sedb.com

Electronics

Factsheet 2010

At a Glance

Singapore has developed a strong foundation for the Electronics industries over the last 40 years. They are key contributors to Singapore's economy.

In 2009, Electronics was the major industry that underpinned Singapore's economic growth, contributing an output of S$63.9 billion and employing more than 76,000 workers. The 2009 investment projects are expected to contribute S$1.8 billion in VA per annum to Singapore's Gross Domestic Product (GDP) when they are fully implemented. This is generated by 2009 Electronics investment commitments of S$4.9 billion in manufacturing FAI, or 41.5 per cent of total manufacturing FAI. More than 4,000 jobs are also expected to be created.

Singapore ~ Global Electronics Hub

Industry Vision

EDB aims to develop Singapore into a world-class electronics manufacturing hub with end-to-end R&D capabilities We will continue to position Singapore as the choice location for companies to create and manage new markets, products and processes, technologies and applications. Electronics in Singapore will also evolve and grow to meet the challenges of a new age. Riding on our existing strengths, we aim to create new businesses and opportunities through emerging growth areas such as Green Electronics, Bioelectronics, Plastic Electronics and Security.

Opportunities in Singapore

1. Semiconductor

- The semiconductor industry consists of integrated circuit (IC) design, wafer fabrication, and assembly and test activities.
- The industry started in Singapore in the 1960s with assembly and test facilities.
- In the 1980s, the industry expanded to include wafer fabrication operations.
- Since then, the industry has grown rapidly. Today, there are 14 operating silicon wafer fabs, 20 assembly and test operations and about 40 IC design

EDB SINGAPORE

centres. This includes three 12-inch fabs (GLOBALFOUNDRIES Fab 7, IM Flash Singapore, UMC Fab 12i, and TECH Semiconductor), the world's top three wafer foundry companies, three of the world's top five assembly and test subcontractor companies, and nine of the world's top 10 fabless IC design companies.

There are four wafer fab parks in Singapore, occupying more than 200 ha of land in Woodlands, Tampines, Pasir Ris and the North Coast area near Senoko.

- The semiconductor industry currently employs about 3,500 R&D engineers across the value chain, in areas such as IC design, wafer fabrication process development, assembly, package and test development, as well as embedded software development.

2. Electronics Components

Advanced Substrates

- Renamed from Printed Circuit Board (PCB) to include activities in flexible circuits, semiconductor packaging substrates, high density interconnects and Low Temperature Co-fired Ceramics (LTCC). Key companies include 3M and FCI for flexible circuits, and Sanmina-SCI and Hitachi Chemical for PCBs. Microcircuit manufactures organic substrate in Singapore.

Batteries and Power Electronics Systems

- Batteries production by Energizer and Sony, and design and headquarters activities by power systems companies, such as XP Power, which has situated its global headquarters in Singapore.

Display

- AFPD, a subsidiary of Toshiba Mobile Display, operates the world's largest Low Temperature Poly-Silicon TFT LCD plant in Singapore.

Passive Components

- Industry leaders include EPCOS for SAW filters, Murata for ceramic capacitors and Panasonic Electronic Devices for SAW filters, capacitors and resistors.

Storage

- Singapore is a major HD media manufacturing location with top players like Showa Denko, Hoya and Seagate expanding their operations here.
- Going forward, this sector will be further enhanced with the extension into storage subsystems and network storage systems.

Peripherals

- Singapore is a key hub for Hewlett-Packard's Imaging and Printing business. Other companies like Kodak, Seiko Epson and Toshiba TEC are also undertaking product and process development activities in Singapore.
- Dell's Singapore operations have global responsibilities for displays and printing products, from development to procurement.

3. Electronics Systems

Network Storage

- Leveraging our rich ecosystem of HDD manufacturers, component suppliers and logistics providers, network storage companies have found it efficient to conduct configure-to-order, testing, and distribution operations in Singapore for regional markets.
- Leading network storage players have also chosen Singapore for knowledge-intensive projects. This includes EMC's South Asia Development Lab (SADL) that conducts interoperability testing and disk drive qualification, as well as Hitachi's Data Systems Business Solutions Centre that conducts customer/partner training. Both centres also embark on proof-of-concept collaborative projects with regional partners.

EMS

- Several of the world's top 10 EMS companies have significant presence in Singapore. Their operations range from design, high value manufacturing, supply chain management, and regional management.
- Key players include Flextronics, Jabil, Sanmina-SCI, Celestica, Venture, and Beyonics. Prominent ODM players such as Asustek Computer also have HQ

operations coupled with R&D functions in Singapore.

- High value manufacturing in Singapore is supported by a growing ecosystem of suppliers in IM/BBK that provide a cost-efficient supply chain by leveraging on Singapore's physical and trade connectivity with the region.

Consumer Electronics & Lighting

- Singapore hosts regional headquarters functions for prominent consumer electronics players such as Electrolux, BSH, Karcher, LG, and Samsung. A few of these companies, such as Philips and Sennheiser, also entrust Singapore with the full range of activities from product development to marketing by holding their product charters here.
  For lighting, Philips Lumileds, which produces LED chips for Philips Lighting, set up its compound wafer fab for high power LEDs in Singapore in Nov 2006.

4. Infocomm Products

- Key products manufactured in Singapore include mission-critical and secure computing products such as high-end servers, ATMs, point-of-sales systems, networking equipment, and smart cards.
- Singapore is particularly suited for such production because of its high-quality, high-mix-low-volume manufacturing expertise that is further supported by an established ecosystem of precision component manufacturers, EMS companies & logistics service providers.
- Leading infocomm product companies, such as HP, IBM and Dell, have established regional and global headquarters with the full value chain of activities in Singapore: from R&D and supply chain management to manufacturing, logistics and shared services.

About the Singapore Economic Development Board

EDB is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business centre and grow the Singapore economy. We dream, design and deliver solutions that create value for investors and companies in Singapore. In so doing, we generate economic opportunities and jobs for the people of Singapore; and help shape Singapore's economic future.

'Host to Home' articulates how EDB is sharpening its economic development strategies to position Singapore for the future. It is about extending Singapore's value proposition to businesses not just in helping them improve their bottom line, but also in helping them grow their top line. EDB plans to build on existing strengths and add new layers of capablities to enable Singapore to become a 'Home for Business', a 'Home for Innovation' and a 'Home for Talent'.

For more information on how EDB can help in your business and investment, please visit www.sedb.com

For more information, please contact

Ms Khor Mi Mi
Assistant Head, Marketing & Communication,
Singapore Economic Development Board
DID: (65) 6832 6229
FAX: (65) 6832 6498
Email: mi_mi_khor@edb.gov.sg

EDB SINGAPORE