

The manufacture of our products is divided into two major steps: wafer fabrication and packaging and testing. Our wafer fabrication requirements are currently allocated between our Oregon fab and third-party foundries. Our in-house

packaging and testing facilities handle most of our packaging and testing needs. We outsource a small portion of our packaging and testing requirements to other contract manufacturers.

Wafer fabrication

We have transitioned from a fabless to a “fab-lite” business model through the acquisition of the Oregon fab in January 2012. We believe our Oregon fab allows us to accelerate the development of our technology and products, as well as to provide better services to our customers. We allocate our wafer production between our in-house facility and third-party foundries. Currently our main third-party foundry is Shanghai Hua Hong NEC Electronic Company Limited, or HHNEC, located in

Shanghai. HHNEC has been manufacturing wafers for us since 2002. HHNEC manufactured 37.7%, 49.9% and 68.7% of the wafers used in our products for the fiscal years ended June 30, 2013, 2012 and 2011, respectively.

Packaging and testing

Completed wafers from the foundries are sent to our in-house packaging and testing facilities or to our subcontractors, where the wafers are cut into individual die, soldered to lead frames, wired to terminals and then encapsulated in protective packaging. After packaging, all devices are tested in accordance with our specifications and substandard or defective devices are rejected. We have established quality assurance procedures that are intended to control quality throughout the manufacturing process, including qualifying new parts for production at each packaging facility, conducting root cause analysis, testing for lots with process defects and implementing containment and preventive actions. The final tested products are then shipped to our distributors or customers.

Our in-house packaging and testing facilities are located in Shanghai, China which handle most of our packaging and testing requirements for our products. Our facilities have the combined capacity to package and test over 600 million parts per month and have available floor space for new package introductions. We believe our ability to package and test our products internally represents a strategic advantage as it protects our proprietary packaging technology, increases the rate of new package introductions, reduces operating expenses and ultimately improves our profit margins.

Quality assurance

Our quality assurance practices aim to consistently provide our end customers with products that are reliable, durable and free of defects. We strive to do so through continuous improvement in our product design and manufacturing and close collaboration with our manufacturing partners. Our manufacturing operations in China received ISO9001 Quality Management System certification in February 2004 in recognition of our quality assurance standards and we have maintained certification to the ISO 9001 standard. Our manufacturing facility in Oregon is also certified to the ISO 9001 standard. ISO9001 is a set of criteria and procedures established by International Organization of Standardization for developing a fundamental quality management system and focusing on continuous improvement, defect prevention and the reduction of variation and waste. We also offer lead-free products in order to comply with Restrictions on the use of Hazardous Substances, or RoHS.

We maintain a supplier management and process engineering team in Shanghai that works with our third-party foundries and packaging and testing subcontractors to monitor the quality of our products, which is designed to ensure that manufacturing of our products, is in strict compliance with our process control, monitoring procedures and product requirements. We also conduct monthly reviews and annual audits to ensure supplier performance. For example, we examine the results of statistical process control systems, implement preventive maintenance, verify the status of quality improvement projects and review delivery time metrics. In addition, we rate and rank each of our suppliers every quarter based on factors such as their quality and performance. Our facility in Oregon integrates manufacturing process controls through our manufacturing execution system coupled with wafer process controls that include monitoring procedures, preventative maintenance, statistical process control, and testing to ensure that finished wafers delivered will meet and exceed quality and reliability requirements. All materials used to manufacture wafers are controlled through a strict qualification process.

Our manufacturing processes use many raw materials, including silicon wafers, gold, copper, molding compound, petroleum and plastic materials and various chemicals and gases. We obtain our raw materials and supplies from a large number of sources. Although supplies for the raw materials used by us are currently adequate, shortages could occur in various essential materials due to interruption of supply or increased demand in the industry.

Competition

The power semiconductor industry is characterized by fragmentation with many competitors. We compete with different power semiconductor suppliers, depending on the type of product lines and geographical area. Our key competitors in power discretes and power ICs are primarily headquartered in the United States, Japan, Europe and Taiwan. Our major competitors in power discretes include Fairchild Semiconductor International, Inc., Infineon Technologies AG, International Rectifier Corporation, MagnaChip Semiconductor Corporation, ON Semiconductor Corp., Renesas Technology Corp., STMicroelectronics N.V., Toshiba Corporation, Diodes Incorporated and Vishay

Intertechnology, Inc. Our major competitors for our power ICs include Global Mixed-mode Technology Inc., Monolithic Power Systems, Inc., Richtek Technology Corp., Semtech Corporation and Texas Instruments Inc. Our ability to compete depends on a number of factors, including:

- our success in expanding and diversifying our serviceable markets, and our ability to develop technologies and product solutions for these markets;

- our capability in quickly developing and introducing proprietary technology and best in class products;
- the performance and cost-effectiveness of our products relative to that of our competitors;
- our ability to manufacture, package and deliver products in large volume on a timely basis at a competitive price;
- our success in utilizing new and proprietary technologies to offer products and features previously not available in the marketplace;
- our ability to recruit and retain analog semiconductor designers and application engineers; and
- our ability to protect our intellectual property.

Some of our competitors have longer operating histories, more brand recognition, and significantly greater financial, technical, research and development, sales and marketing, manufacturing and other resources. However, we believe that we can compete effectively through our integrated and innovative technology platform and design capabilities, including our multi-chip approach to power IC products, strategic global business model, expanding portfolio of products, diversified and broad customer base, and excellent on-the-ground support and quick time to market for our products.

Intellectual property rights

Intellectual property is an important component of our business strategy, and we intend to continue to invest in the growth, maintenance and protection of our intellectual property portfolio. We own significant intellectual property in many aspects of our technology, including device physics and structure, wafer processes, circuit designs, packaging, modules and subassemblies. We have also entered into intellectual property licensing agreements with other companies, including Fairchild Semiconductor International, Inc. and Giant Semiconductor Corporation, to use selected third-party technology for the development of our products, although we do not believe our business is dependent to any significant degree on any individual third-party license.

While we focus our patent efforts in the United States, we file corresponding foreign patent applications in other jurisdictions, such as China and Taiwan, when filing is justified by cost and strategic importance. The patents are increasingly important to remain competitive in our industry, and a strong patent portfolio will facilitate the entry of our products into new markets. As of June 30, 2013, we had 329 patents issued in the United States, of which 39 were acquired, 2 were licensed and 288 were based on our research and development efforts, and these patents are set to expire between 2015 and 2031. We also had a total of 195 foreign patents, including 121 Chinese patents, 67 Taiwanese patents, 6 Korean patents and 1 Japanese patent as of June 30, 2013. Substantially all of our foreign patents were based on our research and development efforts. These foreign patents expire in the years between 2015 and 2030. In addition, as of June 30, 2013, we had a total of 605 patent applications, out of which 209 patents were pending in the United States, 186 patents were pending in China, 198 patents were pending in Taiwan and 12 patents were pending in other countries.

As our technologies are deployed in new applications, we may be subject to new potential infringement claims. Patent litigation, if and when instituted against us, could result in substantial costs and a diversion of our management's attention and resources. However, we are committed to vigorously defending and protecting our investment in our intellectual property. Therefore, the strength of our intellectual property program, including the breadth and depth of our portfolio, will be critical to our success in the new markets we intend to pursue.

In addition to patent protection, we also rely on a combination of trademark, copyright (including mask work protection), trade secret laws, contractual provisions and similar laws in other jurisdictions. We also enter into confidentiality and invention assignment agreements with our employees, consultants, suppliers, distributors and customers and seek to control access to, and distribution of, our proprietary information.

Environmental matters

The semiconductor production process, including the semiconductor wafer manufacturing and packaging process, generates air emissions, liquid wastes, waste water and other industrial wastes. We have installed various types of pollution control equipment for the treatment of air emissions and liquid waste and equipment for recycling and treatment of water in our packaging and testing facilities in China and wafer manufacturing facility in Oregon, USA. Waste generated at our manufacturing facilities, including but not limited to acid waste, alkaline waste, flammable

waste, toxic waste, oxide waste and self-igniting waste, is collected and sorted for proper disposal. Our operations in China are subject to regulation and periodic monitoring by China's State Environmental Protection Bureau, as well as local environmental protection authorities, including those under the Shanghai Municipal Government, which may in some cases establish stricter standards than those imposed by

the State Environmental Protection Bureau. Our operation in Oregon is subject to Oregon Department of Environmental Regulations, Federal Environmental Protection Agency laws and regulations, and local jurisdictional regulations. We believe that we have