## **INDUSTRY OVERVIEW**

This section contains certain information which is derived from official government publications and industry sources as well as a report the Company commissioned from Prismark, an Independent Third Party. The Company believes that the sources of this information are appropriate sources for such information and have taken reasonable care in extracting and reproducing such information. The Company has no reason to believe that such information is false or misleading or that any fact has been omitted that would render such information false or misleading. The information derived from the above sources has not been independently verified by the Company, the Sponsor, the Bookrunner, the Underwriter or any other party involved in the [REDACTED].

The information from official government publications may not be consistent with information available from other sources. The Company, its affiliates or advisers, the Sponsor, the Bookrunner, the Underwriter or their affiliates or advisers, Prismark or any party involved in the [REDACTED] do not make any representation as to the accuracy, completeness or fairness of such information from official government publications and, accordingly, you should not unduly rely on such information from official government publications.

This section contains information extracted from the commissioned report from Prismark which reflects research estimates of the market size, rankings and performance from publicly available secondary sources and trade survey analysis of the opinions and perspectives of industry players, and is prepared primarily as a market research tool. Research by Prismark should not be considered as the opinion of Prismark as to the value of any security or the advisability of investing in the Company and accordingly, such information should not be relied upon.

#### SOURCES OF INFORMATION

#### **Prismark**

Prismark, a company founded in 1994 and based in New York, is an electronics industry consulting firm with offices in New York and Taipei. Prismark is an Independent Third Party. The Company commissioned Prismark to conduct market analysis of the semiconductor and discrete semiconductor industry, and produce the Prismark Report at a total fee of US\$26,500. The Company is of the view that the payment of such fee does not affect the fairness of the conclusions drawn in the Prismark Report.

# **Prismark Report**

The Company has included certain information from the Prismark Report in this [REDACTED] because the Directors believe that such information facilitates an understanding of the relevant market for potential investors. The information, data and forecast contained in the Prismark Report came from primary and secondary sources. The market research process for compiling the Prismark Report involved:

i. in-depth discussions and interviews with managers or executives of leading companies profiled;

- ii. review of financial filings, investor presentations and other press releases to collect the historic financial and component sales data over the course of any given year; and
- iii. detailed desk research using Prismark's own database collected based on a combination of company sales, data reported by Semiconductor Industry Association ("SIA") and Taiwan Semiconductor Industry Association ("TSIA"), as well as other analysts.

Analysis and forecasts contained in the Prismark Report are based on the following major assumptions at the time of compiling such report:

- i. the global economy is likely to maintain a steady but moderate growth through the forecast period;
- ii. the social, economic and political environment is likely to remain stable in the forecast period; and
- iii. there will not be catastrophic events that will result in a disruption of demand for the semiconductor supply chain ecosystem.

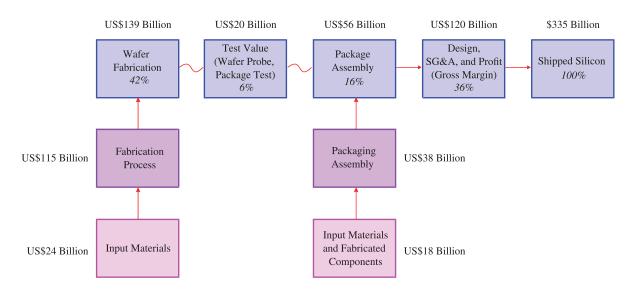
The market assessments are based upon the current market, as well as likely future conditions as perceived by the market. The estimation of future market conditions is a very problematic exercise which, at best, should be regarded as an indicative assessment of possibilities rather than absolute certainties. The process of making forward projections and market outlook involves assumptions regarding a considerable number of variables, which are acutely sensitive to changing conditions. Some assumptions inevitably will not materialise and unanticipated events and circumstances may occur.

After taking reasonable care, the Directors confirm that to their knowledge there is no adverse change in the market information since the date of the Prismark Report which may qualify, contradict or have a material impact on the information in this section.

#### SEMICONDUCTOR MANUFACTURING VALUE CHAIN

The chart below sets out where the value is derived across the value chain for manufacturing semiconductor products in the global semiconductor manufacturing industry.

## Global semiconductor manufacturing value chain (2015)



Source: Prismark

Shipped silicon — represents the total value of semiconductor devices shipped to the end users. In 2015, the global semiconductor industry shipped approximately US\$335 billion worth of components.

Wafer fabrication — represents value derived from the wafer processing of the silicon, which could be either done by an internal fab, or a wafer foundry as a service provider. In 2015, among the approximately US\$335 billion total worth of components shipped in the global semiconductor industry, approximately 42% or US\$139 billion was derived from wafer fabrication, which included approximately US\$115 billion worth value generated from fabrication process and approximately US\$24 billion worth input materials.

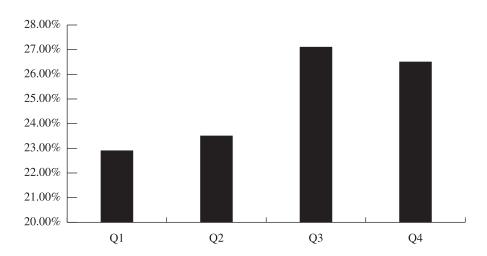
Test value — represents value derived from wafer probe and package testing. In 2015, among the approximately US\$335 billion total worth of components shipped in the global semiconductor industry, approximately 6% or US\$20 billion was derived from wafer probe and package testing.

Package assembly — represents value derived from assembly of the semiconductor device into a package that can be shipped to an end customer. In 2015, among the approximately US\$335 billion total worth of components shipped in the global semiconductor industry, approximately 16% or US\$56 billion was derived from package assembly, which included approximately US\$38 billion worth value generated from equipment, processing and development involved in the package assembly process and approximately US\$18 billion worth major raw materials related to package assembly.

## INDUSTRY OVERVIEW

Design, selling, general and administrative (SG&A) and profit (gross margin) — represents all semiconductor design and SG&A expenses, as well as profits. In 2015, among the approximately US\$335 billion total worth of components shipped in the global semiconductor industry, approximately 36% or US\$120 billion went to design, SG&A as well as the profit (gross margin).

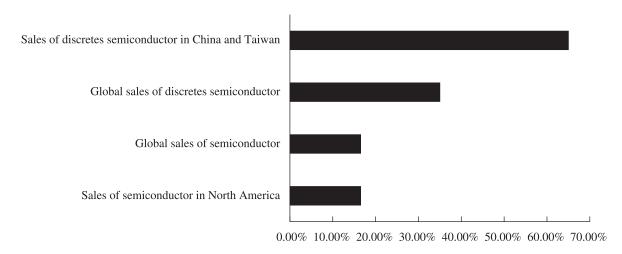
## Semiconductor market seasonality



Source: Prismark

According to Prismark, The semiconductor industry is a cyclical market, with seasonal strength in the third and fourth quarters of the calendar year. For the past 20 years, on average the second half of the year contributed to approximately 53.6% of the total revenue of the year, which was approximately 7.2% higher than that of first half of the year. For the year of 2016, Prismark forecasted the revenue of the second half of the year will be 9.3% higher than the first half.

## Percentage of semiconductor sales through distributors



Source: Prismark

According to Prismark, 65.0% sales of discrete semiconductors in the PRC and Taiwan were through distributors and sales through distribution channels were more practical for companies with smaller size of revenues (less than US\$400 million), and approximately 65.0%–85.0% of revenues from these companies was sold through distributors.

#### SEMICONDUCTOR MARKET DEMAND AND GROWTH OUTLOOK

## Global, PRC and Taiwan semiconductor market demand

According to Prismark, the market performance of the semiconductor industry may be affected by a number of underlying factors, including but not limited to economic growth, release of new consumer electronic devices, corporate capital spending, consumer demand, legislative actions such as tighten automotive safety requirements, or even general consumer sentiment.

The tables below set out certain data of the global semiconductor market, the PRC (including Hong Kong) and Taiwan semiconductor market for the period from 2008 to 2015, respectively.

## Global semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	560.6	529.3	661.5	660.8	672.6	705.5	775.0	785.0	4.9%
Average sales price (US\$)	0.44	0.43	0.45	0.45	0.43	0.43	0.43	0.43	(0.4%)
Revenue (US\$ billion)	248.6	226.3	298.3	299.5	291.6	305.6	335.8	335.5	4.4%

Source: SIA

#### PRC semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	169.8	172.9	218.6	225.4	227.0	241.8	268.0	280.0	7.4%
Average sales price (US\$)	0.27	0.26	0.29	0.29	0.27	0.33	0.34	0.34	3.3%
Revenue (US\$ billion)	45.1	45.6	63.1	66.2	61.9	80.9	91.0	95.2	11.3%
As a percentage of global									
revenue	18.1%	20.2%	21.2%	22.1%	21.2%	26.5%	27.1%	28.4%	

Source: SIA

#### Taiwan semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	16.1	13.8	16.1	13.1	12.5	15.3	17.3	16.0	0.0%
Average sales price (US\$)	0.38	0.37	0.38	0.39	0.40	0.40	0.40	0.40	0.7%
Revenue (US\$ billion)	6.1	5.1	6.1	5.1	5.0	6.1	6.9	6.4	0.7%
As a percentage of global									
revenue	2.5%	2.3%	2.0%	1.7%	1.7%	2.0%	2.1%	1.9%	

Source: SIA/TSIA/Prismark

The global semiconductor market demand in terms of revenue grew from approximately US\$248.6 billion in 2008 to approximately US\$335.5 billion in 2015, representing a CAGR of approximately 4.4%, while the PRC semiconductor market outpaced the global market growth by a significant margin from approximately US\$45.1 billion in 2008 to approximately US\$95.2 billion in 2015, representing a CAGR of approximately 11.3% and constituted approximately 28.4% of the global semiconductor market in 2015. Taiwan semiconductor market demand in terms of revenue grew slightly from approximately US\$6.1 billion in 2008 to approximately US\$6.4 billion in 2015, representing a CAGR of approximately 0.7%. According to Prismark, the Taiwanese market has underperformed the overall market, largely due to a continuing move of board level assembly from Taiwan to the PRC.

Despite a strong performance of the PRC semiconductor market, the market demand in terms of revenue in the rest of the Asia (including Taiwan, Korea, Vietnam, Singapore, Thailand, Malaysia, etc.) grew at a much slower CAGR of approximately 3.8% from 2008 to 2015, primarily due to migration of semiconductor manufacturing toward the PRC in these regions. According to the Prismark Report, a recovery in the rest of Asia is expected as the transition to the PRC slows, and some companies look to Vietnam and other locations (e.g. India) for lower cost manufacturing. The growth for semiconductor demand in the rest of the Asia (including Taiwan, Korea, Vietnam, Singapore, Thailand, Malaysia, etc.) is forecasted to be at a CAGR of approximately 6.0% from 2015 to 2018.

#### Global semiconductor market forecast (2016E-2020E)

	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	785.0	824.2	1010.0	5.2%
Average sales price (US\$)	0.43	0.42	0.40	(1.2%)
Revenue (US\$ billion)	335.5	348.9	407.0	3.9%

Source: SIA (2015)/Prismark (2016, 2020)

#### PRC semiconductor market forecast (2016E-2020E)

	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	280.0	297.0	371.0	5.7%
Average sales price (US\$)	0.34	0.34	0.35	0.7%
Revenue (US\$ billion)	95.2	101.0	129.8	6.5%
As a percentage of global revenue	28.4%	28.9%	31.9%	

Source: SIA (2015)/Prismark (2016, 2020)

## **INDUSTRY OVERVIEW**

#### Taiwan semiconductor market forecast (2016E-2020E)

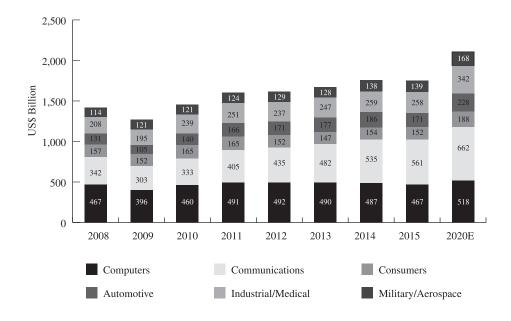
	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	16.0	15.8	15.8	0.0%
Average sales price (US\$)	0.40	0.40	0.40	0.0%
Revenue (US\$ billion)	6.4	6.3	6.3	0.%
As a percentage of global revenue	1.9%	1.8%	1.5%	

Source: SIA/TSIA (2015/2016)/Prismark (2020)

#### **Global Growth Outlook by Application Segments**

Semiconductors are used in a wide array of electronic application segments, such as computers, communications, consumers, automotive, industrial, medical, military and aerospace. The diagram below indicates the growth of the electronics industry by application segments from 2008 to 2015, and a forecast for the period from 2015 to 2020.

#### Electronic systems global revenue by application segments (2008-2020E) (\$US Billion)



Source: Prismark

The communications and automotive segments had been a key growth driver from 2008 to 2015, with a CAGR of approximately 7.3% and 3.9% respectively, much higher than the average overall CAGR of approximately 3.0% for all segments during the same period. From 2015 to 2020, however, the growth of these two segments is expected to slow down. Prismark expects that the communications segment will experience a lower than average growth rate from 2015 to 2020, while the automotive segment is expected to achieve a growth rate above average. As forecasted by Prismark, segments including industrial, medical and automotive are expected to be the growth drivers from 2015 to 2020.

#### Global growth outlook by product types

Semiconductor devices are manufactured both as single discrete devices and as integrated circuits. Discrete semiconductors are used in almost all electronic systems for power distribution, power conditioning, and other basic functional blocks. There are a variety of different types of discrete devices, including diodes, small signal transistors, power transistors, thyristors and rectifiers. The table below sets out the global unit shipments of discrete semiconductors by type for the periods indicated:

## Global unit shipment of discrete semiconductors by type (in Billion units)

-	2013	2014	2015	2020E	CAGR 2015–2020E
Diodes	146	154	150	183	4.1%
Small signal transistors	103	109	107	133	4.4%
Power transistors	44	48	48	62	5.3%
Thyristors	61	65	63	80	4.9%
Rectifier/others	4	4	4	5	4.6%
Total	358	380	372	463	4.5%

Source: SIA (2013-2015)/Prismark (2020)

#### Global and the PRC diode and transistor (discrete) semiconductor market demand

Diodes and transistors collectively contributed to a significant portion of the global units of discrete semiconductors shipped in 2015. According to Prismark, the global diode and transistor semiconductor market demand in terms of revenue grew from approximately US\$16.9 billion in 2008 to approximately US\$18.7 billion in 2015, representing a CAGR of approximately 1.5%, while the PRC diode and transistor semiconductor market slightly outpaced the global market and grew from approximately US\$4.8 billion in 2008 to approximately US\$6.1 billion in 2015, representing a CAGR of approximately 4.9%. The tables below set out certain data of the global and the PRC diode and transistor semiconductor market demand from 2008 to 2015, respectively.

# Global diode and transistor (discrete) semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	324	289	371	356	346	358	380	372	2.0%
Average sales price (US\$)	0.052	0.049	0.053	0.060	0.055	0.051	0.053	0.050	(0.6%)
Revenue (US\$ billion)	16.9	14.2	19.8	21.4	19.1	18.2	20.0	18.7	1.5%

Source: SIA

## PRC diode and transistor (discrete) semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	108	85	130	125	120	124	138	144	4.2%
Average sales price (US\$)	0.044	0.041	0.045	0.046	0.042	0.045	0.045	0.042	(0.7%)
Revenue (US\$ billion)	4.8	3.5	5.9	5.8	5.0	5.6	6.2	6.1	4.9%
As a percentage of global									
revenue	28.4%	24.6%	29.8%	27.1%	26.2%	30.8%	31.0%	32.6%	

Source: SIA

## Taiwan diode and transistor (discrete) semiconductor market demand (2008-2015)

									CAGR
	2008	2009	2010	2011	2012	2013	2014	2015	2008-2015
Units (billion)	14.9	12.5	14.3	11.8	12.2	14.0	16.7	15.3	0.4%
Average sales price (US\$)	0.047	0.048	0.049	0.051	0.049	0.050	0.048	0.05	0.6%
Revenue (US\$ billion)	0.70	0.60	0.70	0.60	0.60	0.70	0.80	0.75	1.0%
As a percentage of global									
revenue	4.1%	4.2%	3.5%	2.8%	3.1%	3.8%	4.0%	4.0%	

Source: SIA/TSIA/Prismark

Prismark expects that the growth of the PRC diode and transistor semiconductor market will further outpace the global market primarily driven by the strong demand for end-products within the PRC not just because assembly the PRC becomes more significant in the next five years.

The tables below set out the forecasts to the global, the PRC and Taiwan diode and transistor semiconductor market from 2016 to 2020, respectively.

## Global diode and transistor (discrete) semiconductor market forecast (2016E-2020E)

	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	372	390	463	4.4%
Average sales price (US\$)	0.050	0.050	0.049	(0.5%)
Revenue (US\$ billion)	18.7	19.4	22.7	4.0%

Source: Prismark

#### The PRC diode and transistor (discrete) semiconductor market forecast (2016E-2020E)

	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	144	152	190	5.7%
Average sales price (US\$)	0.042	0.042	0.043	0.6%
Revenue (US\$ billion)	6.1	6.5	8.2	6.0%
As a percentage of global revenue	32.6%	33.5%	36.1%	

Source: Prismark

## Taiwan diode and transistor (discrete) semiconductor market forecast (2016E-2020E)

	2015	2016E	2020E	CAGR 2016E-2020E
Units (billion)	15.3	15.7	18.0	3.5%
Average sales price (US\$)	0.049	0.049	0.050	0.5%
Revenue (US\$ billion)	0.75	0.77	0.90	4.0%
As a percentage of global revenue	4.0%	4.0%	4.0%	

Source: TSIA/Prismark

#### OVERVIEW OF THE DISCRETE SEMICONDUCTOR PACKAGES

## Discrete semiconductor packages

Discrete semiconductors are available in different packages using different packaging technologies with different outline and dimensions. Discrete semiconductors also vary in terms of specifications and characteristics featuring, among others, voltage, current, power dissipation, thermal resistance, reverse-current protection for the use in a broad spectrum of applications. Discrete semiconductors are typically packaged into a standard through-hole or surface mount package. According to Prismark, discrete packages can be classified into four generations in terms of discrete packaging technology, as categorised in the table below:

Generation	Package type	Key features	Product picture		
1st	Axial and through-hole packaging, such as DO and TO series	Through-hole packages for mature applications	#		

## **INDUSTRY OVERVIEW**

Generation	Package type	Key features	Product picture
2nd	Traditional surface mount packages, such as SOD and SOT series, mainly represented by SOT-23, SOT-89, SOT-223, SOT-323, and similar packages	Most commonly applied today, but slowly losing favor to smaller packages	333
3rd	Micro-package for discrete devices, such as SOT-723, SOT-963, SOT-1123, SOD-923, etc.	Fast growth, and cost competitive to mature packages	-
4th	QFN-style and WLCSP	Fastest growth and driven by small size and performance. Some applications not ready to deploy such packages, but most consumer portables already using these packages	

Source: Prismark

According to Prismark, the first generation includes axial and through-hole packaging, such as DO and TO series. Prismark estimates that 15% of diodes and transistors still use this generation of discrete packaging. The table below sets out the global unit shipments of discrete semiconductor by package type in 2015, and forecasted global unit shipments by package type in 2020. The Group's power discrete semiconductor mainly comprises the package type TO-220 similar and other TO series. For each of the two years ended 31 December 2014 and 2015, the Group's revenue generated from package type of TO-220 accounted for approximately 57.6% and 58.1% of total revenue, respectively.

# Global diode and transistor (discrete) semiconductor market growth by package type

Unit Volume (Billion)

				CAGR	
Package type	2013	2015	2020E	2015-2020E	Major applications
DO	17	15	14	(1.4%)	Diode, rectifier
SOD	40	38	35	(1.6%)	Diode
SOT-23 Similar	101	100	110	1.9%	Diode, small signal transistor
SOT Others	57	59	61	0.7%	Diode, small signal transistor, thyristor
TO-92 Similar	6.5	6.5	8	4.2%	Diode, small signal transistor
TO-220 Similar	12.5	12.5	15	3.7%	Power transistor, rectifier
TO Others	12	11	12	1.8%	Diode, small signal transistor, power transistor, rectifier, thyristor
DPAK and Power-SO	27	30	40	5.9%	Power transistor, rectifier
QFN, DFN, SC-70, etc.	60	70	108	9.1%	Diode, small signal transistor, power transistor, rectifier, thyristor
WLCSP	25	30	60	14.9%	Diode, small signal transistor, power transistor
Total Discrete	358	372	463	4.5%	

Source: Prismark Package Database

## Raw materials and cost structure of discrete semiconductor packages

According to Prismark, die cost and package assembly material cost collectively account for more than half of the total cost of packaging finished discrete semiconductors such as diodes and transistors. As a result, a price increase in die or any package assembly material would cause an increase in the average sales price of the final packaged discrete semiconductors.

The table below sets forth a breakdown of the cost structure of a typical discrete components:

## Cost structure for typical discrete components — 2015 (US\$ per finished device)

Low end application processor Diode Power transistor 14.00 Average sales price 100% 0.01 100.0% 0.25 100.0% Die cost 5.50 39% 0.003 25.0% 0.07028.0%Package assembly 2.20 0.005 45.0% 40.0% 16% 0.100 Test 1.40 10% 0.0007 7.0% 0.022 9.0% 4.90 35% 0.0023 23.0% 0.05823.0% Design/Margin

Source: Prismark

# Manufacturing cost and materials breakdown of diode and transistor (US\$ per finished device)

	Diode		Power transistor	
	2011	2015	2011	2015
Die cost (Note)	0.0028	0.0025	0.08	0.07
Package assembly	0.006	0.005	0.11	0.1
Leadframe	0.0012	0.0012	0.02	0.02
Gold/Copper wire	0.0011	0.0005	0.02	0.01
Epoxy molding compound	0.0006	0.0007	0.004	0.005
Die attach	0.0005	0.0006	0.01	0.011

Source: Prismark

Note: According to Prismark, cost of EPI wafer constitutes approximately 65% of total Die Cost.

The historical cost reduction of package assembly has been enabled by material cost reductions. Material costs of both diodes and transistors decreased from 2011 to 2015, primarily due to the transition from using gold wire to copper wire during the manufacturing process.

According to Prismark, discrete semiconductor packaging cost is expected to decrease 1.5% to 2.0% annually, which is primarily enabled by reduced material volume and/or cost, improved equipment efficiencies, improved yields, and better plant and labor utilization. Assuming stable metals and resin material pricing, it is expected that the raw material costs will decline 1% to 2% annually, across discrete components, enabled by improved utilization of material per package.

#### MARKET PLAYERS AND COMPETITIVE LANDSCAPE

## Market players and market trend

The discrete semiconductor market is largely controlled by multinational companies who have dominated this market for decades. According to Prismark, the global top-ten semiconductor companies have consistently represented 50% to 55% of the world-wide production of semiconductors between 2008 and 2015.

The PRC players in the market are mainly focused on discrete semiconductor package assembly for leading global players. As packaging costs can account for a significant portion of the manufacturing cost of finished discrete devices, ranging from 30% to 60% depending on die size and complexity, leading discrete semiconductor suppliers have few incentives to outsource much of their discrete packaging and testing, given that their internal cost structures are usually much more competitive. However, according to Prismark, approximately 15% of discrete semiconductor packaging are outsourced by a few key players.

According to Prismark, while the supply of semiconductor components has been growing at approximately 15% to 20% annually, the market demand is growing at only 5% to 6% annually, leaving considerable discrepancies between supply and demand and thus intensifying the competition among the market players.

## Discrete suppliers revenue 2014–2015 (US\$ Billion)

	2014	2015	
Global	20.0	18.7	
The PRC	6.2	6.1	
The Company	0.016	0.018	
Revenue of the company as percentage of global	0.08%	0.10%	
Revenue of the company as percentage of the PRC	0.26%	0.30%	

#### The Competitive landscape

According to Prismark, the semiconductor market in the PRC has been well served by companies who are long established participants in the market, and there are no specific and imminent threats and/ or challenges at the industry level. Similar to the global market where the top-ten players have consistently represented 55% to 60% of the total production, the semiconductor market in the PRC has high market share concentration for discrete semiconductors, making it challenging for smaller players with limited product offerings to penetrate the market.

To compete with the multinational companies who have advantages in brand recognition, resources, long-term customer relationships, and technology development enabled by investments, smaller players are expected to penetrate the market by offering customised solutions, faster delivery of products, as well as adherence to high-quality and services. In the long run, Prismark forecasts that there will be continuing emergence of smaller local players in the market, along with mergers among the large players. The competitive landscape has remained relatively unchanged in the past ten years.

## Competitive advantages

The Group is principally competing with discrete semiconductor manufacturers who offer similar products. The Directors consider the Group's competitive strengths include but not limited to:

- (i) reputable as a high-quality manufacturer of power discrete semiconductors;
- (ii) strong research and development capability for product development;
- (iii) enhancement and advanced production lines coupled with strong technology expertise; and
- (iv) strong and stable management team with extensive industry experience.

In the meantime, the Group may have competitive weaknesses such as limited product offerings compared to market-leading discrete players; the Group can only currently compete in its products offered, and the Group has limited history with end users. For details of competitive strengths and business strategies of the Group, please refer to the subsections headed "Business — Competitive strengths" and "Business — Business strategies" of this [REDACTED].

#### Entry barriers for diode and transistor market in the PRC

- i. Although discretes are not as complex as logic ICs, the sheer number of components supported and developed by a top ten supplier is in the hundreds or thousands. It will take a new player many years to develop such a library of products.
- ii. The number of end users is potentially in the thousands, and the largest players cannot call out one customer that makes up even 5% of total sales. Supporting a larger number of customers will be a challenge for a fast growth and small player.
- iii. The wafer fabrication processes are increasingly varied, with leading discrete players supporting over fifteen different processes to meet unique demands. While a new player may have access to many different die suppliers, it is unlikely to match the breadth of a market-leading company.
- iv. Many PRC players focus on serving the package assembly for leading global players. However, these end companies consistently assemble 70% to 90% of their packages internally, leaving relatively small opportunity for merchant package assembly.
- v. A few multinational companies have begun to use more outsourcing in recent years, and this trend will continue, but slowly.

## Opportunities and threats for diode and transistor market in the PRC

## **Opportunities**

- i. many PRC players have found a means to enter the discrete market by serving the leading discrete suppliers directly whereas they design, fab, and package parts for those foreign discrete players who sell them under their own leading label.
- ii. As multinational companies continue to outsource more production, there are opportunities to support them directly or through acquisition of their current factories in the PRC.

#### **Threats**

According to Prismark, there are no specific threats and/or challenges to the diode and transistor market in the PRC, the market is well served by companies that have been serving this segment for a decade or longer. While companies may look to local supply of components, many of these foreign companies are already utilizing low cost PRC or other Asian design and assembly locations that have been in production for decades utilizing well depreciated equipment.

While the market demand for semiconductor components is growing at 5% to 6% annually, the underlying growth in supply has been growing at 15% to 20% annually. This is to close the large gap in production versus demand that still exists. Much of the demand for discrete semiconductors in the PRC is being met by large foreign companies, even if they have production bases in the PRC. The market share concentration for discretes is high, with the top ten players representing 56% of the production. However, this is due to logical economies of scale, and the challenge for smaller players to penetrate the market with limited product offerings.