AMKOR TECHNOLOGY INC
Form 10-K
February 28, 2014

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K
ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For the Fiscal Year Ended December 31, 2013
Commission File Number 000-29472
Amkor Technology, Inc.
(Exact name of registrant as specified in its charter)

| Delaware<br>(State of incorporation) | 23-1722724<br>(I.R.S. Employer<br>Identification Number) |
|---|---|

1900 South Price Road
Chandler, AZ 85286
(480) 821-5000
(Address of principal executive offices and zip 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 o   No þ
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 þ
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.  Yes þ   No 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 þ   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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

| Large accelerated filer o | Accelerated filer þ | Non-accelerated filer o<br>(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 þ
The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2013, based upon the closing price of the common stock as reported by the NASDAQ Global Select Market on that date, was approximately $330.5 million.

The number of shares outstanding of each of the issuer's classes of common equity, as of January 31, 2014, was as follows: 217,901,240 shares of Common Stock, $0.001 par value.

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of the registrant's Proxy Statement relating to its 2014 Annual Meeting of Stockholders, to be filed subsequently, are incorporated by reference into Part III of this Report where indicated.

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All references in this Annual Report on Form 10-K to "Amkor," "we," "us," "our" or the "company" are to Amkor Technology Inc. and its subsidiaries. We refer to the Republic of Korea, which is also commonly known as South Korea, as "Korea". All references to "J-Devices" and "Toshiba" are to J-Devices Corporation and Toshiba Corporation, respectively. Amounts preceded by are in Korean won, and amounts preceded by ¥ are in Japanese yen. Amkor®, Amkor Technology®, ChipArray®, FlipStack®, FusionQuad®, MicroLeadFrame® and TMV® are registered trademarks of Amkor Technology, Inc. All other trademarks appearing herein are held by their respective owners. Subsequent use of the above registered trademarks in this report may occur without the respective superscript symbol (®) in order to facilitate the readability of the report and are not a waiver of any rights that may be associated with the relevant trademarks.

This report contains forward-looking statements within the meaning of the federal securities laws, including but not limited to statements regarding: (1) the amount, timing and focus of our expected capital investments in 2014 including expenditures in support of customer demand in the mobile communications market and expenditures related to our new factory and research and development facility in Korea, (2) our ability to fund our operating activities for the next twelve months, (3)

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the effect of changes in capacity utilization on our gross margin, (4) the focus of our research and development activities, (5) the expiration of tax holidays in jurisdictions in which we operate and expectations regarding our effective tax rate, (6) the release of valuation allowances related to taxes in the future, (7) our repurchase or repayment of outstanding debt or the conversion of debt in the future, (8) payment of dividends, (9) compliance with our covenants, (10) expected contributions to foreign pension plans, (11) liability for unrecognized tax benefits, (12) the effect of foreign currency exchange rate exposure on our financial results, (13) the volatility of the trading price of our common stock, (14) changes to our internal controls related to integration of acquired operations and implementation of our enterprise resource planning ("ERP") system and other systems, (15) our view of the outcome of our dispute with Tessera and our estimates regarding the possible amount of, and funding for, any payments due in conjunction with such dispute, (16) the anticipated schedule for construction of our new factory and research and development facility in Korea, (17) our plan to increase our ownership of J-Devices and consolidation of J-Devices' results into our consolidated financial statements, (18) our expected forfeiture rate for outstanding stock options and restricted shares, (19) our expected rate of return for pension plan assets and (20) other statements that are not historical facts. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "expects," "plans," "anticipates," "believes," "estimates," "predicts," "potential," "continue," "intend" or the negative of these terms or other comp terminology. Because such statements include risks and uncertainties, actual results may differ materially from those anticipated in such forward-looking statements as a result of various factors, including those set forth in the following report as well as in Part I, Item 1A of this Annual Report on Form 10-K.

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PART I

Item 1. Business

OVERVIEW

Amkor is one of the world's leading providers of outsourced semiconductor packaging and test services. Amkor pioneered the outsourcing of semiconductor packaging and test services through a predecessor corporation in 1968, and over the years we have built a leading position by:

- Designing and developing innovative packaging and test technologies;
- Offering a broad portfolio of cost-effective solutions and services;
- Successfully penetrating strategic end markets which offer solid growth prospects;
- Cultivating long-standing relationships with our customers, which include many of the world's leading semiconductor companies;
- Collaborating with customers, original equipment manufacturers ("OEMs") and equipment and material suppliers;
- Developing a competitive cost structure with disciplined capital investment;
- Building expertise in high-volume manufacturing processes and developing a reputation for high quality and solid execution and
- Having a diversified operational scope with research and development, engineering and production capabilities at various facilities throughout China, Japan, Korea, Malaysia, the Philippines and Taiwan.

Our packaging and test services are designed to meet application and chip specific requirements including the type of interconnect technology employed; size; thickness and electrical, mechanical and thermal performance. We are able to provide turnkey packaging and test services including semiconductor wafer bump, wafer probe, wafer backgrind, package design, packaging, test and drop shipment services. Our customers will use us for one or more of these services.

We provide our services to integrated device manufacturers ("IDMs"), "fabless" semiconductor companies and contract foundries. IDMs generally design, manufacture, package and test semiconductors in their own facilities. However, the availability of technologically advanced outsourced manufacturing services has encouraged IDMs to increasingly outsource their manufacturing service needs. Fabless semiconductor companies do not have factories and focus exclusively on the semiconductor design process and outsource virtually every step of the manufacturing process. Fabless semiconductor companies utilize contract foundries to manufacture their semiconductors in wafer form, and companies such as Amkor for their packaging and test needs. Some companies will engage a contract foundry to manage the complete semiconductor manufacturing process, and in turn, the contract foundry will outsource some of its packaging and test needs.

Our IDM customers include: Intel Corporation; Micron Technology, Inc.; STMicroelectronics N.V.; Texas Instruments Incorporated and Toshiba Corporation. Our fabless customers include: Altera Corporation; Broadcom Corporation; LSI Corporation and Qualcomm Incorporated. Our contract foundry customers include: GlobalFoundries Inc. and Taiwan Semiconductor Manufacturing Company Limited.

AVAILABLE INFORMATION

Amkor files annual, quarterly and current reports, proxy statements and other information with the U.S. Securities and Exchange Commission (the "SEC"). You may read and copy any document we file at the SEC's Public Reference Room, 100 F Street, NE, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for information on the Public Reference Room. The SEC maintains a web site that contains annual, quarterly and current reports, proxy statements and other information that issuers (including Amkor) file electronically with the SEC. The SEC's web site is

http://www.sec.gov.

Amkor's web site is http://www.amkor.com. Amkor makes available free of charge through its web site, our annual reports on Form 10-K; quarterly reports on Form 10-Q; current reports on Form 8-K; Forms 3, 4 and 5 filed on behalf of directors



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and executive officers and any amendments to those reports filed or furnished pursuant to the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. We also make available, free of charge, through our web site, our Corporate Governance Guidelines, the charters of the Audit Committee, Nominating and Governance Committee and Compensation Committee of our Board of Directors, our Code of Business Conduct, our Code of Ethics for Directors and other information and materials. The information on Amkor's web site is not incorporated by reference into this report.

## INDUSTRY BACKGROUND

Semiconductor devices are the essential building blocks used in most electronic products. As electronic and semiconductor devices have evolved, several important trends have emerged that have fueled the growth of the overall semiconductor industry, as well as the market for outsourced semiconductor packaging and test services. These trends include:

- An increasing demand for mobile and internet-connected devices, including world-wide adoption of mobile "smart" phones and tablets that can access the web and provide multimedia capabilities. The demand for digital video content has driven a range of higher performance internet connected home and mobile consumer electronics products including the rapidly growing smartphone and tablet categories.
- An increase in mobility and connectivity capabilities and growing digital content driving demand for new broadband wired and wireless networking equipment.
- The proliferation of semiconductor devices into well established end products such as automotive systems due to increased use of electronics for safety, navigation, fuel efficiency, emission reduction and entertainment systems.
- An overall increase in the semiconductor content within electronic products to provide greater functionality and higher levels of performance.

Our business is impacted by market conditions in the semiconductor industry, which is cyclical by nature and impacted by broad economic factors, such as world-wide gross domestic product and consumer spending. Historical trends indicate there has been a strong correlation between world-wide gross domestic product levels, consumer spending and semiconductor industry cycles.

### Outsourcing Trends in Semiconductor Manufacturing

Semiconductor companies outsource their packaging and test needs to service providers such as Amkor for the following reasons:

Packaging and test service providers have developed expertise in advanced technologies.

Semiconductor packaging and test technologies continue to become more sophisticated, complex and customized due to increasing demands for miniaturization, greater functionality and improved thermal and electrical performance. This trend has led many semiconductor companies and OEMs to view packaging and test as enabling technologies requiring sophisticated expertise and technological innovation. Many of these companies are also relying on packaging and test service providers as key sources for new package designs and advanced interconnect technologies, thereby enabling them to reduce their internal research and development costs.

Packaging and test service providers offer a cost effective solution in a highly cyclical, capital intensive industry.

The semiconductor industry is cyclical by nature and impacted by broad economic factors, such as changes in world-wide gross domestic product and consumer spending. Semiconductor packaging and test are complex processes requiring substantial investment in specialized equipment, factories and human resources. As a result of this cyclicality and the large investments required, manufacturing facilities must operate at consistently high levels of utilization to be cost effective. Shorter product life cycles, coupled with the need to update or replace packaging and

test equipment to accommodate new package types, make it more difficult for integrated semiconductor companies to maintain cost effective utilization of their packaging and test assets throughout semiconductor industry cycles. Packaging and test service providers, on the other hand, can typically use their assets to support a broad range of customers, potentially generating more efficient use of their production assets and a more cost effective solution.

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Packaging and test service providers can facilitate a more efficient supply chain and help shorten time-to-market for new products.

We believe that semiconductor companies, together with their customers, are seeking to shorten the time-to-market for their new products, and that having an effective supply chain is a critical factor in facilitating timely and successful product introductions. Packaging and test service providers have the resources and expertise to timely develop their capabilities and implement new packaging technology in volume. For this reason, semiconductor companies and OEMs are leveraging capabilities of packaging and test service providers to deliver their new products to market more quickly.

High quality packaging and test service providers enable semiconductor manufacturers to focus their resources on semiconductor design and wafer fabrication.

As semiconductor process technology migrates to larger wafers and smaller feature sizes, the cost of building a state-of-the-art wafer fabrication factory has risen significantly and can now be several billions of dollars. The high cost of investing in next generation silicon technology and equipment is causing many semiconductor companies to adopt or maintain a “fabless” or “fab-lite” strategy to reduce or eliminate their investment in wafer fabrication and associated packaging and test operations. As a result, these companies are increasing their reliance on outsourced providers of semiconductor manufacturing services, including packaging and test.

## STRATEGY AND COMPETITIVE STRENGTHS

### Strategy

Our financial goals are sales growth and improved profitability, and we are focusing on the following strategies to achieve these goals:

#### Leverage Our Investment in Services for Advanced Technologies

We are an industry leader in developing and commercializing cost-effective advanced packaging and test technologies. These technologies provide increased value to our customers while typically generating gross margins above the corporate average. This is particularly true in the mobile device market, where growth has outpaced the industry rate. The key to success in the advanced packaging and test area is to generate reasonably quick returns on investments made for customers seeking leading edge technologies.

In recent years we have invested hundreds of millions of dollars on state-of-the-art facilities and equipment to provide services for the industry’s most complex devices. With approximately 400 employees engaged in research and development focusing on the design and development of new semiconductor packaging and test technologies, we have achieved technology leadership in areas such as fine pitch bumping, advanced flip chip and wafer-level processing. During 2013, we had success capitalizing on our advanced technology to achieve design wins and new product introductions in areas such as chips fabricated at 20 nanometer geometries, fingerprint sensors and NAND memory. We are also making substantial progress with 2.5D and 3D interconnect solutions that stack multiple active chips in a single package, as we work closely with our customers to develop cost-effective leading-edge packages for the next generation of devices.

We believe that the value added by advanced packaging services will continue to grow as our customers and leading electronics OEMs strive for smaller device geometries, higher levels of speed and performance and lower power consumption. We intend to continue to leverage our investment in advanced technology to meet the demand for these services.

Improve Utilization of Existing Assets

Another key to our success is to improve the utilization of our existing assets. The transition by leading edge customers to newer packaging and test equipment and platforms typically creates capacity to provide incremental packaging and test services without significant additional investment. As part of our strategy, we are focused on developing a second wave of customers for these assets. For example, we have a concerted effort to increase our sales to Chinese and Taiwanese fabless

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chip companies, since they dominate the mid-tier and entry-level segments of the mobile device market where most of the growth is occurring.

Also in 2013, we began efforts to seek out and engage new customers in the analog area for our mainstream wirebond technologies. Another area of expanded emphasis is the automotive market where semiconductor content continues to grow. These efforts to enlarge our customer base will increase in 2014 as we target these and other customers to grow our revenue and improve the utilization of our existing assets.

Selectively Grow Our Scale and Scope through Strategic Investments

From time to time we see attractive opportunities to grow our customer base and expand markets. For example, in 2009 we invested in J-Devices Corporation, a joint venture to provide semiconductor packaging and test services in Japan. In 2013, we increased our investment in J-Devices to 60%. Together with J-Devices, we are pursuing a consolidate and fill strategy with IDM customers in Japan, and we believe our increasing engagement with J-Devices will improve our revenues, particularly in the automotive market. In 2013, we acquired Toshiba's power discrete semiconductor packaging and test factory in Malaysia. In addition to adding a new revenue stream from our existing customer, Toshiba, we expect this acquisition to attract new customers.

We believe that selective growth through joint ventures, acquisitions and other strategic investments can help diversify our revenue streams, improve our profits and continue our technological leadership. We expect to continue to evaluate these types of opportunities in 2014.

Competitive Strengths

The outsourced semiconductor packaging and test market is very competitive. We also compete with the internal semiconductor packaging and test capabilities of many of our customers. We believe we are well-positioned in the outsourced packaging and test services market. The following competitive strengths allow us to build upon our industry position and to remain one of the preferred providers of semiconductor packaging and test services.

Leading Technology Innovator

We are a leader in developing advanced semiconductor packaging and test solutions. We have designed and developed several state-of-the-art package formats and technologies including our Package-on-Package ("PoP") platform with Through Mold Via ("TMV") technology, FusionQuad, flip chip ball grid array, multi-chip modules with a silicon interposer placed between the module chips and substrate, copper pillar bumping and fine pitch copper pillar flip chip packaging technologies. In addition, we believe that as semiconductor technology continues to achieve smaller device geometries with higher levels of speed and performance, packages will increasingly require flip chip and three dimensional or "3D" interconnect solutions that stack multiple active chips in a single package. We have been investing in our technology leadership in electroplated wafer bumping, wafer-level processing and 3D packaging technologies. We have also been a leader in developing environmentally friendly integrated circuit packaging, which involves the elimination of lead and certain other materials.

In the area of 3D packaging, we have been a market and technology leader in both stacked die, such as stacked chip scale packages and FlipStack, and stacked package technologies such as PoP and TMV. The semiconductor industry is now in a period of 3D packaging development where Through Silicon Via ("TSV") interconnect technology will be used to create 3D integrated circuits. An alternative approach to full 3D stacking is to place active die on a passive silicon interposer, which in turn is placed on the package substrate. The use of a silicon interposer is often referred to as a "2.5D" packaging solution. We continue to invest in developing the key processes and packaging and test technologies required for our customers to deliver 2.5D and 3D solutions to market. We are a leader in wafer thinning,

micro-bumping and TSV-based flip chip stacking technologies, and we are leveraging our technology development relationships with key customers in diverse applications to develop and deploy new 2.5D and 3D packaging and test solutions with high density TSV interconnections.

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Long-Standing Relationships and Collaboration with Prominent Semiconductor Companies

Our customers include most of the world's largest semiconductor companies and over the last four decades, we have developed long-standing relationships with many of these companies. We believe that our production excellence has been a key factor in our success in attracting and retaining customers. We work with our customers and our suppliers to develop proprietary process technologies to enhance our existing capabilities, reduce time-to-market, increase quality and lower costs.

We believe that our focus on research and product development will enable us to enter new markets early, capture market share and promote the adoption of our new package designs as industry standards. We collaborate with customers and leading OEMs to develop comprehensive packaging solutions that make it easier for next-generation semiconductors to be designed into next-generation end products. By collaborating with leading semiconductor companies and OEM electronic companies, we gain access to technology roadmaps for next generation semiconductor designs and obtain the opportunity to develop new packages that satisfy their future requirements.

Broad Offering of Semiconductor Package Design, Packaging and Test Services

Creating successful interconnect solutions for advanced semiconductor devices often poses unique thermal, electrical and mechanical design challenges, and we employ a large number of engineers to solve these challenges. We provide services for more than 1,000 unique products, representing one of the broadest package offerings in the semiconductor industry. This wide variety of packaging offerings is necessary to meet the diverse needs of our customers for the optimal combination of performance, size and cost attributes. Our solutions enable our customers to focus on semiconductor design and wafer fabrication while utilizing Amkor as their turnkey design and manufacturing provider and, in many cases, their packaging technology innovator.

We also offer an extensive line of advanced probe and final test services for analog, digital, logic, mixed signal and radio frequency semiconductor devices. We believe that the breadth of our design, packaging and test services is important to customers seeking to limit the number of their suppliers.

Geographically Diversified Operational Base

We have a broad and geographically diversified operational footprint of six million square feet of space strategically located in six countries in many of the world's important electronics manufacturing regions. We believe that our scale and scope allow us to provide cost effective solutions to our customers by:

- Offering capacity to absorb large orders and accommodate quick turn-around times;
- Obtaining favorable pricing on materials and equipment, where possible, by using our purchasing power and leading industry position;
- Qualifying production of customer devices at multiple manufacturing sites to mitigate the risks of supply disruptions and
- Providing capabilities and solutions for customer-specific requirements.

Competitive Cost Structure and Disciplined Capital Investment

There has been a continuous push throughout the entire semiconductor supply chain for lower cost solutions. A competitive cost structure and disciplined capital investment decisions enable us to provide cost-competitive solutions while achieving profitability and generating cash flow. Some of our cost control efforts have included: (1) increasing strip densities to drive higher throughput; (2) migrating from capillary underfill to molded underfill; (3) developing thinner and shorter gold wire solutions; (4) migrating from gold wire to copper wire for certain wirebond packages; (5) reducing test cycle times and (6) increasing labor productivity.

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We operate in a cyclical industry. During an industry downturn we seek to reduce our costs and drive greater factory and administrative efficiencies. Cost control efforts can include reducing labor costs by temporarily lowering compensation, reducing employee and contractor headcount, shortening work weeks and obtaining labor-related foreign government subsidies where available.

## PACKAGING AND TEST SERVICES

### Overview of Semiconductor Manufacturing Process

In general, the semiconductor manufacturing process consists of integrated circuit design, wafer fabrication, wafer probe, packaging and final test.

Integrated circuit design involves the laying out of electronic components, such as transistors, resistors, capacitors and the metallic interconnect of these components, to achieve the desired device functionality. Wafer fabrication is a multiple-step sequence of photolithographic and chemical processing steps during which the integrated circuits are gradually created on semiconductor material, typically a silicon wafer. Individual integrated circuits are generally known as a “chip” or “die”, and a single wafer will contain many die. Wafers are fabricated by two types of companies - IDMs which design and fabricate wafers using their own in-house manufacturing facilities, and contract foundries which manufacture wafers that are designed by fabless companies or other customers.

The packaging and test services we provide occur subsequent to wafer fabrication. The wafers that we receive from our customers are generally consigned to us; we do not own the consigned wafers or record their value in our financial statements. During wafer probe, each individual die is electrically tested, or probed, for defects. Packaging is the processing of bare die to facilitate electrical connections and heat dissipation and protect the die. The wafer is separated into individual die. Each good die is then assembled into a package that typically encapsulates the die for protection and creates the electrical connections used to connect the package to a printed circuit board, module or other part of the electronic device. In some packages, chips are attached to a substrate or leadframe carrier through wirebonding or flip chip interconnects and then encased in a protective material. Or, for a wafer-level package, the electrical interconnections are created directly on the surface of the die (while the wafer is still intact) so that the chip may be attached directly to other parts of an electronic device without a substrate or leadframe. The packages are then tested using sophisticated equipment to ensure that each packaged chip meets its design and performance specifications.

### Packaging and Test Technologies and Processes

Our packages employ wirebond, flip chip and copper clip interconnect technologies. We use leadframe and substrate package carriers, and we perform a variety of test services.

#### Interconnect Technologies

Wirebond:  In packages that employ wirebond interconnect technology, the die is mounted face up on the package carrier and the interconnections between the die and package carrier are made through very fine gold, silver or copper wires which are attached from the bond pads of the die to the package carrier. Wirebonding is generally considered to be the most cost-effective and flexible interconnect technology and is used to assemble the majority of semiconductor packages.

Flip Chip:  In packages that employ flip chip interconnect technology, the interconnections between the die and package carrier are made through conductive “bumps” that are placed directly on the die surface utilizing a process called wafer bumping. The bumped die is then “flipped over” and placed face down, with the bumps connecting directly

to the package carrier. Flip chip allows a higher number of interconnects than wirebond as it uses the entire surface area of the die, and sometimes the perimeter as well, instead of just the perimeter as used by most wirebond packages. Flip chip also provides enhanced thermal and electrical performance, and enables smaller die and thinner, smaller form factors (or physical package dimensions).

The wafer bumping process consists of preparing the wafer for bumping and forming or placing the bumps. Preparation may include cleaning, removing insulating oxides and providing a pad metallurgy that will protect the interconnections while making good mechanical and electrical connection between the bump and the wafer.

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Copper Clip: Copper clip interconnect technology uses a solid copper bridge or "clip" to connect the die to the package carrier. The clip allows a higher level of current flow than a wire and also provides a better method of heat transfer from the die. The clip is either spot welded, or more often re-flow soldered, to the die pads and the package carrier pads.

Package Carriers

Leadframe: A leadframe is a miniature sheet of metal, generally made of copper and silver alloys, on which a pattern of electrical connections (or "leads") has been cut. The leads are generally placed around the perimeter of the leadframe and are used to connect the package to the system board. The number of leads on an individual leadframe is limited as electrical shorting can occur if the leads are placed too close together.

Substrate: A substrate is a laminate of multiple layers of epoxy resin, woven glass fibers and metal conductors. Bumps provide the electrical connection to the system board. The bumps are typically distributed evenly across the bottom surface of the substrate (called a "ball grid array" format). This allows greater distance between individual leads and a higher number of interconnects than leadframe packages.

Test Services

Amkor provides a complete range of semiconductor testing services including wafer testing or probe and final test. We offer a full range of test software, hardware, integration and product engineering services, and we support a range of business models and test capabilities. Substantially all of our test business is derived from testing packages that we assemble.

Wafer Test Services: Wafer test, also referred to as wafer probe, is performed after wafer fabrication or wafer bumping to screen out defective devices prior to packaging. We offer a range of wafer test coverage that can be tailored based on the cost and complexity of the die, the package and the product. These services range from coarse level screening for major defects all the way up to probing at high digital speeds and can include full radio frequency transmit and receive as well as testing at multiple temperatures. Wafer testing can also involve a range of wafer mapping and inspection operations.

Final Test Services: After the packaging process, final test is performed to ensure that the packaged device meets the customer's requirements. Final test spans a range of rigor and complexity depending on the device and end market application. More rigorous types of final test include testing multiple times under different electrical and temperature conditions and before and after device reliability stresses, such as burn-in. In addition to electrical testing, specialized solutions are required for packages that also process non-electric stimuli.

The electrical tests are a mix of functional, structural and system-level tests depending on the customer's requirements and cost and reliability parameters. The electrical test equipment we use includes commercially available automated test equipment, customized and proprietary system level test equipment and innovative types of low cost test equipment developed by Amkor.

Advanced Products and Mainstream Products

We offer a broad range of advanced and mainstream packaging and test services to our customers. We refer to our flip chip, wafer-level processing and related test services as "Advanced Products", and our wirebond packaging and related test services as "Mainstream Products". The following table sets forth, for the periods indicated, the amount of advanced and mainstream packaging and test net sales and the percentage of such net sales:

Year Ended December 31,

| | 2013 | | | 2012 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (In millions, except percentage of net sales) | | | | | | | | |
| Advanced products | $1,451 | 49.1 | % | $1,302 | 47.2 | % | $1,125 | 40.5 | % |
| Mainstream products | 1,505 | 50.9 | % | 1,458 | 52.8 | % | 1,651 | 59.5 | % |
| Total net sales | $2,956 | 100.0 | % | $2,760 | 100.0 | % | $2,776 | 100.0 | % |

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Advanced Products

Our advanced packages consist of flip chip chip scale packages, and flip chip ball grid array packages. These package families use flip chip interconnect technology to connect a die to a substrate package carrier.

Flip Chip Chip Scale Package (FC CSP) Products: FC CSP packages are small form factor packages where the substrate size is not much larger than the die itself. The size advantage provided by chip scale packaging technologies has made FC CSP the package of choice for a wide variety of applications that require very small form factors such as wireless handsets and mobile consumer electronic devices.

Flip chip stacked chip scale (FC SCSP) packages stack a second die on top of the original die in a FC CSP package. The top die is typically memory, and wirebond interconnects are used to attach it to the substrate. FC SCSP is frequently used to stack memory on top of digital baseband and applications processors for use in mobile devices.

We developed fine pitch copper pillar flip chip interconnect technology which creates interconnections at finer pitches using a packaging process to reduce the number of substrate layers to facilitate very thin packages. This innovative solution is also an enabling technology for 2.5D and 3D package stacking with TSVs.

Wafer-level chip scale packages (WL CSP) do not utilize a package carrier. The bumped wafer is singulated into individual die, and the wafer-level package is then attached directly to the system board. WL CSP offers one of the lowest total system costs, enabling higher semiconductor content while leveraging the smallest form factor and one of the highest performing, most reliable, semiconductor package platforms on the market today. We have seen significant growth in our WL CSP business, particularly for power management, radio frequency, and integrated connectivity applications.

Flip Chip Ball Grid Array (FC BGA) Products: FC BGA packages are large form factor substrate-based packages which are used where processing power and speed are needed, and small form factors are not required. Our FC BGA packages are assembled around state-of-the-art substrates. Utilizing multiple high density routing layers, laser drilled vias, and ultra-fine line and space metallization, FC BGA substrates have the highest routing density available. The variety of FC BGA package options allows package selection to be tailored to the specific thermal needs of the end product. We offer FC BGA packaging in a variety of product formats to fit a wide range of end application requirements, including networking, storage, computing and consumer applications.

Our Flip Chip Molded BGA (FCmBGA) packages utilize a molding compound that replaces traditional capillary underfill to interconnect larger die onto a substrate without the structural need for a lid or stiffening ring. This enables thinner packaging and improved thermal performance while reducing system cost.

Mainstream Packages

Our mainstream packages consist of leadframe packages, substrate-based wirebond packages and micro-electro-mechanical systems packages. These package families use wirebond interconnect technology to connect a die to a leadframe or substrate package carrier.

Leadframe Packages: Leadframe packages use wirebond or flip chip technology to interconnect a die to a leadframe package carrier. Leadframe packages are used in many electronic devices and remain the most practical and cost-effective solution for many low to medium pin count applications.

Traditional leadframe packages support a wide variety of device types and applications. Two of our most popular traditional leadframe package types are small outline integrated circuit and quad flat package, commonly known as

“dual” and “quad” products, respectively, based upon the number of sides from which the leads extend. The traditional leadframe package family has evolved from “through hole design,” where the leads are plugged into holes on the circuit board to “surface mount design,” where the leads are soldered to the surface of the circuit board. We offer a wide range of lead counts and body sizes to satisfy variations in the size of customers’ semiconductor devices.

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Through a process of continuous engineering and customization, we have designed several leadframe package types that are thinner and smaller than traditional leadframe packages, and which have the ability to accommodate more leads on the perimeter of the package. These leadframe packages typically have superior thermal and electrical characteristics, which allow them to dissipate heat generated by high-powered semiconductor devices while providing enhanced electrical connectivity. We are developing increasingly smaller versions of these packages to keep pace with continually shrinking semiconductor device sizes and demand for miniaturization of portable electronic products. One of our more successful leadframe package offerings is the MicroLeadFrame family of quad flat no lead packages.

Power discrete devices use a leadframe as the package carrier and primarily use wirebond interconnect technology. However, power applications that require improved thermal and electrical performance will use packaging with copper clip interconnect technology.

Substrate-based Wirebond Packages: Substrate-based wirebond packages use wirebond technology to connect a die to a substrate. Some of our packages in this category include stacked chip scale packages (CSP), chip array ball grid array (BGA) packages and plastic ball grid array (PBGA) packages.

Stacked CSP technology enables the stacking of a wide range of different semiconductor devices to deliver high levels of silicon integration and area efficiency. Stacked CSP utilizes high density thin core substrates and advanced materials, along with leading-edge wafer thinning, die attach, and molding capabilities to stack multiple die on a substrate. Stacked CSP is ideal for memory, including NAND, NOR and DRAM memory, and mixed signal applications.

Chip array BGA packages offer a broad selection of ball array pitches, ball counts and body sizes, single and multi-die layouts, stacked die and passive component integration. They are applicable for a wide range of semiconductors requiring a smaller package size than conventional PBGAs or leadframe packages.

Plastic ball grid array packages are used in applications requiring higher pin count than leadframe packages, but typically have lower interconnect density than flip chip. PBGA packages are designed for low inductance, improved thermal operation and enhanced surface-mount technology ability. Custom performance enhancements, like ground and power planes, are also available.

Micro-Electro-Mechanical Systems (MEMS) Packages: MEMS are miniaturized mechanical and electro-mechanical sensors that can sense or manipulate the physical world. Examples of MEMS devices include microphones, accelerometers, gyrometers, magnetometers, humidity and temperature sensors and pressure sensors. MEMS are most typically created on silicon wafers but can also employ other substrate types as well. MEMS devices often require an extra fabrication process where the device wafer is bonded to a second wafer which effectively encapsulates the MEMS structure. This method leaves the device free to move within a vacuum or an inert gas atmosphere. However, applications such as microphones and pressure sensors require the MEMS structure to remain unencapsulated, requiring innovative cavity style packages.

System-in-Package (SiP) Modules: SiP modules contain one or more die plus passive components integrated into a single package to create a fully functioning system or subsystem. These modules use wirebond or flip chip interconnect technologies to connect the die to a substrate package carrier. The passive components include inductors, capacitors, resistors, filters and diplexers. SiP modules are used in mobile devices for components such as fingerprint sensors, radio frequency controllers, power amplifiers, GPS modules, Bluetooth modules, digital basebands and hard drive controllers.

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End Markets

The following table lists the end markets that use our products:

| End Market | Applications | Package Type |
|---|---|---|
| Communications | Handsets (Cell Phones, Feature Phones, Smart Phones)<br>Tablets<br>Handheld Devices<br>Wireless LAN | Flip Chip Chip Scale Package<br>Stacked Chip Scale Package<br>Flip Chip Stacked Chip Scale Package<br>Wafer Level Chip Scale Package<br>MicroLeadFrame<br>ChipArray Ball Grid Array<br>Fine Pitch Copper Pillar Flip Chip Chip Scale Package |
| Consumer | Television<br>Set Top Boxes<br>Gaming<br>Portable Media<br>Digital Cameras | Flip Chip Ball Grid Array<br>Thin Quad Flat Pack<br>ChipArray Ball Grid Array<br>Digital Micromirror Device<br>MicroLeadFrame<br>Plastic Ball Grid Array |
| Networking | Servers<br>Routers<br>Switches | Flip Chip Ball Grid Array<br>Plastic Ball Grid Array<br>MicroLeadFrame<br>Thin Quad Flat Pack<br>ChipArray Ball Grid Array |
| Automotive and Industrial | Infotainment<br>Safety<br>Performance, Fuel Efficiency and Environmental Sustainability<br>Comfort, Aesthetics and Security | Small Outline Integrated Circuit<br>MicroLeadFrame<br>Plastic Ball Grid Array<br>Thin Quad Flat Pack<br>Thin Shrink Small Outline Package<br>Quad Flat Pack |
| Computing | Desk Top Computer<br>Laptop Computer<br>Notebook Computer<br>Netbook Computer<br>Hard Disk Drive<br>Printers and Other Peripherals<br>Computer Server | MicroLeadFrame<br>ChipArray Ball Grid Array<br>Thin Quad Flat Pack<br>Flip Chip Ball Grid Array<br>Small Outline Integrated Circuit<br>Stacked Chip Scale Package<br>Flip Chip Chip Scale Package |

RELATIONSHIP WITH J-DEVICES CORPORATION

J-Devices Corporation is the largest provider of outsourced semiconductor packaging and test services in Japan with net sales of $0.8 billion in 2013. J-Devices' business covers a broad range of packaging and test services focused on the automotive, industrial and consumer end markets. The company's customers include some of the largest semiconductor companies in the world, such as Fujitsu Semiconductor Limited, Renesas Electronics Corporation and Toshiba Corporation.

J-Devices was formed in 2009 as a result of a joint venture between Amkor, Toshiba and J-Devices' predecessor, Nakaya Microdevices Corporation (NMD). As part of this transaction, J-Devices acquired certain assets and business, including technology development, of Toshiba's semiconductor packaging business. Since that time, J-Devices has experienced considerable growth through various acquisitions, including the purchase of three packaging and test facilities from Fujitsu in 2012 and the purchase of three additional packaging and test facilities in 2013 from Renesas.

In 2013, we completed the exercise of our option to increase our ownership interest in J-Devices from 30% to 60%. As a result of this transaction, J-Devices is now owned 60% by Amkor, 34% by the former shareholders of NMD and 6% by Toshiba. The governance provisions applicable to J-Devices restrict our ability to cause J-Devices to take certain actions without the consent of the other investors. Accordingly, we account for our investment in J-Devices using the equity method of accounting. We plan to exercise additional options to increase our ownership interest to 80% by 2016, at which time

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certain governance restrictions will lapse and we will begin consolidating J-Devices' results. We continue to work closely with J-Devices in a number of areas, including joint purchasing programs and joint technology development.

RESEARCH AND DEVELOPMENT

Our research efforts focus on developing new packaging solutions and test services, and improving the efficiency and capabilities of our existing production processes. We believe that technology development is one of the keys to success in the semiconductor packaging and test industry. By concentrating our research and development on our customers’ needs for innovative packages, increased performance and lower cost, we gain opportunities to enter markets early, capture market share and promote our new package offerings as industry standards. In addition, we leverage our research and development by licensing our leading edge technology, such as MicroLeadFrame, Fine Pitch Copper Pillar Flip Chip, TMV, Lead Free and Copper Pillar Bumping and FusionQuad.

Our areas for research and development include:

- 2.5D and 3D packaging;
- Advanced flip chip packaging;
- Advanced micro-electromechanical system packaging and testing;
- Advanced Package-on-Package (PoP);
- Copper Pillar bumping and packaging;
- Copper wire interconnects;
- Embedded Die / Fan Out technology;
- Engineering and characterization tools;
- High density laminate and leadframe packaging;
- Manufacturing cost reductions;
- Silicon Photonics;
- Silver wirebond interconnects;
- TMV technology;
- TSV technology and
- Wafer-level processing.

We have key development partners within our customer and supplier base. We work with our partners and allocate our resources to develop applications that have promising potential for a healthy return on investment.

As of December 31, 2013, we had approximately 400 employees engaged in research and development activities. In 2013, 2012 and 2011, we incurred $64.6 million, $54.1 million and $50.4 million, respectively, of research and development expense.

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## MARKETING AND SALES

Our marketing and sales offices are located throughout Asia, Europe and North America. Our support personnel manage and promote our packaging and test services and provide key customer and technical support. To provide comprehensive sales and customer service, we typically assign our customers a direct support team consisting of an account manager, technical program manager, test program manager and both field and factory customer support representatives. We also support our largest multinational customers from multiple office locations to ensure that we are aligned with their global operational and business requirements.

Our direct support teams are further supported by an extended staff of product, process, quality and reliability engineers, as well as marketing and advertising specialists, information systems technicians and factory personnel. Together, these direct and extended support teams deliver an array of services to our customers. These services include:

- Managing and coordinating ongoing manufacturing activity;
- Providing information and expert advice on our portfolio of packaging and test services and related trends;
- Managing the start-up of specific packaging and test programs;
- Working to improve our customers' time-to-market;
- Providing a continuous flow of information to our customers regarding products and programs in process;
- Partnering with customers on design solutions;
- Researching and assisting in the resolution of technical and logistical issues;
- Aligning our technologies and research and development activities with the needs of our customers and OEMs;
- Providing guidance and solutions to customers in managing their supply chains;
- Driving industry standards;
- Providing design and simulation services to ensure package reliability and
- Collaborating with our customers on continuous quality improvement initiatives.

Further, we implement direct electronic links with our customers to:

- Achieve near real time and automated communications of order fulfillment information, such as inventory control, production schedules and engineering data, including production yields, device specifications and quality indices and
- Connect our customers to our sales and marketing personnel world-wide and to our factories.

## SEASONALITY

Our sales have generally been higher in the second half of the year than in the first half due to the effect of consumer buying patterns in the U.S., Europe and Asia and the timing of flagship mobile device launches. In addition, semiconductor companies generally reduce their production during the holidays at the end of December which results in a decrease in packaging and test services during the first quarter.

## CUSTOMERS

As of December 31, 2013, we had approximately 200 customers, including many of the largest semiconductor companies in the world. Our ten largest customers accounted for 62.9% of our net sales in 2013. Qualcomm Incorporated and Toshiba each accounted for more than 10% of our net sales in 2013.

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## MATERIALS AND EQUIPMENT

### Materials

Our materials are used primarily for packaging activities. Our packaging operations depend upon obtaining adequate supplies of materials on a timely basis. The principal materials used in our packaging process are leadframes, laminate substrates, gold and copper wire, mold compound, epoxy, tubes and trays. The silicon wafer is generally consigned from the customer. We do not take ownership of the customer consigned wafer, and title and risk of loss remains with the customer for these materials. Test materials constitute a very small portion of our total test cost. We purchase materials based on customer forecasts, and our customers are generally responsible for any unused materials which we purchased based on such forecasts.

We obtain the materials required for packaging services from various suppliers. We source most of our materials, including critical materials such as leadframes, laminate substrates and gold wire, from a limited group of suppliers. We work closely with our primary material suppliers to ensure that materials are available and delivered on time and, we also negotiate world-wide pricing agreements with our major suppliers to take advantage of the scale of our operations.

### Equipment

Our ability to meet the changing demand from our customers for manufacturing capacity depends upon obtaining packaging and test equipment in a timely manner. We work closely with our main equipment suppliers to coordinate the ordering and delivery of equipment to meet our expected capacity needs.

The primary types of equipment used in providing our packaging services are wirebonders and die bonders. In addition, we maintain a variety of other packaging equipment, including mold, singulation, die attach, ball attach and wafer backgrind, along with numerous other types of manufacturing equipment. A substantial portion of our packaging equipment base can generally be used and adapted to support the manufacture of many of our packages through the use of relatively low cost tooling, although equipment used in advanced packaging can be more difficult to redeploy than equipment used in traditional wirebond packaging.

We also purchase wafer bumping equipment to facilitate our flip chip and wafer level packaging services. Wafer bump equipment includes sputter and spin coaters, electroplating equipment, reflow ovens and other types of equipment. This equipment tends to have longer lead times for order and installation than other packaging equipment and is sold in relatively larger increments of capacity.

The primary equipment used in the testing process includes testers, handlers and probers. Handlers are used to transfer individual or small groups of packaged integrated circuits to a tester. Test equipment is generally a more capital intensive portion of the process and tends to have longer delivery lead times than most types of packaging equipment. We focus our capital expenditures on standardized tester platforms in order to maximize test equipment utilization where possible.

## ENVIRONMENTAL MATTERS

The semiconductor packaging process uses chemicals, materials and gases and generates byproducts that are subject to extensive governmental regulations. For example, we produce liquid waste when semiconductor wafers are diced into chips with the aid of diamond saws, then cooled with running water. In addition, semiconductor packages have historically utilized metallic alloys containing lead (Pb) within the interconnect terminals typically referred to as leads, pins or balls. The usage of lead (Pb) has decreased over the past few years, as we have ramped volume production of

alternative lead (Pb)-free processes. Our operations are subject to numerous laws and regulations governing the protection of the environment, disposal of waste, discharges into water, emissions into the atmosphere and the protection of employee health and safety. Future regulations may impose stricter environmental requirements on the semiconductor packaging and test industry and may require additional capital investment.



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We are engaged in a continuing program to assure compliance with federal, state and local environmental laws and regulations. We do not expect that capital expenditures or other costs attributable to compliance with environmental laws and regulations will have a material adverse effect on our business, liquidity, results of operations, financial condition or cash flows.

COMPETITION

The outsourced semiconductor packaging and test market is very competitive. We face substantial competition from established packaging and test service providers primarily located in Asia, including companies with significant manufacturing capacity, financial resources, research and development operations, marketing and other capabilities. These companies include Advanced Semiconductor Engineering, Inc., Siliconware Precision Industries Co., Ltd. and STATS ChipPAC Ltd.
Such companies also have developed relationships with most of the world's largest semiconductor companies, including current or potential customers of Amkor. We also compete with the internal semiconductor packaging and test capabilities of many of our customers. Our IDM customers continually evaluate the attractiveness of outsourced services against their own in-house packaging and test services and at times may decide to shift some or all of their outsourced packaging and test services to internally sourced capacity. We also compete with companies (including semiconductor foundries) that provide wafer bumping and other advanced packaging solutions that compete with our packaging and test services. In addition, we compete with companies that offer only test services and not packaging.

The principal elements of competition in the semiconductor packaging and test services market include:
- technical competence;
- quality;
- price;
- breadth of packaging and test services offered, including turnkey services;
- new package and test design, technology innovation and implementation;
- cycle times;
- customer service and
- available capacity and ability to invest in capacity, geographic location and scale of manufacturing.

We believe that we generally compete favorably with respect to each of these elements.

INTELLECTUAL PROPERTY

We maintain an active program to protect and derive value from our investment in technology and the associated intellectual property rights. Intellectual property rights that apply to our various products and services include patents, copyrights, trade secrets and trademarks. We have filed and obtained a number of patents in the U.S. and abroad, and their durations vary depending on the jurisdiction in which each patent is filed. Although our patents are an important element of our intellectual property strategy as a whole, we are not materially dependent on any one patent or any one technology. We expect to continue to file patent applications when appropriate to protect our proprietary technologies, but we cannot assure you that we will receive patents from pending or future applications. In addition, any patents we obtain may be challenged, invalidated or circumvented and may not provide meaningful protection or other commercial advantage to us.

We also protect certain details about our processes, products and strategies as trade secrets by maintaining the confidentiality of the information we believe provides us with a competitive advantage. We have ongoing programs designed to maintain the confidentiality of such information. Further, to distinguish our products from our competitors' products, we have obtained certain trademarks and service marks and may promote our particular brands through advertising and other marketing techniques.

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EMPLOYEES

As of December 31, 2013, we had approximately 20,900 full-time employees. Of the total employee population, approximately 15,400 were engaged in manufacturing services, 3,300 were engaged in manufacturing support, 400 were engaged in research and development, 300 were engaged in marketing and sales and 1,500 were engaged in administration, business management and finance. We believe that our relations with our employees are good, and we have not experienced a work stoppage in any of our factories. Our employees in Europe, the Philippines, Taiwan and the U.S. are not represented by any union. Certain employees at our factories in China, Japan, Korea and Malaysia are members of a union, and we operate subject to collective bargaining agreements that we have entered into with the unions in Japan, Korea and Malaysia.

Item 1A. Risk Factors

The factors discussed below are cautionary statements that identify important factors and risks that could cause actual results to differ materially from those anticipated by the forward-looking statements contained in this report. For more information regarding the forward-looking statements contained in this report, see the Table of Contents of this Annual Report on Form 10-K. You should carefully consider the risks and uncertainties described below, together with all of the other information included in this report, in considering our business and prospects. The risks and uncertainties described below are not the only ones facing Amkor. Additional risks and uncertainties not presently known to us may also impair our business operations. The occurrence of any of the following risks could affect our business, liquidity, results of operations, financial condition or cash flows.

Dependence on the Highly Cyclical Semiconductor Industry — We Operate in Volatile Industries and Industry Downturns and Declines in Global Economic and Financial Conditions Could Harm Our Performance.

Our business is impacted by market conditions in the semiconductor industry, which is cyclical by nature and impacted by broad economic factors, such as world-wide gross domestic product and consumer spending. The semiconductor industry has experienced significant and sometimes sudden and prolonged downturns in the past. For example, the financial crisis and global recession in 2008 and 2009 resulted in a downturn in the semiconductor industry that adversely affected our business and results of operations during those periods. The economic recovery since that time has been slow and uneven.

Since our business is, and will continue to be, dependent on the requirements of semiconductor companies for outsourced packaging and test services, any downturn in the semiconductor industry or any other industry that uses a significant number of semiconductor devices, such as consumer electronic products, telecommunication devices or computing devices, could have a material adverse effect on our business and operating results. During downturns we have experienced, among other things, reduced demand, excess capacity and reduced sales. It is difficult to predict the timing, strength or duration of any economic slowdown or subsequent economic recovery, which, in turn, makes it more challenging for us to forecast our operating results, make business decisions and identify risks that may affect our business, sources and uses of cash, financial condition and results of operations. Additionally, if industry conditions deteriorate, we could suffer significant losses, as we have in the past, which could materially impact our business, liquidity, results of operations, financial condition and cash flows.

Also, the action or inaction of the U.S. government relating to federal income tax increases, the federal debt ceiling, the federal deficit and government spending restrictions or shutdowns, may adversely affect consumer demand and economic growth in the U.S. and globally, which may harm the semiconductor industry and our business.

Fluctuations in Operating Results and Cash Flows — Our Operating Results and Cash Flows Have Varied and May Vary Significantly as a Result of Factors That We Cannot Control.

Many factors, including the impact of adverse economic conditions, could have a material adverse effect on our net sales, gross profit, operating results and cash flows, or lead to significant variability of quarterly or annual operating results. Our profitability and ability to generate cash from operations is principally dependent upon demand for semiconductors, the utilization of our capacity, semiconductor package mix, the average selling price of our services, our ability to manage our capital expenditures in response to market conditions and our ability to control our costs including labor, material, overhead and financing costs.

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Our net sales, gross profit, operating income and cash flows have historically fluctuated significantly from quarter to quarter as a result of many of the following factors, over which we have little or no control and which we expect to continue to impact our business:

- fluctuation in demand for semiconductors and conditions in the semiconductor industry generally, as well as by specific customers, such as inventory reductions by our customers impacting demand in key markets;
- changes in our capacity and capacity utilization rates;
- changes in average selling prices which can occur quickly due to the absence of long term agreements on price;
- changes in the mix of the semiconductor packaging and test services that we sell;
- evolving packaging and test technology and potential difficulties in developing and transitioning to new technologies;
- absence of backlog, the short-term nature of our customers' commitments and the impact of these factors, including the possible delay, rescheduling and cancellation of large orders, or the timing and volume of orders relative to our production capacity;
- changes in costs, quality, availability and delivery times of raw materials, components and equipment;
- changes in labor costs to perform our services;
- wage inflation and fluctuations in commodity prices, including gold, copper and other precious metals;
- the timing of expenditures in anticipation of future orders;
- changes in effective tax rates;
- the availability and cost of financing;
- intellectual property transactions and disputes;
- high leverage and restrictive covenants;
- warranty and product liability claims and the impact of quality excursions and customer disputes and returns;
- costs associated with legal claims, indemnification obligations, judgments and settlements;
- international events, political instability, civil disturbances or environmental or natural events, such as earthquakes, that impact our operations;
- pandemic illnesses that may impact our labor force and our ability to travel;
- costs of acquisitions and divestitures, difficulties integrating acquisitions, the failure of our joint ventures to operate in accordance with business plans and fluctuations in the results of investments accounted for using the equity method;
- our ability to attract and retain qualified personnel to support our global operations;
- fluctuations in foreign exchange rates;
- fluctuations in our manufacturing yields;
- dependence on key customers or concentration of customers in certain market segments, such as mobile communications and
- restructuring charges, asset write-offs and impairments.

It is often difficult to predict the impact of these factors upon our results for a particular period. The downturn in the global economy and the semiconductor industry in 2009 increased the risks associated with the foregoing factors as customer

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forecasts became more volatile, and there was less visibility regarding future demand and significantly increased uncertainty regarding the economy, credit markets and consumer demand. The slow rate of economic growth in the U.S. and elsewhere and economic uncertainty worldwide could continue to cause volatility in customer forecasts and reduce our visibility regarding future demand in the semiconductor industry. These factors may have a material and adverse effect on our business, liquidity, results of operations, financial condition and cash flows or lead to significant variability of quarterly or annual operating results. In addition, these factors may adversely affect our credit ratings which could make it more difficult and expensive for us to raise capital and could adversely affect the price of our securities.

Absence of Backlog — The Lack of Contractually Committed Customer Demand May Adversely Affect Our Sales.

Our packaging and test business does not typically operate with any material backlog. Our quarterly net sales from packaging and test services are substantially dependent upon our customers' demand in that quarter. None of our customers have committed to purchase any significant amount of packaging or test services or to provide us with binding forecasts of demand for packaging and test services for any future period, in any material amount. In addition, our customers often reduce, cancel or delay their purchases of packaging and test services for a variety of reasons including industry-wide, customer-specific and Amkor-specific reasons. This makes it difficult for us to forecast our capacity utilization and net sales in future periods. Since a large portion of our costs is fixed and our expense levels are based in part on our expectations of future sales, we may not be able to adjust costs in a timely manner to compensate for any sales shortfall. If we are unable to adjust costs in a timely manner, our margins, operating results, financial condition and cash flows would be adversely affected.

High Fixed Costs — Due to Our High Percentage of Fixed Costs, We Will Be Unable to Maintain Our Gross Margin at Past Levels if We Are Unable to Achieve Relatively High Capacity Utilization Rates.

Our operations are characterized by relatively high fixed costs. Our profitability depends in part not only on pricing levels for our packaging and test services, but also on the efficient utilization of our human resources and packaging and test equipment. Increases or decreases in our capacity utilization can significantly affect gross margins. In periods of low demand, we experience relatively low capacity utilization in our operations, which leads to reduced margins during that period. For example, we experienced lower than optimum utilization in late 2008 and in 2009 due to a decline in world-wide demand for our packaging and test services which impacted our gross margin. Transitions between different packaging technologies, such as the transition from gold wirebond to flip chip and copper wirebond packages, can also impact our capacity utilization if we do not efficiently redeploy our equipment for other packaging and test opportunities. For example, in 2011 the migration of some customer demand from wirebond to flip chip packages resulted in under-utilized wirebond assets which negatively impacted our capacity utilization and gross margin. We cannot assure you that we will be able to achieve consistently high capacity utilization, and if we fail to do so, our gross margins may decrease. If our gross margins decrease, our business, liquidity, results of operations, financial condition and cash flows could be materially adversely affected.

In addition, our fixed operating costs have increased in recent years in part as a result of our efforts to expand our capacity through significant capital expenditures. Forecasted customer demand for which we have made capital investments may not materialize, especially if industry conditions deteriorate. As a result, our sales may not adequately cover fixed costs resulting in reduced profit levels or causing significant losses, both of which may adversely impact our business, liquidity, results of operations, financial condition and cash flows.

Guidance — Our Failure to Meet Our Guidance or Analyst Projections Could Adversely Impact the Trading Prices of Our Securities.

We periodically provide guidance to investors with respect to certain financial information for future periods. Securities analysts also periodically publish their own projections with respect to our future operating results. As discussed above under "Fluctuations in Operating Results and Cash Flows — Our Operating Results and Cash Flows Have Varied and May Vary Significantly as a Result of Factors That We Cannot Control," our operating results and cash flows vary significantly and are difficult to accurately predict. Volatility in customer forecasts and fluctuations in global consumer demand make it particularly difficult to predict future results. To the extent we fail to meet or exceed our own guidance or the analyst projections for any reason, the trading prices of our securities may be adversely impacted. Moreover, even if we do meet or exceed that guidance or those projections, if analysts and investors do not react favorably, or if analysts were to discontinue providing coverage of our company, the trading prices of our securities may be adversely impacted.

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Declining Average Selling Prices — Historically There Has Been Downward Pressure on the Prices of Our Packaging and Test Services.

Prices for packaging and test services have generally declined over time, and sometimes prices can change significantly in relatively short periods of time. We expect downward pressure on average selling prices for our packaging and test services to continue in the future. If we are unable to offset a decline in average selling prices by developing and marketing new packages with higher prices, reducing our purchasing costs, recovering more of our material cost increases from our customers and reducing our manufacturing costs, our business, liquidity, results of operations, financial condition and cash flows could be materially adversely affected.

Decisions by Our Integrated Device Manufacturer Customers to Curtail Outsourcing May Adversely Affect Our Business.

Historically, we have been dependent on the trend in outsourcing of packaging and test services by IDMs. Our IDM customers continually evaluate the need for outsourced services against their own in-house packaging and test services. As a result, at any time and for a variety of reasons, IDMs may decide to shift some or all of their outsourced packaging and test services to internally sourced capacity.

The reasons IDMs may shift their outsourced business to internal capacity include:

- their desire to realize higher utilization of their existing packaging and test capacity, especially during downturns in the semiconductor industry;
- their unwillingness to disclose proprietary technology;
- their possession of more advanced packaging and test technologies and
- the guaranteed availability of their own packaging and test capacity.

In addition, to the extent we limit capacity commitments for certain customers, these customers may increase their level of in-house packaging and test capabilities, which could make it more difficult for us to regain their business when we have available capacity.

In a downturn in the semiconductor industry, IDMs could respond by shifting some or all outsourced packaging and test services to internally serviced capacity on a short term basis. Also, the IDMs could curtail or reverse the trend of outsourcing packaging and test services. If we experience a significant loss of IDM business, it could have a material adverse effect on our business, liquidity, results of operations, financial condition and cash flows, especially during a prolonged industry downturn.

Our Substantial Indebtedness Could Adversely Affect Our Financial Condition and Prevent Us from Fulfilling Our Obligations.

We have a significant amount of indebtedness, and the terms of the agreements governing our indebtedness allow us and our subsidiaries to incur more debt, subject to certain limitations. As of December 31, 2013, our total debt balance was $1,652.7 million, of which $61.4 million was classified as a current liability and $320.0 million was collateralized indebtedness at our subsidiaries. We may consider investments in joint ventures, increased capital expenditures or acquisitions which may increase our indebtedness. If new debt is added to our consolidated debt level, the related risks that we face could intensify.

Our substantial indebtedness could:

- make it more difficult for us to satisfy our obligations with respect to our indebtedness, including our obligations under our indentures to purchase notes tendered as a result of a change in control of Amkor;
- increase our vulnerability to general adverse economic and industry conditions;
- 

limit our ability to fund future working capital, capital expenditures, research and development and other business opportunities, including joint ventures and acquisitions;

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- require us to dedicate a substantial portion of our cash flow from operations to service payments of interest and principal on our debt thereby reducing the availability of our cash flow to fund future working capital, capital expenditures, research and development expenditures and other general corporate requirements;
- increase the volatility of the price of our common stock;
- limit our flexibility to react to changes in our business and the industry in which we operate;
- place us at a competitive disadvantage to any of our competitors that have less debt;
- limit, along with the financial and other restrictive covenants in our indebtedness, among other things, our ability to borrow additional funds;
- limit our ability to refinance our existing indebtedness, particularly during periods of adverse credit market conditions when refinancing indebtedness may not be available under interest rates and other terms acceptable to us or at all and
- increase our cost of borrowing.

We May Have Difficulty Funding Liquidity Needs.

We assess our liquidity based on our current expectations regarding sales, operating expenses, capital spending and debt service requirements. Our liquidity is affected by, among other things, the performance of our business, our capital expenditure and other investment levels and our ability to repay debt out of our operating cash flows or with the proceeds of debt or equity financings.

We operate in a capital intensive industry. We had capital expenditures of $566.3 million in 2013. Servicing our current and future customers requires that we incur significant operating expenses and continue to make significant capital expenditures and other investments, which are generally made in advance of the related revenues and without any firm customer commitments. Ultimately the actual amount of our capital expenditures for 2014 and thereafter may vary materially and will depend on several factors. These factors include, among others, the amount, timing and implementation of our capital projects, including those under review and not yet planned, the performance of our business, economic and market conditions, the cash needs and investment opportunities for the business, the need for additional capacity and facilities and the availability of cash flows from operations or financing.

In addition, we have a significant level of debt, which requires significant scheduled principal and interest payments in the coming years. The sources funding our operations, including making capital expenditures and other investments and servicing principal and interest obligations with respect to our debt, are cash flows from our operations, existing cash and cash equivalents, borrowings under available debt facilities, or proceeds from any additional debt or equity financing.

The health of the worldwide banking system and capital markets affects our liquidity. If financial institutions that have extended credit commitments to us are adversely affected by the conditions of the U.S. and international banking system and capital markets, they may refuse or be unable to fund borrowings under their credit commitments to us. Volatility in the banking system and capital markets could also make it difficult or more expensive for us to maintain our existing credit facilities or refinance our debt.

In addition, there is a risk that we could fail to generate the necessary net income or operating cash flows to meet the funding needs of our business due to a variety of factors, including the other factors discussed in this "Risk Factors" section. If we fail to generate the necessary cash flows or we are unable to access the capital markets when needed, our liquidity may be adversely impacted.

Restrictive Covenants in the Indentures and Agreements Governing Our Current and Future Indebtedness and Our Joint Venture Agreements Could Restrict Our Operating Flexibility.

The indentures and agreements governing our existing debt, and debt we may incur in the future, contain, or may contain, affirmative and negative covenants that materially limit our ability to take certain actions, including our ability to incur debt, pay dividends and repurchase stock, make certain investments and other payments, enter into certain mergers and

consolidations, engage in sale leaseback transactions and encumber and dispose of assets. In addition, our future debt agreements may contain financial covenants and ratios.

The breach of any of these covenants by us or the failure by us to meet any of the financial ratios or conditions could result in a default under any or all of such indebtedness. If a default occurs under any such indebtedness, all of the outstanding obligations thereunder could become immediately due and payable, which could result in a default under our other outstanding debt and could lead to an acceleration of obligations related to other outstanding debt. The existence of such a default or event of default could also preclude us from borrowing funds under our revolving credit facilities. Our ability to comply with the provisions of the indentures, credit facilities and other agreements governing our outstanding debt and indebtedness we may incur in the future can be affected by events beyond our control and a default under any debt instrument, if not cured or waived, could have a material adverse effect on us.

Also, our ability to sell our joint venture investments or for our joint ventures to pay dividends, make distributions, provide loans or make other payments to us may be restricted by our joint venture agreements. As a result, we may not be able to access the cash flow of our joint ventures or realize a cash return on our joint venture investment. For example, the governance provisions of our joint venture with J-Devices require the consent of the joint venture partners to pay dividends or for us to sell our investment.

We Have Significant Severance Plan Obligations Associated With Our Manufacturing Operations in Korea Which Could Reduce Our Cash Flow and Negatively Impact Our Financial Condition.

We sponsor an accrued severance plan for our Korean subsidiary, under which we have an accrued liability of $145.1 million as of December 31, 2013. Existing tax laws in Korea limit our ability to deduct severance expenses associated with the current plan. These limitations are designed to encourage companies to migrate to a defined contribution or defined benefit plan. If we adopt a new plan, we may fund a significant portion of the existing liability, which could have a material adverse effect on our liquidity, financial condition and cash flows. If we do not adopt a new plan, our ability to deduct accrued severance will continue to be limited, and as a result we will have to pay higher taxes, which could adversely affect our liquidity, financial condition and cash flows.

Under the existing Korean plan, to the extent eligible employees are terminated, our Korean subsidiary would be required to make lump-sum severance payments on behalf of these eligible employees based on their length of service, seniority and rate of pay at the time of termination. Since our severance plan obligation is significant, in the event of a significant layoff or other reduction in our labor force in Korea, payments under the plan could have a material adverse effect on our liquidity, financial condition and cash flows. See Note 15 to our Consolidated Financial Statements in Part II, Item 8 to this Annual Report on Form 10-K.

If We Fail to Maintain an Effective System of Internal Controls, We May Not be Able to Accurately Report Financial Results or Prevent Fraud.

Effective internal controls are necessary to provide reliable financial reports and to assist in the effective prevention of fraud. We must annually evaluate our internal procedures to satisfy the requirements of Section 404 of the Sarbanes-Oxley Act of 2002, which requires management and our independent registered public accounting firm to assess the effectiveness of internal control over financial reporting.

Internal controls may not prevent or detect misstatements because of their inherent limitations, including the possibility of human error, the circumvention or overriding of controls, fraud or corruption. Therefore, even effective internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. In addition, projections of any evaluation of effectiveness of internal controls to future periods are subject to the risk that the internal controls may become inadequate because of changes in conditions, or that the

degree of compliance with the policies or procedures may deteriorate.

As previously reported, we are implementing a new enterprise resource planning ("ERP") system in a multi-year program on a world-wide basis. We have recently implemented several significant ERP modules and expect to implement additional ERP modules in the future. In addition, we are implementing a new shop floor management system in certain of our factories. The implementation of the ERP and shop floor systems represents a change in our internal control over financial reporting.



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Although we continue to monitor and assess our internal controls in the new ERP system environment and the shop floor system as changes are made and new modules are implemented, there is a risk that deficiencies may occur that could constitute significant deficiencies or in the aggregate a material weakness.

In addition, on July 31, 2013, we completed our acquisition of Amkor Technology Malaysia Sdn. Bhd. We are continuing to integrate the acquired operations into our overall internal control over financial reporting. Although we have extended our oversight and monitoring processes that support internal control over financial reporting to include the acquired operations, there is a risk that deficiencies may occur that could constitute significant deficiencies or in the aggregate a material weakness.

If we fail to remedy any deficiencies or maintain the adequacy of our internal controls, we could be subject to regulatory scrutiny, civil or criminal penalties or shareholder litigation. In addition, failure to maintain adequate internal controls could result in financial statements that do not accurately reflect our operating results or financial condition.

We Face Warranty Claims, Product Return and Liability Risks, the Risk of Economic Damage Claims and the Risk of Negative Publicity if Our Packages Fail.

Our packages are incorporated into a number of end products, and our business is exposed to warranty claims, product return and liability risks, the risk of economic damage claims and the risk of negative publicity if our packages fail.

We receive warranty claims from our customers which occur from time to time in the ordinary course of our business. If we were to experience an unusually high incidence of warranty claims, we could incur significant costs and our business could be adversely affected. In addition, we are exposed to the product and economic liability risks and the risk of negative publicity affecting our customers. Our sales may decline if any of our customers are sued on a product liability claim. We also may suffer a decline in sales from the negative publicity associated with such a lawsuit or with adverse public perceptions in general regarding our customers' products. Further, if our packages are delivered with impurities or defects, we could incur additional development, repair or replacement costs or suffer other economic losses, and our credibility and the market's acceptance of our packages could be harmed.

Risks Associated With International Operations — We Depend on Our Factories and Operations in China, Japan, Korea, Malaysia, the Philippines and Taiwan. Many of Our Customers' and Vendors' Operations Are Also Located Outside of the U.S.

We provide packaging and test services through our factories and other operations located in China, Japan, Korea, Malaysia, the Philippines and Taiwan. Substantially all of our property, plant and equipment is located outside of the United States. Moreover, many of our customers' and the vendors in our supply chain are located outside the U.S. The following are some of the risks we face in doing business internationally:

- changes in consumer demand resulting from deteriorating conditions in local economies;
- regulations and policies imposed by U.S. or foreign governments, such as tariffs, customs, duties and other restrictive trade barriers, antitrust and competition, tax, currency and banking, privacy, labor, environmental, health and safety;
- the payment of dividends and other payments by non-U.S. subsidiaries may be subject to prohibitions, limitations or taxes in local jurisdictions;
- fluctuations in currency exchange rates;
- political and social conditions, such as civil unrest and terrorism;
- disruptions or delays in shipments caused by customs brokers or government agencies;
- difficulties in attracting and retaining qualified personnel and managing foreign operations, including foreign labor disruptions;
- difficulty in enforcing contractual rights and protecting our intellectual property rights;

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- potentially adverse tax consequences resulting from tax laws in the U.S and in foreign jurisdictions in which we operate and
- local business and cultural factors that differ from our normal standards and practices, including business practices that we are prohibited from engaging in by the Foreign Corrupt Practices Act (FCPA) and other anti-corruption laws and regulations.

In particular, we have significant facilities and other investments in South Korea, and there have been heightened security concerns in recent years stemming from North Korea's nuclear weapon and long-range missile programs as well as its military actions in the region. Furthermore, there has been a history of conflict and a recent rise in tensions among other countries in the region.

We Face Risks in Connection with the Continuing Development and Implementation of Changes to, and Maintenance and Security of, Our Management Information Systems.

We depend on our management information systems for many aspects of our business. Some of our key software has been developed by our own programmers, and this software may not be easily integrated with other software and systems. Our systems may be susceptible to damage, disruptions or shutdowns due to failures during the process of upgrading, replacing or maintaining software, databases or components thereof, power outages, hardware failures, computer viruses, attacks by computer hackers, telecommunication failures, user errors, malfeasance or catastrophic events. In addition, security breaches could result in unauthorized disclosure of confidential information. We have made and continue to make significant investments to implement and evolve our management information systems. In addition, we are implementing a new shop floor system in certain of our factories. In July 2013, we acquired a factory in Malaysia, and have begun to integrate its management information systems into our existing systems and processes. We face risks in connection with current and future projects to install or integrate new management information systems or upgrade our existing systems. These risks include:

- we may face delays in the design and implementation of the system;
- the cost of the systems may exceed our plans and expectations and
- disruptions resulting from the implementation or integration of the systems may impact our ability to process transactions and delay shipments to customers, impact our results of operations or financial condition or harm our control environment.

Our business could be materially and adversely affected if our management information systems are disrupted or if we are unable to successfully install new systems or improve, upgrade, integrate or expand upon our existing systems.

We Face Risks Trying to Attract and Retain Qualified Employees to Support Our Operations.

Our success depends to a significant extent upon the continued service of our key senior management, sales and technical personnel, any of whom may be difficult to replace. Competition for qualified employees is intense, and our business could be adversely affected by the loss of the services of any of our existing key personnel, including senior management, as a result of competition or for any other reason. We do not have employment agreements with our key employees, including senior management or other contracts that would prevent our key employees from working for our competitors in the event they cease working for us. We cannot assure you that we will be successful in our efforts to retain key employees or in hiring and properly training sufficient numbers of qualified personnel and in effectively managing our growth. Our inability to attract, retain, motivate and train qualified new personnel could have a material adverse effect on our business.

Difficulties Consolidating and Integrating Our Operations - We Face Challenges as We Integrate Diverse Operations.

We have experienced, and expect to continue to experience, change in the scope and complexity of our operations resulting primarily from existing and future facility consolidations, strategic acquisitions, joint ventures and other partnering arrangements. Some of the risks from these activities include those associated with the following:

- increasing the scope, geographic diversity and complexity of our operations;

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- conforming an acquired company's standards, practices, systems and controls with our operations;
- increasing complexity from combining recent acquisitions of an acquired business;
- unexpected losses of key employees or customers of an acquired business; other difficulties in the assimilation of acquired operations, technologies or products and
- diversion of management and other resources from other parts of our operations and adverse effects on existing business relationships with customers.

In connection with these activities, we may:

- use a significant portion of our available cash;
- issue equity securities, which may dilute the ownership of current stockholders;
- incur substantial debt;
- incur or assume known or unknown contingent liabilities and
- incur large, immediate accounting write offs and face antitrust or other regulatory inquiries or actions.

For example, the businesses we have acquired had, at the time of acquisition, multiple systems for managing their own production, sales, inventory and other operations. Migrating these businesses to our systems typically is a slow, expensive process requiring us to divert significant resources from other parts of our operations. We may continue to face these challenges in the future. For example, on July 31, 2013, we completed the purchase of Amkor Technology Malaysia Sdn. Bhd. We have also exercised our option to increase our ownership interest in J-Devices from 30% to 60%, which we completed in April 2013 and we have additional options to increase our ownership over time to as much as 80%. We have begun integration of the recently acquired operation in Malaysia, and we anticipate that in the future we will need to integrate J-Devices with our existing operations. In addition, J-Devices will need to integrate with its operations the acquisitions it has recently completed. Furthermore, the governance provisions applicable to J-Devices restrict our ability to cause J-Devices to take certain actions without the consent of the other investors. As a result of the risks discussed above, the anticipated benefits of the increase in our investment in J-Devices or other future acquisitions, consolidations and partnering arrangements may not be fully realized, if at all, and these activities could have a material adverse effect on our business, financial condition and results of operations.

Dependence on Materials and Equipment Suppliers — Our Business May Suffer If the Cost, Quality or Supply of Materials or Equipment Changes Adversely Including Any Disruption that May Occur in the Supply of Certain Metals due to New Regulations Regarding the Supply of Minerals From Conflict Zones.

We obtain from various vendors the materials and equipment required for the packaging and test services performed by our factories. We source most of our materials, including critical materials such as leadframes, laminate substrates and gold wire, from a limited group of suppliers. A disruption to the operations of one or more of our suppliers could have a negative impact on our business. For example, the severe earthquake and tsunami in Japan in 2011 had a significant adverse effect on the electronic industry supply chain impacting the supply of specialty chemicals, substrates, silicon wafers, equipment and other supplies to the electronics industry. In addition, we purchase the majority of our materials on a purchase order basis. Our business may be harmed if we cannot obtain materials and other supplies from our vendors in a timely manner, in sufficient quantities, at acceptable quality or at competitive prices. Some of our customers are also dependent on a limited number of suppliers for certain materials and silicon wafers. Shortages or disruptions in our customers' supply channels could have a material adverse effect on our business, financial condition, results of operations and cash flows. For example, the shortage in the supply of 28 nanometer wafers to some of our customers in 2012 delayed or otherwise adversely impacted the demand for certain of our advanced packaging and test services.

Rules adopted by the Securities and Exchange Commission implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act impose diligence and disclosure requirements regarding the use of certain minerals originating from the conflict zones of the Democratic Republic of Congo and adjoining countries in our products. Industry associations and some of our customers are also implementing initiatives to improve transparency and accountability concerning the supply of these materials and, in some cases, requiring us to certify that the covered

materials we use in our packages do not come

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from the conflict areas. We may incur additional costs associated with complying with the new requirements and customer initiatives. These new requirements and customer initiatives could affect the pricing, sourcing and availability of metals used in the manufacture of semiconductor devices, and we cannot assure you that we will be able to obtain conflict-free materials in sufficient quantities and at competitive prices or that we will be able to verify the origin of all of the metals we use in our manufacturing process. If we are unable to certify that the metals we use in our packages are conflict-free, it could adversely affect our business as some customers may move their business to other suppliers. Our reputation could also be adversely affected.

We purchase new packaging and test equipment to maintain and expand our operations. From time to time, increased demand for new equipment may cause lead times to extend beyond those normally required by equipment vendors. For example, in the past, increased demand for equipment caused some equipment suppliers to only partially satisfy our equipment orders in the normal time frame or to increase prices during market upturns for the semiconductor industry. The unavailability of equipment or failures to deliver equipment on a timely basis could delay or impair our ability to meet customer orders. If we are unable to meet customer orders, we could lose potential and existing customers. Generally, we acquire our equipment on a purchase order basis and do not enter into long-term equipment agreements. As a result, we could experience adverse changes in pricing, currency risk and potential shortages in equipment in a strong market, which could have a material adverse effect on our results of operations.

We are a large buyer of gold and other commodity materials including substrates and copper. The prices of gold and other commodities used in our business fluctuate. Historically, we have been able to partially offset the effect of commodity price increases through price adjustments to some customers and changes in our product designs that reduce the material content and cost, such as the use of shorter, thinner, gold wire and migration to copper wire. However, we typically do not have long-term contracts that permit us to impose price adjustments, and market conditions may limit our ability to do so. Significant price increases may adversely impact our gross margin in future periods to the extent we are unable to pass along past or future commodity price increases to our customers.

Customer Concentration and Loss of Customers — The Loss of Certain Customers or Reduced Pricing or Orders from Existing Customers May Have a Significant Adverse Effect on Our Operations and Financial Results.

We have derived and expect to continue to derive a large portion of our revenues from a small group of customers during any particular period due in part to the concentration of market share in the semiconductor industry. Our ten largest customers together accounted for 62.9% of our net sales in 2013. One customer accounted for 23.7% and another customer accounted for 10.5% of net sales in 2013. The loss of a significant customer, a reduction in orders or decrease in price from a significant customer or disruption in any of our significant strategic partnerships or other commercial arrangements may result in a decline in our sales and profitability and could have a material adverse effect on our business, liquidity, results of operations, financial condition and cash flows.

The demand for our services from each customer is directly dependent upon that customer’s level of business activity, the quality and price of our services, our cycle time and delivery performance, the customer's qualification of additional competitors on products we package or test and a number of other factors. Each of these factors could vary significantly from year to year resulting in the loss or reduction of customer orders. Our business is likely to remain subject to this variability in order levels, and we cannot assure you that our key customers or any other customers will continue to place orders with us in the future at the same levels as in past periods.

From time to time we may acquire or build new facilities, such as our new factory and research and development center in Korea or migrate existing business among our facilities. In connection with these facility changes, our customers require us to re-qualify the new facilities even though we have already qualified to perform the services at our other facilities. We cannot assure that we will successfully re-qualify or that our customers will not qualify our competitors and move the business for such services.

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Capital Expenditures - We Make Substantial Investments in Equipment and Facilities To Support the Demand Of Our Customers, Which May Adversely Affect Our Business If the Demand Of Our Customers Does Not Develop As We Expect or Is Adversely Affected.

We make significant investments in equipment and facilities in order to service the demand of our customers. For example, we had capital expenditures of $566.3 million in 2013, $533.5 million in 2012 and $466.7 million in 2011. The amount of our capital expenditures depends on several factors, including the performance of our business, our assessment of future industry and customer demand, our capacity utilization levels and availability, our liquidity position and the availability of financing. Our ongoing capital expenditure requirements may strain our cash and short-term asset balances, and, in periods when we are expanding our capital base, we expect that depreciation expense and factory operating expenses associated with our capital expenditures to increase production capacity will put downward pressure on our gross margin, at least over the near term. From time to time, we also make significant capital expenditures based on specific business opportunities with one or a few key customers, and the additional equipment purchased may not be readily usable to support other customers. If demand is insufficient to fill our capacity, or we are unable to efficiently redeploy such equipment, our capacity utilization and gross margin could be negatively impacted. Our capital expenditures may increase as we transition to new packaging and test technologies because, among other things, new equipment used for these technologies is generally more expensive and often our existing equipment cannot be redeployed in whole or part for these technologies.

Furthermore, if we cannot generate or raise additional funds to pay for capital expenditures, particularly in some of the advanced packaging and bumping areas, as well as research and development activities, our growth and future profitability may be adversely affected. Our ability to obtain external financing in the future is subject to a variety of uncertainties, including:

- our future financial condition, results of operations and cash flows;
- general market conditions for financing;
- volatility in fixed income, credit and equity markets and
- economic, political and other global conditions.

The lead time needed to order, install and put into service various capital investments is often significant, and, as a result, we often need to commit to capital expenditures in advance of our receipt of firm orders or advance deposits based on our view of anticipated future demand with only very limited visibility. Although we seek to limit our exposure in this regard, in the past we have from time to time expended significant capital for additional equipment or facilities for which the anticipated demand did not materialize for a variety of reasons, many of which were outside of our control. To the extent this occurs in the future, our business, liquidity, results of operations, financial condition and cash flows could be materially adversely affected.

In addition, during periods where customer demand exceeds our capacity, customers may transfer some or all of their business to other suppliers who are able to support their needs. To the extent this occurs, our business, liquidity, results of operations, financial condition and cash flows could be materially adversely affected.

Impairment Charges — Any Impairment Charges Required Under U.S. GAAP May Have a Material Adverse Effect on Our Net Income.

Under U.S. GAAP, we review our long-lived assets including property, plant and equipment, intellectual property and other intangibles for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Factors we consider include significant under-performance relative to expected historical or projected future operating results, significant negative industry or economic trends and our market capitalization relative to net book value. We may be required in the future to record a significant charge to earnings in our financial statements during the period in which any impairment of our long-lived assets is determined. Such charges have had and could have a significant adverse impact on our results of operations and our operating flexibility under our debt covenants.

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Litigation Incident to Our Business Could Adversely Affect Us.

We have been a party to various legal proceedings, including those described in Note 19 to our Consolidated Financial Statements in Part II, Item 8 of this Annual Report on Form 10-K, and may be a party to legal proceedings in the future. These proceedings could require significant management time and resources and, if an unfavorable ruling or outcome were to occur in these legal proceedings, there could be a material adverse impact on our business, liquidity, results of operations, financial condition, cash flows and the trading price of our securities.

We Could Suffer Adverse Tax and Other Financial Consequences if There Are Changes in Tax Law or Taxing Authorities Do Not Agree with Our Interpretation of Applicable Tax Laws, Including Whether We Continue to Qualify for Our Tax Holidays.

Our operations are subject to tax in multiple jurisdictions with complicated and varied tax regimes. Tax laws and income tax rates in these jurisdictions are subject to change due to economic and political conditions. Changes in tax laws could have a material adverse impact on our liquidity, results of operations, financial condition and cash flows. For example, there have been proposals to change U.S. tax laws that would significantly impact how U.S. corporations are taxed on foreign earnings. We earn a substantial portion of our income in foreign countries. Although we cannot predict whether or in what form any of these proposals might be enacted into law, if adopted they could have a material adverse impact.

Our corporate structure and operations are based, in part, on interpretations of various tax laws, including withholding tax, compliance with tax holiday requirements, application of changes in tax law to our operations and other relevant laws of applicable taxing jurisdictions. From time to time, the taxing authorities of the relevant jurisdictions may conduct examinations of our income tax returns and other regulatory filings. We cannot assure you that the taxing authorities will agree with our interpretations, including whether we continue to qualify for our tax holidays. To the extent they do not agree, we may seek to enter into settlements with the taxing authorities which require significant payments or otherwise adversely affect our results of operations or financial condition. We may also appeal the taxing authorities' determinations to the appropriate governmental authorities, but we cannot be sure we will prevail. If we do not prevail, we may have to make significant payments or otherwise record charges (or reduce tax assets) that adversely affect our results of operations, financial condition and cash flows. Additionally, certain of our subsidiaries operate under tax holidays, which will expire in whole or in part at various dates in the future. As those tax holidays expire, our tax expenses will increase as income from those jurisdictions become subject to higher statutory income tax rates, thereby reducing our liquidity and cash flow.

Intellectual Property — Our Business Will Suffer if We Are Not Able to Develop New Proprietary Technology, Protect Our Proprietary Technology and Operate Without Infringing the Proprietary Rights of Others.

The complexity and breadth of semiconductor packaging and test services are rapidly increasing. As a result, we expect that we will need to develop, acquire and implement new manufacturing processes and packaging design technologies and tools in order to respond to competitive industry conditions and customer requirements. Technological advances also typically lead to rapid and significant price erosion and may make our existing packages less competitive or our existing inventories obsolete. If we cannot achieve advances in packaging design or obtain access to advanced packaging designs developed by others, our business could suffer.

The need to develop and maintain advanced packaging capabilities and equipment could require significant research and development, capital expenditures and acquisitions in future years. In addition, converting to new packaging designs or process methodologies could result in delays in producing new package types, which could adversely affect our ability to meet customer orders and adversely impact our business.

The process of seeking patent protection takes a long time and is expensive. There can be no assurance that patents will issue from pending or future applications or that, if patents are issued, the rights granted under the patents will provide us with meaningful protection or any commercial advantage. Any patents we do obtain will eventually expire, may be challenged, invalidated or circumvented and may not provide meaningful protection or other commercial advantage to us.



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Some of our technologies are not covered by any patent or patent application. The confidentiality agreements on which we rely to protect these technologies may be breached and may not be adequate to protect our proprietary technologies. There can be no assurance that other countries in which we market our services will protect our intellectual property rights to the same extent as the U.S.

Our competitors may develop, patent or gain access to know-how and technology similar or superior to our own. In addition, many of our patents are subject to cross licenses, several of which are with our competitors. The semiconductor industry is characterized by frequent claims regarding the infringement of patent and other intellectual property rights. If any third party makes an enforceable infringement claim against us or our customers, we could be required to:

- discontinue the use of certain processes or cease to provide the services at issue, which could curtail our business;
- pay substantial damages;
- develop non-infringing technologies, which may not be feasible or
- acquire licenses to such technology, which may not be available on commercially reasonable terms or at all.

We may need to enforce our patents or other intellectual property rights, including our rights under patent and intellectual property licenses with third parties, or defend ourselves against claimed infringement of the rights of others through litigation, which could result in substantial cost and diversion of our resources. Furthermore, if we fail to obtain necessary licenses, our business could suffer, and we could be exposed to claims for damages and injunctions from third parties, as well as claims from our customers for indemnification. We have been involved in legal proceedings involving the acquisition and license of intellectual property rights, the enforcement of our existing intellectual property rights or the enforcement of the intellectual property rights of others, including the legal proceeding filed by and against Tessera, Inc. and the complaint filed and ongoing proceeding against Carsem (M) Sdn Bhd, Carsem Semiconductor Sdn Bhd, and Carsem Inc., or collectively “Carsem”, which are described in more detail in Note 19 to our Consolidated Financial Statements in Part II, Item 8 of this Annual Report on Form 10-K. Unfavorable outcomes in any legal proceedings involving intellectual property could result in significant liabilities and could have a material adverse effect on our business, liquidity, results of operations, financial condition and cash flows. The potential impact from the legal proceedings referred to in this Annual Report on Form 10-K on our results of operations, financial condition and cash flows could change in the future.

Packaging and Test Processes Are Complex and Our Production Yields and Customer Relationships May Suffer from Defects in the Services We Provide or if We do Not Successfully Implement New Technologies.

Semiconductor packaging and test services are complex processes that require significant technological and process expertise. Defective packages primarily result from:

- contaminants in the manufacturing environment;
- human error;
- equipment malfunction;
- changing processes to address environmental requirements;
- defective raw materials or
- defective plating services.

Test is also complex and involves sophisticated equipment and software. Similar to many software programs, these software programs are complex and may contain programming errors or “bugs.” The test equipment is also subject to malfunction. In addition, the test process is subject to operator error.

These and other factors have, from time to time, contributed to lower production yields. They may also do so in the future, particularly as we adjust our capacity, change our processing steps or ramp new technologies. In addition, we must continue to develop and implement new packaging and test technologies, and expand our offering of packages to be competitive.

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Our production yields on new packages, particularly those packages which are based on new technologies, typically are significantly lower than our production yields on our more established packages.

Our failure to maintain quality standards or acceptable production yields, if significant and prolonged, could result in loss of customers, increased costs of production, delays, substantial amounts of returned goods and claims by customers relating thereto. Any of these problems could have a material adverse effect on our business, liquidity, results of operations, financial condition and cash flows.

In addition, in line with industry practice, new customers usually require us to pass a lengthy and rigorous qualification process that may take several months. If we fail to qualify packages with potential customers or existing customers, such failure could have a material adverse effect on our business, results of operations, financial condition and cash flows.

Competition — We Compete Against Established Competitors in the Packaging and Test Business as Well as Internal Customer Capabilities and May Face Competition from New Competitors.

The outsourced semiconductor packaging and test market is very competitive. We face substantial competition from established and emerging packaging and test service providers primarily located in Asia, including companies with significant processing capacity, financial resources, local presence, research and development operations, marketing, technology and other capabilities. These companies may also have established relationships with many large semiconductor companies that are our current or potential customers. Consolidation among our competitors could also strengthen their competitive position.

We also face competition from the internal capabilities and capacity of many of our current and potential IDM customers. In addition, we compete with companies (including semiconductor foundries) that provide wafer bumping and other advanced packaging solutions that compete with our packaging and test services. For example, one of the major semiconductor foundries, which is substantially larger and has greater financial resources than we do, has expanded, and may continue to expand its operations to include packaging and test services.

We cannot assure you that we will be able to compete successfully in the future against our existing or potential competitors or that our customers will not rely on internal sources for packaging and test services, or that our business, liquidity, results of operations, financial condition and cash flows will not be adversely affected by such increased competition.

Environmental, Health & Safety Laws and Initiatives — Future Environmental, Health & Safety Laws and Initiatives Could Place Additional Burdens on Our Manufacturing Operations.

The semiconductor packaging process generates by-products that are subject to extensive governmental regulations. For example, at our foreign facilities we produce liquid waste when semiconductor wafers are diced into chips with the aid of diamond saws, then cooled with running water. In addition, semiconductor packages have historically utilized metallic alloys containing lead (Pb) within the interconnect terminals typically referred to as leads, pins or balls. Environmental, health and safety laws and regulations in places we do business, impose various controls on the use, storage, handling, discharge and disposal of chemicals used in our production processes and on the factories we occupy and are increasingly imposing restrictions on the materials contained in semiconductor products. We may become liable under these environmental, health and safety laws and regulations for the cost of compliance and cleanup of any disposal or release of hazardous materials arising out of our former or current operations, or otherwise as a result of the existence of hazardous materials on our properties. In such an event, we could be held liable for damages, including fines, penalties and the cost of investigations and remedial actions, and could also be subject to revocation of permits negatively affecting our operations.

Public attention has focused on the environmental impact of semiconductor operations and the risk to neighbors of chemical releases from such operations and to the materials contained in semiconductor products. For example, the European Union’s Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment Directive imposes strict restrictions on the use of lead and other hazardous substances in electrical and electronic equipment. In addition, increasing climate change and environmental concerns could result in our customers requesting that we exceed regulatory standards. Complying with existing and possible future environmental, health and safety laws or related customer requests may impose upon us the need for additional equipment or other process requirements, restrict our ability to expand our operations, disrupt

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our operations, increase costs, subject us to liability or cause us to curtail our operations. Furthermore, energy costs in general could increase significantly due to climate change and other regulations.

Our Business and Financial Condition Could be Adversely Affected by Natural Disasters and Other Calamities.

We have significant packaging and test and other operations in locations which are subject to natural disasters, such as earthquakes, tsunamis, typhoons, floods, droughts, volcanoes and other severe weather and geological events, and other calamities, such as fire; the outbreak of infectious diseases (such as SARs or flu); industrial strikes; breakdowns of equipment; difficulties or delays in obtaining materials, equipment, utilities and services; political events; acts of war and terrorist incidents; industrial accidents and other events, that could disrupt or even shutdown our operations. In addition, our suppliers and customers also have significant operations in such locations. In the event of such a disruption or shutdown, we may be unable to reallocate production to other facilities in a timely or cost-effective manner (if at all) and we may not have sufficient capacity to service customer demands in our other facilities. A natural disaster or other calamity that results in a prolonged disruption to our operations, or the operations of our customers or suppliers, could have a material adverse effect on our business, financial condition, results of operations and cash flows. For example, Japan experienced a severe earthquake and tsunami in 2011 that resulted in significant disruption in the electronics industry supply chain and adversely affected Japan's economy and consumer spending. In addition, in October 2011, Thailand experienced substantial flooding which affected the facilities and operations of customers and suppliers in our industry. In addition, some of the processes that we utilize in our operations place us at risk of fire and other damage. For example, highly flammable gases are used in the preparation of wafers holding semiconductor devices for flip chip packaging. Although we maintain insurance policies for various types of property, casualty and other risks, we do not carry insurance for all the above referred risks and with regard to the insurance we do maintain, we cannot assure you that it would be sufficient to cover all of our potential losses. As a result, our business, financial condition, results of operations and cash flows could be adversely affected by natural disasters and other calamities.

Continued Control By Existing Stockholders — Mr. James J. Kim and Members of His Family Can Effectively Determine or Substantially Influence The Outcome of All Matters Requiring Stockholder Approval.

As of December 31, 2013, Mr. James J. Kim, the Executive Chairman of our Board of Directors, members of Mr. Kim’s immediate family and affiliates owned approximately 137.5 million shares, or approximately 63%, of our outstanding common stock. In June 2013, the Kim family exchanged their 2014 Notes for approximately 49.6 million shares of common stock (the "2014 Convert Shares"). The Kim Family also has options to acquire approximately 0.5 million shares. If the options are exercised, the Kim family's total ownership would be an aggregate of approximately 138.0 million shares of our outstanding common stock or approximately 63% of our outstanding common stock.

The 2014 Convert Shares are subject to a voting agreement. The agreement requires the Kim family to vote these shares in a “neutral manner” on all matters submitted to our stockholders for a vote, so that such 2014 Convert Shares are voted in the same proportion as all of the other outstanding securities (excluding the other shares owned by the Kim family) that are actually voted on a proposal submitted to Amkor’s stockholders for approval. The Kim family is not required to vote in a “neutral manner” any 2014 Convert Shares that, when aggregated with all other voting shares held by the Kim family, represent 41.6% or less of the total then-outstanding voting shares of our common stock. The voting agreement for the 2014 Convert Shares terminates upon the earliest of (i) such time as no principal amount of the 2014 Notes remains outstanding and the Kim family no longer beneficially owns any of the 2014 Convert Shares, (ii) consummation of a change of control (as defined in the voting agreement) or (iii) the mutual agreement of the Kim family and Amkor.

Mr. James J. Kim and his family and affiliates, acting together, have the ability to effectively determine or substantially influence matters submitted for approval by our stockholders by voting their shares or otherwise acting by written consent, including the election of our Board of Directors. There is also the potential, through the election of members of our Board of Directors, that the Kim family could substantially influence matters decided upon by our Board of Directors. This concentration of ownership may also have the effect of impeding a merger, consolidation, takeover or other business consolidation involving us, or discouraging a potential acquirer from making a tender offer for our shares, and could also negatively affect our stock's market price or decrease any premium over market price that an acquirer might otherwise pay. Concentration of ownership also reduces the public float of our common stock. There may be less liquidity and higher price volatility for the stock of companies with a smaller public float compared to companies with broader public ownership.

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Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The location and size of our manufacturing facilities are set forth in the table below. All facilities are owned unless otherwise specified.

| | Approximate Facility Size (Square Feet) |
|---|---|
| Korea | |
| Gwangju, Korea | 1,221,000 |
| Seoul, Korea | 668,000 |
| Pupyong, Korea (1) | 448,000 |
| Philippines | |
| Muntinlupa, Philippines (2) | 661,000 |
| Province of Laguna, Philippines (2) | 629,000 |
| China | |
| Shanghai, China (3) | 887,000 |
| Taiwan | |
| Hsinchu, Taiwan | 489,000 |
| Lung Tan, Taiwan | 353,000 |
| Malaysia | |
| Telok Panglima Garang, Malaysia (3) | 377,000 |
| Japan | |
| Kitakami, Japan (4) | 207,000 |

(1) Includes a lease for 44,000 square feet of building space.

(2) As a result of foreign ownership restrictions in the Philippines, the land is leased. A portion of the land we lease is owned by realty companies in which we own a 40% interest. We also lease 661,000 square feet of building space.

(3) Land is leased.

(4)