

## 2.1 An Introduction to TSMC

TSMC is the world's largest dedicated semiconductor foundry. Founded on February 21, 1987 and headquartered in Hsinchu, Taiwan, TSMC pioneered the business model of focusing solely on manufacturing customers' semiconductor designs. As a dedicated semiconductor foundry, the company does not design, manufacture, or market semiconductor products under its own brand name, ensuring that TSMC does not compete directly with its customers.

TSMC's diverse global customer base ensures that TSMC-manufactured microchips are used in a broad variety of applications, including various segments of the computer, communications and consumer electronics markets.

Total capacity of the manufacturing facilities managed by TSMC, including subsidiaries and joint ventures, was 8.29 million 8-inch equivalent wafers in 2007. In Taiwan, TSMC operates two advanced 12-inch wafer fabs, four 8-inch wafer fabs, and one 6-inch wafer fab. TSMC also manages two 8-inch fabs at wholly owned subsidiaries: WaferTech in the United States and TSMC (Shanghai) Company, Ltd. in China. In addition, TSMC obtains 8-inch wafer capacity from other companies in which TSMC has an equity interest.

TSMC provides customer service through its account management and engineering services offices in North America, Europe, Japan, China, South Korea, and India. The company employed more than 20,000 people worldwide as of the end of 2007.

TSMC continued to lead the industry in advanced process technologies. Already first to provide 65nm production capacity, TSMC in 2007 became the first foundry to provide 45nm production. In addition to general-purpose logic process technology, TSMC supports the wide-ranging needs of its customers with embedded non-volatile memory, embedded DRAM, mixed signal/RF, high voltage, CMOS image sensor, color filter, and silicon germanium technologies. In December 2007, TSMC announced at the IEDM conference in Washington the foundry's first 32nm technology with functional SRAM.

The company is listed on the Taiwan Stock Exchange (TSE) under ticker number 2330, and its American Depositary Shares trade on the New York Stock Exchange (NYSE) under the symbol TSM.

## 2.2 Market/Business Summary

### 2.2.1 TSMC Achievements

In 2007, TSMC maintained its leading position in the dedicated foundry segment of the global semiconductor industry, with an estimated market segment share of 47%, above twice the share of its closest competitor. TSMC achieved this result amid fierce competition from both established players and relatively new entrants to the business.

A key contributory factor to TSMC's strong position is its lead in advanced process technologies. In 2007, 55% of TSMC's wafer revenue came from manufacturing processes with geometries of 0.13 $\mu$ m and below. A critical milestone was reached in December 2007, when TSMC shipped its one-millionth 90nm 12-inch wafer. Moreover, TSMC also achieved volume production of the 45nm process as well as development of the leading-edge 32nm process, both industry firsts. By the fourth quarter of 2007, more than 39% of TSMC's revenue came from 90nm processes or below.

In line with its unwavering focus on customer partnership, TSMC offers innovative services as well as advanced technologies. Among the many innovative services unveiled in 2007 were: Multi-Layer Mask Service, which enables maximum customer flexibility in prototyping single or multi-chip verifications or small volume production runs; Reference Flow™ 8.0, the latest generation of TSMC's design methodology, which increases yield, lowers risks and improves design margins; and Active Accuracy Assurance, which enables design optimization critical for silicon success in leading-edge technologies such as 45nm.

TSMC continued to advance the semiconductor roadmap in 2007. Examples of technologies the Company developed or rolled out include:

- 32nm technology with functional SRAM
- 45nm technology
- 55nm technology, a 90% linear shrink from 65nm
- 65nm mixed signal and radio frequency (MS/RF) technologies
- 65nm embedded DRAM technology
- 0.13 $\mu$ m embedded flash memory
- 0.16 $\mu$ m high voltage process for small panel single chip drivers
- 0.20 $\mu$ m process for larger panel source drivers
- 0.25 $\mu$ m bipolar complementary device (BCD)
- 1.00 $\mu$ m ultra high voltage process

In addition, a major focus of TSMC's technology development in 2007 was its quarter-node strategy. TSMC unveiled CMOS Logic 0.152 $\mu$ m, CMOS Mixed Signal 0.152 $\mu$ m, CMOS Logic 0.12 $\mu$ m, CMOS Logic 85nm General, and CMOS Logic 85nm Low Power technologies. These quarter-node technologies enabled customers to produce their IC chips even more cost-effectively by shrinking the process nodes.

### 2.2.2 Market Overview

The integrated circuit (IC) market in 2007 reached US\$218.5 billion in revenue, an increase of 4.3% over 2006. This represented 85% of total worldwide semiconductor revenue of US\$256 billion. Growth of fabless design companies slightly outpaced that of integrated device manufacturers (IDMs) in 2007, with a market share of 21% of total IC revenues. IC foundry, a manufacturing sub-segment of the IC industry that serves both fabless companies and IDMs, generated total revenues of US\$24.3 billion in 2007, up 4.3% year on year, while revenues from dedicated IC foundries such as TSMC reached US\$20.7 billion, up 4% from 2006. It is estimated that the production value of dedicated IC foundries accounted for 19% of worldwide IC revenues in 2007.

In 2007, the largest geographic market for dedicated foundry services was North America, which accounted for 59% of overall dedicated foundry revenue. The second largest geographic market was Asia Pacific (excluding Japan), which accounted for 26% of total dedicated foundry revenue in 2007. European-based customers accounted for 9%, and orders from companies based in Japan contributed 6%.

### 2.2.3 Industry Outlook, Opportunities and Threats

#### Industry Demand and Supply Outlook

The semiconductor market in 2007 experienced modest growth of 3.5%. For 2008, based on current market conditions, semiconductor market growth could be around the mid single digit depending on the level of global economic growth. As the inventory level in general appears normal at the beginning of 2008, the growth of the foundry segment could outperform the semiconductor industry by a few percentage points in 2008. On the other hand, the foundry capacity could expand at 13% in 2008 according to IC Insights, compared with the 15% compound annual growth rate of the past 3 years. This indicates that there may be more cautious capacity investment from major foundry players in response to slowing industry demand.

#### Opportunities and Threats in the Foundry Sector of the Semiconductor Market

Despite the fact that the semiconductor market as a whole is maturing, TSMC believes that foundry services, the sector TSMC competes in, will play an increasingly important role as the IC industry becomes more reliant on outsourced manufacturing. IC Insights forecasts that by 2012, 27% of global semiconductor revenue will come from dedicated foundries, compared with 19% in 2007. Consequently, the dedicated foundry sector is forecast to grow at a rate of 12% in 2008, outpacing overall industry growth. As the leader in dedicated foundry services, TSMC is well positioned to capture the faster growth opportunities of this sector. On the other hand, threats remain, such as the continuing fall in wafer prices, due to the fact that the IC industry is prone to fast-declining end application prices, as well as potential industry overcapacity if the global economic climate experiences a downturn.

### 2.2.4 TSMC Position, Differentiation and Strategy

#### Position

As the leader in the dedicated foundry segment of the IC manufacturing industry, TSMC commanded a 47% share of this segment in 2007, with total revenue of US\$9.8 billion. In terms of geographic distribution categorized by company headquarters, 77% of total revenue came from North America, 11% from the Asia Pacific region excluding Japan, 9% from Europe, and 3% from Japan. In terms of end product application, 32% of total revenue came from the computing sector, 42% from communications, 17% from consumer products, and 9% from other categories, such as industrial products.

#### Differentiation

TSMC's leading industry position is based on a trinity of key differentiating strengths: technology leadership, manufacturing excellence, and customer partnership. As a technology leader, TSMC has consistently been the first dedicated foundry to develop the next generation of leading-edge technologies. As a manufacturing leader, TSMC is renowned for its yield management, and offers best-in-class support services to expedite time-to-market and time-to-volume. And, in customer partnership, TSMC works closely with its customers on end-to-end collaboration to optimize design and manufacturing efficiencies. Going forward, TSMC will continue building on this trinity of strengths to provide the best overall value to its customers.

#### Strategy

TSMC is confident its differentiating strengths will enable it to leverage the attractive growth opportunities in the foundry sector going forward. TSMC works constantly to ensure that these strengths are maintained and improved, both in the short-term and in the long-term. For example, TSMC is intensively working on the leading-edge 32nm process to maintain its technology leadership position, and is poised to be the first dedicated foundry player to roll out production in that technology. Numerous efforts are also underway to ensure manufacturing excellence, such as continuing enhancement of Design-For-Manufacturing (DFM) support services to increase yield and efficiency. Finally, TSMC conducts throughout the year customer reviews and surveys to better understand customer needs and wants, and accordingly adjusts its offering in response, thereby strengthening its partnership with customers.

To counter the ongoing challenge of falling wafer prices, TSMC's long-term and short-term development plans are to continue strengthening its core capabilities and value propositions; including its ability to deliver customer product to market earlier and with better functionality, advanced and mainstream technologies with sufficient capacity support and flexible manufacturing, and focus on customer service. In addition, TSMC will continue optimizing its service portfolio in order to balance profitability and growth.