



2016 Top Markets Report **Semiconductors and Semiconductor Manufacturing Equipment** Country Case Study

Japan

Japan is an important market and competitor for U.S. semiconductor and semiconductor manufacturing equipment companies. Japan has the third largest electronics manufacturing industry in the world and is home to two of the top 10 semiconductor buying companies, Sony and Toshiba, which also are also top semiconductor producers and customers for semiconductor manufacturing equipment. In 2015, Japan switched places with China to regain its position as the third largest country export market for semiconductor manufacturing equipment but is expected to return to fourth in 2016. Japan is a participant in the WTO Information Technology Agreement (WTO ITA), and will eliminate tariffs on all products under the WTO ITA expansion on the implementation date – July 1, 2016.



Overview of the Markets

According to Japanese industry, production by the Japanese electronics/ICT industry increased in 2014 and 2015 and is expected to increase in 2016, especially for displays, server/storage equipment, electro-medical equipment and electronic measuring equipment, increasing the market for semiconductors. Sensors and other ICs for the Internet of Things (IoT) will also experience strong demand. Japanese industry also expects their production of semiconductors and fab upgrades to increase in 2016, stirring demand for semiconductor manufacturing equipment.¹

Semiconductors

Japan’s electronic products industry, which is the third largest in the world, is the largest demand

factor driving sales of semiconductors to Japan. WSTS predicts Japanese consumption of semiconductors will grow from \$24.3 billion in 2015 to \$31.3 billion in 2016 and to \$32.1 billion in 2017. Although in dollar terms the growth is moderate, exchange rates have an effect. Japanese consumption of semiconductors showed a reduction on a dollar basis from 2014 to 2015 but grew on a yen basis.² The exchange rate change is to the advantage of Japanese electronic equipment producers. According to the Japan Electronics and Information Technology Industries Association (JEITA), the Japanese electronics industry was expected to increase domestic production for the second year in a row in 2015 – recovering from the fall in production since the 2011 Great East Japan Earthquake.³ Japan’s once-formidable semiconductor industry is greatly diminished today, with some firms going bankrupt, plants closing,

assets being divested and companies being sold, but it still remains as a competitor.

Semiconductor Manufacturing Equipment

Japan is the fifth largest U.S. export market for semiconductor manufacturing equipment when the EU is considered a market. Semiconductor manufacturing equipment sales in Japan reached \$4.2 billion in 2014⁴ and \$5.49 billion in 2015 (a 31 percent increase)⁵ but are projected to decrease to 4.53 billion in 2016, following the usual two years up and one or two years down cycle characteristic of the sub-sector.^{6,7} Japan ranks first for installed semiconductor fab capacity (when discrete semiconductors, especially LEDs are included - Taiwan ranks first in integrated circuit fab capacity).⁸ Top 10 semiconductor company Toshiba is divesting many divisions of its company after an accounting scandal brought to light false reporting of revenues spanning a number of years. It is concentrating on key profitable divisions, including its semiconductor division. Toshiba is breaking ground on a new semiconductor fab this year, and if the construction proceeds, it should be buying semiconductor manufacturing equipment during the 2017 to 2018 time frame. The big Japan story from last year's Japan country case study, the merger of top ranked Applied Materials with fourth ranked TEL, which would have been the largest value merger in the semiconductor manufacturing equipment industry, was abandoned when the two companies were unable to successfully resolve competitive concerns raised by the U.S. Department of Justice.^{9,10}

Challenges and Barriers to U.S. Semiconductor and related equipment exports

Semiconductors

Unlike other markets, where U.S. semiconductor firms have more than 50 share of the market, U.S. firms have only 35.8 percent share of the Japanese Market. Historically, foreign headquartered firms have held a relatively lower share of the Japanese market than in other markets.¹¹ Korean and Chinese chipmakers provide competition to U.S. companies selling in Japan in some types of semiconductors. Japan retains three companies in the top 20, Toshiba, Sony, and Renesas, with Toshiba the only remaining Japanese company in the top ten.¹² As mentioned earlier, Toshiba is shedding parts of its

business. Its semiconductor division, especially for NAND Flash, was one of the few profit-making divisions,¹³ though its sales fell from 2014 to 2015. Renesas's sales also fell. Sony is proving a better performer with 5.7 percent growth from 2014 to 2015.¹⁴

Semiconductor Manufacturing Equipment

Japan can be a challenging market for U.S. companies due to the in-market competitors.¹⁵ Japan's share of the global semiconductor manufacturing equipment market – 30 percent – is ranked second after the United States' 44 percent share.¹⁶ Except for the challenge of domestic competitors, the Japanese market is open to U.S. semiconductor manufacturing equipment.

Opportunities for U.S. Companies

Japan hosts the successful semiconductor manufacturing equipment and materials – and increasingly semiconductor and related electronics - show, SEMICON Japan, which will be a U.S. Department of Commerce certified trade show for the third year in a row in 2016. SEMICON Japan 2015 (December 2015) was a successful certified trade show, and along with semiconductor manufacturing equipment and materials companies, U.S. semiconductor companies, and other innovators, such as Tesla, were exhibitors at the show.¹⁷ There were 42 U.S. companies exhibiting or represented by a Japanese distributor at the show, the USA Showcase, and U.S. companies were promoted at the press conference and the President's reception, and there were over 200 attendees at the USA Showcase Seminar.¹⁸

WTO Information Technology Agreement Expansion

Implementation of the WTO Information Technology Agreement expansion will begin July 2016. Japan will offer immediate duty-free access for all 201 products covered by the expansion agreement, including the semiconductor and semiconductor manufacturing related products.¹⁹ See Appendix 1 for a list of the semiconductor-related products in the WTO ITA expansion, information on the WTO ITA expansion and links to key documents.

Semiconductors

The Japan Electronics and Information Technology Industries Association (JEITA) forecasts a third straight year of growth in domestic Japanese electronics manufacturing in 2016, rising 3 percent to reach 4.48 trillion yen (\$37 billion) in sales. This means growth opportunities for U.S. semiconductor companies, especially those that supply chips for display devices in smartphones, which are getting larger and have increasing screen resolution; computer server/data storage equipment (to equip new data centers); electronic measuring instruments and electro-medical equipment; the Internet of Things (IoT); and automotive electronics.²⁰

Semiconductor Manufacturing Equipment

Semiconductor manufacturing equipment sales in Japan reached \$4.2 billion in 2014²¹ and \$5.49 billion in 2015 (a 31 percent increase)²² but are projected to decrease to 4.53 billion in 2016, following the usual two years up and one or two years down cycle of the industry. Unit sales most likely will be better – the 2015 global equipment market in dollar terms lost \$2 billion or 7 percent of its value solely due to Yen and Euro currency disruptions.²³

2016 Trade Shows/Events in Japan

Department of Commerce Certified Trade Show December 14-16 2016: SEMICON Japan. Tokyo, Japan

SEMICON Japan is the largest show in Japan, covering semiconductor manufacturing equipment, materials, services and related industries. Last year's USA Showcase at SEMICON Japan 2015 for U.S. exhibitors was a huge success with over 40 U.S. companies participating. SEMICON Japan is a certified trade show again this year.

- U.S. exhibitors at USA Showcase with booths. Also, USA Showcase brochure.
- USA Showcase and U.S. companies promoted at SEMICON Japan's President's reception.
- Keynote at USA Showcase: Co-sponsored by SEMICON Japan and the U.S. Embassy – IT Forum on IoT. Last year, over 700 people showed up for the event (capacity).
- U.S. semiconductor companies gave presentations last year on "Trends in the U.S. Semiconductor Industry".
- For more information on the USA Showcase for SEMICON Japan 2016, please contact Erick Kish, Commercial Attaché at the U.S. Embassy in Japan (erick.kish@trade.gov).

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- ¹ 2016 Production Forecasts for the Global Electronics and Information Technology Industries, 12/16/2015. Japan Electronics and Information Technology Industries Association (JEITA)
- ² "WSTS Market Forecast Autumn 2015" WSTS World Trade Statistics, 11/2015.
- ³ 2016 Production Forecasts for the Global Electronics and Information Technology Industries, 12/16/2015. Japan Electronics and Information Technology Industries Association (JEITA)
- ⁴ "Worldwide Semiconductor Equipment Market Statistics by Category and By Region December 20154" SEMI, 12/2015
- ⁵ "SEMI Microelectronic Manufacturing Supply Chain Quarterly Market Data – CYQ12016, SEMI.org/marketinfo March 2016.
- ⁶ "Demand Forecast for Semiconductor/FPD Manufacturing Equipment", January 14, 2016, Semiconductor Equipment Association of Japan.
- ⁷ "2015 Year End Forecast Report" SEMI, 12/2015.
- ⁸ "Japan, Silent but Strong Player of the Semiconductor Industry" semiwiki.com/1/21/2016
- ⁹ "Applied Materials, Tokyo Electron Cancel Merger Plans", Wall Street Journal, 4/27/2015.
- ¹⁰ <https://www.justice.gov/opa/pr/applied-materials-inc-and-tokyo-electron-ltd-abandon-merger-plans-after-justice-department>
- ¹¹ "SIA 2016 Factbook" [Semiconductor Industry Association \(SIA\), March 2016](http://Semiconductor Industry Association (SIA), March 2016).
- ¹² IC Insights
- ¹³ "Toshiba to Sell Chip Business Except NAND" EETAsia.com 1/25/2016
- ¹⁴ "Global Semiconductor Market Slumps in 2015, HIS Says", HIS 4/4/2016.
- ¹⁵ SEAJ (Semiconductor Equipment Association of Japan)
- ¹⁶ SEMI Equipment Market Data Subscription 1/2015.
- ¹⁷ End of Show Report, Semicon Japan 2015, SEMICON Japan 2015 website.
- ¹⁸ SEMICON Japan 2015 USA Showcase Post show Report.
- ¹⁹ [WTO members conclude landmark \\$1.3 trillion IT trade deal](http://WTO members conclude landmark $1.3 trillion IT trade deal) – Includes link to the parties' national line schedules. WTO, 12/16/2015. Also see Appendix 1.
- ²⁰ 2016 Production Forecasts for the Global Electronics and Information Technology Industries, 12/16/2015. Japan Electronics and Information Technology Industries Association (JEITA)
- ²¹ "Worldwide Semiconductor Equipment Market Statistics by Category and By Region December 20154" SEMI, 12/2015
- ²² "SEMI Microelectronic Manufacturing Supply Chain Quarterly Market Data – CYQ12016, SEMI.org/marketinfo March 2016.
- ²³ "2015 Year End Forecast Report" SEMI, 12/2015.