Electronics Industry in Singapore

Summary

Since gaining independence in 1965, Singapore has emerged as a regional economic powerhouse. One of the key reasons for this is its strong and diverse manufacturing sector, which has been the cornerstone of Singapore’s thriving economy. For many years manufacturing has contributed at least 25 percent to the Gross Domestic Product (GDP), of which the electronics industry plays a significant role in terms of foreign investment as well as value-added output and employment.

Electronics Industry in Singapore is divided into three categories, which are also its best prospects:

• Semiconductors and Disk Drives
• Electronic Modules and Components
• Electronic Manufacturing Services and Peripherals

Data from Singapore’s Economic Development Board (EDB) shows growth of over one percent for the semiconductor category, computer peripherals experienced more than 22 percent growth, five percent for data storage and also five percent for other electronic modules & components respectively as of June 2008. Overall, electronic products for the first half of the year grew 2.5 percent compared to the same period last year.

Singapore is a key player for infocomm products. It is a major supply chain hub for the PC industry with top players like HP, Dell, Lenovo and Apple having a strong supply chain management presence here. More than 50% of the world’s point-of-sale (POS) products are designed or made here. Singapore is also a major manufacturing site for HP’s enterprise storage, inkjet cartridges and networking products.

In 2007, Singapore’s electronics products contributed 45 percent of the country’s total exports. After Hong Kong and the European Union, the United States is Singapore’s third biggest
electronics market. For Singapore, a country of slightly less than than five million people, it is the U.S.’s 15th largest trading partner and 11th largest export market in Asia for 2007.

Market Demand

Singapore's achievements in the Electronics industry, according to the Singapore Economic Development Board (EDB), include the following:

- 10 percent global market share for semiconductor wafer foundry output
- Home to the world's top three wafer foundry companies
- Home to four of the world’s top five sub-contract assembly-and-test companies
- Home to four of the world's top 10 fabless IC design companies
- 25 percent global market share for printers

Singapore's importance in the electronics industry is evident in the quantity and scope of facilities currently located in the country. The country is home to over 14 Semiconductor wafer fabrication plants (including three 12-inch fabrication plants), 20 assembly and test operations, and 40 IC design centers.

Over the years, Singapore’s hard disk industry has been moving from the lower end of the value chain of mass-producing simple drives to the higher end. It now churns out cutting-edge hard disks such as those that are used in servers to store massive amounts of data amounting to thousands of gigabytes. The industry has also diversified into making a key component within hard disk drives known as disk media or magnetic disks that hold media. However, this industry has been shrinking. Seagate, the world's largest manufacturer of hard disk drives, is embarking on a new S$200 million media plant to design, develop and manufacture its 1-inch drive for global consumption; as the plant will create 2,000 jobs over the next few years as it reaches full capacity. In addition to this facility, the company also operates a factory that develops small portable storage devices and produces the company's enterprise and mobile storage products. Apart from Seagate, the only other remaining hard disk manufacturer in Singapore is Hitachi, which currently employs more than 4300 workers.

The Singapore Government plans to double manufacturing output by 2020 with the following targets:
• to double the current total manufacturing output to $220 billion (S$300 billion)
• to double the current total manufacturing value-added to $58 billion (S$80 billion)
• to raise the current skill profile of manufacturing workers to 50 percent

As a result of this projected growth, over 90,000 workers were employed in the electronics industry in 2007, generating $53 billion in output. It appears that the targets are well on their way to being met as many MNCs have recently announced expansion plans in Singapore.

In 2006, Micron Technology began test and assembly operations at its Singapore facility following a major investment of $250 million the previous year. The facility takes silicon wafers and processes them into flash memory chips, which are used to store data such as digital cameras and MP3 players.

Both Samsung-Siltronic (Korean-German joint venture) and Soitec (French) also announced in 2006 that they would build a $1 billion and a $450 million wafer fabrication plants respectively in Singapore. It is Singapore’s first 300mm wafer substrate and ingot pulling facility. The Samsung-Siltronic plant will be able to produce approximately 250,000 300mm wafers a month when in operation while the Soitec plant will produce less.

Marvell Technology which designs / develops chips for iPods and wireless devices announced two years ago that they will invest $63.29 million over five years to expand its operation in Singapore which will include a design center. This center will be the company’s largest outside the U.S. and is part of a facility that will also have sales and technical support. Similarly, NEC Electronics is upgrading its Singapore plant. The company closed its plant in Ireland and relocated to Singapore where current output is 15 million chips per month. When the upgrade is completed end of this decade, it will be able to produce around 20 million chips monthly and Singapore will serve as the company’s assembly and testing hub for the Asia-Pacific region.

IM Flash Singapore was formed in February 2007 as a joint venture between Micron and Intel where the manufacturing facility being built, will be operational within the next 9-12 months. This facility will primarily manufacture NAND Flash memory chips to be used in consumer electronics, removable storage and handheld communication devices. In May 2008, Intel, Samsung and TSMC announced that they hope to create a 450 mm wafer by 2012 since by working together, these companies can save money, reduce risk and share ideas. This larger wafer would lower costs per chip, as well as other resources, like energy and water; which was seen some years ago with the conversion from 200mm to 300mm wafers resulting in reduced aggregate emissions.
In July 2008, the ground was broken for a new operations center for Applied Material which is expected to be completed in late 2009. The 32,000 square meter facility will serve as a hub for Applied’s business activities such as global purchasing, sales, manufacturing, engineering and financial activities throughout Asia. They will support customers in the Asian chip industry, as well as the rapidly growing solar markets in India and China.

Singapore recognizes the importance of wafer fabrication; in fact, to help increase talent, the EDB plans to invest up to US$6 million to train wafer fabrication engineers over three years. This new program, cosponsored by semiconductor companies here, is to encourage undergraduate students in electrical, electronics, mechanical, materials and chemical engineering to specialize in wafer fabrication and work in the semiconductor industry.

By CHAN Y K

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