

**Market Forecast Report
Semiconductor and FPD Manufacturing Equipment
Released in January 2023
(Fiscal years 2022-2024)**

January 12, 2023



Semiconductor Equipment Association of Japan

Overview

This report provides trend forecasts for semiconductor and FPD manufacturing equipment. The comprehensive results included in this forecast report are based on demand forecasts by the Semiconductor Research and Statistics subcommittee and the FPD Research and Statistics subcommittee of the Semiconductor Equipment Association of Japan (hereinafter called SEAJ, Chairman: Mr. Kazuo Ushida) as well as market trend research by the 20 companies represented on the Board of Directors and auditors.

With the impact of the U.S. semiconductor export regulations to China, imposed in October, 2022, as well as the cautious stance toward capital investment mainly in Memory, we forecast sales of semiconductor manufacturing equipment made in Japan for fiscal 2022 to be 3.68 trillion yen, an increase of 7.0% from the previous year. For fiscal 2023, we will continue to take a cautious view of investment within the calendar year, with a sales forecast of 3.5 trillion yen, a decrease of 5.0%. For fiscal 2024, we forecast sales of 4.2 trillion yen, an increase of 20.0%, as we expect to achieve a full-fledged recovery in Memory and robust investment in logic.

As for FPD manufacturing equipment, the impact of the worsening LCD panel oversupply will remain in fiscal 2022, as we forecast sales of 452 million yen, a decrease of 6.0%, reflecting the deferral of some delivery dates. For fiscal 2023, large-scale investments, focused on LCD, will only be a few, with a forecast sale of 361 billion yen, a decrease of 20.0%. For fiscal 2024, we forecast sales of 543 billion yen, an increase in 50.0%, expecting demands owing to launch of Organic Light Emitting Diode (OLED) investment using new technology on G8 boards.

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|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Forecast period | Three years from fiscal year 2022 to 2024 (FY2022: From April 2022 to March 2023) |
| (2) Forecast items | Sales of Japanese-made semiconductor manufacturing equipment and sales for the Japanese market
Sales of Japanese-made FPD manufacturing equipment |
| (3) Forecast background | |

(Semiconductor Manufacturing Equipment)

Due to the dragging conflict in Ukraine, soaring energy prices, continued interest rate hikes in the United States and Europe, and inflationary pressures, there is growing concern over signs of deceleration in global consumption, including of electronics products. Shipments of PCs and smartphones fell below the previous year's level, with semiconductors, mainly of memory, used in them, that are currently in the phase of inventory adjustment.

Emerging geopolitical risks and the impact of regional blocs on a global scale over economic security are affecting the entire semiconductor industry. While the tightening of US export restrictions on China has had a negative impact on short-term equipment demand, government subsidies for semiconductors have been proposed in various regions around the world, creating a

structure that underpins overall investment.

WSTS (World Semiconductor Trade Statistics) released its latest semiconductor market forecast last November. The global semiconductor market in 2022 will grow by 4.4% from the previous year, and its growth will become stagnant. In 2023, the forecast is expected to decline by 4.1% year-on-year, the first negative growth in four years. This outlook has been revised considerably downward, reflecting the decline in memory prices.

The semiconductor manufacturing equipment market in fiscal 2023 is expected to fall below the previous year's level due to a reduction in memory capital investment owing to the market deterioration centering on DRAM. In fiscal 2024, on top of the full-scale recovery of memory, large-scale Logic investment is planned in each region of the world, emphasizing a return to the buoyant growth rate.

Data center investment and demand for high-end smartphones remain firm, despite some fluctuations, and the number of semiconductors mounted in each vehicle will further increase for automotive applications. In addition to conventional PCs and smartphones, 5G, IoT, AI, data centers, autonomous driving, EVs and power, and industrial equipment will continue to drive demand for semiconductor manufacturing equipment in a healthy manner over the medium term.

Advanced logic will finally adopt a new transistor structure called GAA (Gate-All-Around), and advances in package technology such as chiplets will provide for a favorable cost and performance balance. Realizing both high computing performance and low power consumption is essential from the viewpoint of achieving carbon neutrality in the future. Meanwhile, continuous technological innovations will further boost equipment demand.

(FPD Manufacturing Equipment)

Business environment surrounding FPD manufacturing equipment is deteriorating due to recoil factors from the COVID-19 specific strong demand for panels since 2020. The unit prices of both IT products (for PCs and tablets) and TV panels continued to fall for a long period of time, leading to a drop in corporate profits of panel companies. Many capital investments have been cancelled as the outlook for fiscal 2023 appears severe.

On the other hand, from 2024, it is expected that investment in the 8th generation OLED panels will move into full swing. There has been much exploration of installing OLED panels in IT products. Since panel size per unit will be larger compared to the OLED for smartphones thus far, investment in the 8th generation OLED panels equipped with high production efficiency is desired, to which equipment manufacturers are proceeding preparations effortlessly. As the technical hurdles for some processes are significantly different from those of the 6th generation, high expectations are held for the role of manufacturing equipment made in Japan, which pioneers in technological development.

(4) Forecast results

[Sales forecasts for semiconductor/FPD manufacturing equipment and equipment made in Japan]

For fiscal 2022, assuming that sales of semiconductor manufacturing equipment will rise 7.0% and sales of FPD manufacturing equipment will decrease by 6.0%, we forecast overall sales of 4.14 trillion yen, an increase of 5.4%. For fiscal 2023, as investment in both semiconductor and FPD is expected to decline, we forecast overall sales of 3.86 trillion yen, a decrease of 6.6%. For fiscal 2024, growth will be sharp for both semiconductors and FPD, with a growth of 20% and 50% respectively, as we forecast overall sales of 4.74 trillion yen, an increase of 22.8%.

[Sales forecasts for semiconductor manufacturing equipment made in Japan]

For fiscal 2022, factoring in the impacts of the US export restrictions on China and on capital investment due to the drop in memory prices, especially DRAM, we forecast sales of 3.68 trillion yen, an increase of 7.0% from the previous year. For fiscal 2023, considering the severe views on memory investment especially during the first half, we forecast sales of 3.5 trillion yen, a decrease of 5.0%. For fiscal 2024, we have taken into account a full-scale recovery in memory investment and multiple large-scale Logic investment as we forecast sales of 4.2 trillion yen, an increase of 20.0%.

[Sales forecasts for semiconductor manufacturing equipment in the Japanese market]

For fiscal 2022, given the focus of investment by major memory manufacturers in the first half, we forecast sales of 956 billion yen, an increase of 5.0%. For fiscal 2023, stable investment is expected as a whole, as we forecast sales of 1 trillion yen, an increase of 5.0%. For fiscal 2024, we expect full-scale investment by major foundries, as we forecast sales of 1.2 trillion yen, an increase of 20.0%.

[Sales forecasts for FPD manufacturing equipment made in Japan]

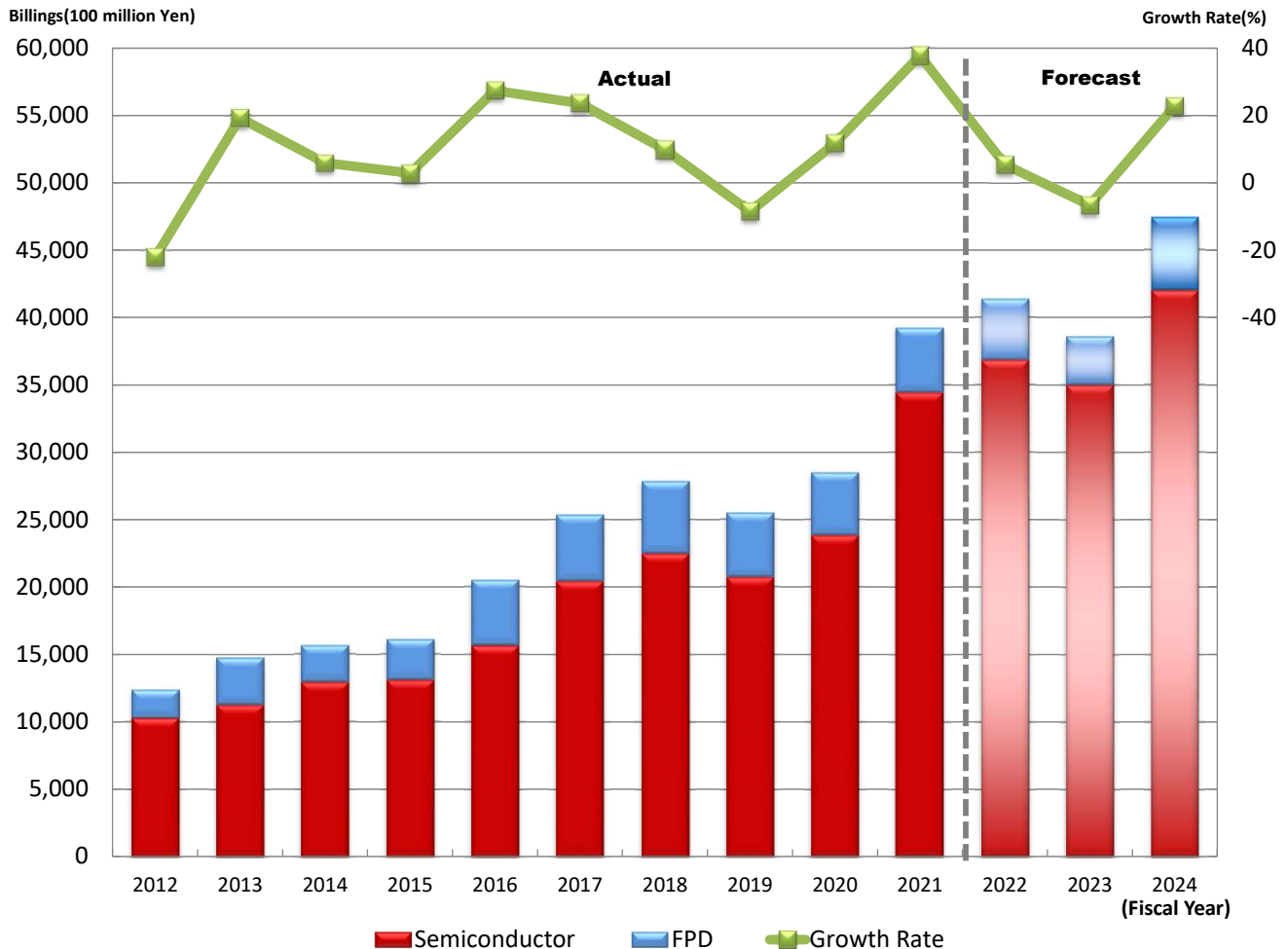
In fiscal 2022, owing to the examination of rollout for the implementation of the latest equipment, we forecast sales of 452 billion yen, a decrease of 6.0%. In fiscal 2023, reflecting lots of cancellation of LCD investments plan, our forecast is set at 362 billion yen, a decrease of 20.0%. In fiscal 2024, we expect a turnaround in panel supply and demand due to investment restraint in fiscal 2023 as well as a full-scale investment in OLEDs for Gen 8 boards that employ new technology, as we forecast an increase of 50.0% to 543 billion yen.

January 2023 Forecast for Semiconductor and FPD Manufacturing Equipment

1. Semiconductor and FPD Manufacturing Equipment

【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing " = Japanese manufacturers Domestic and Oversea Billing.



(CAGR : 2021-2024)

	Actual										Forecast			
Fiscal Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR
Semiconductor	10,284	11,278	12,921	13,089	15,642	20,436	22,479	20,730	23,835	34,430	36,840	34,998	41,997	6.5%
FPD	2,089	3,485	2,717	2,993	4,857	4,916	5,364	4,758	4,638	4,809	4,520	3,616	5,425	
Total (100 million yen)	12,373	14,763	15,638	16,082	20,499	25,352	27,843	25,488	28,473	39,239	41,360	38,614	47,422	
Growth Rate (%)	-22.1	19.3	5.9	2.8	27.5	23.7	9.8	-8.5	11.7	37.8	5.4	-6.6	22.8	

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* FPD statistics participating companies have changed since FY2019.

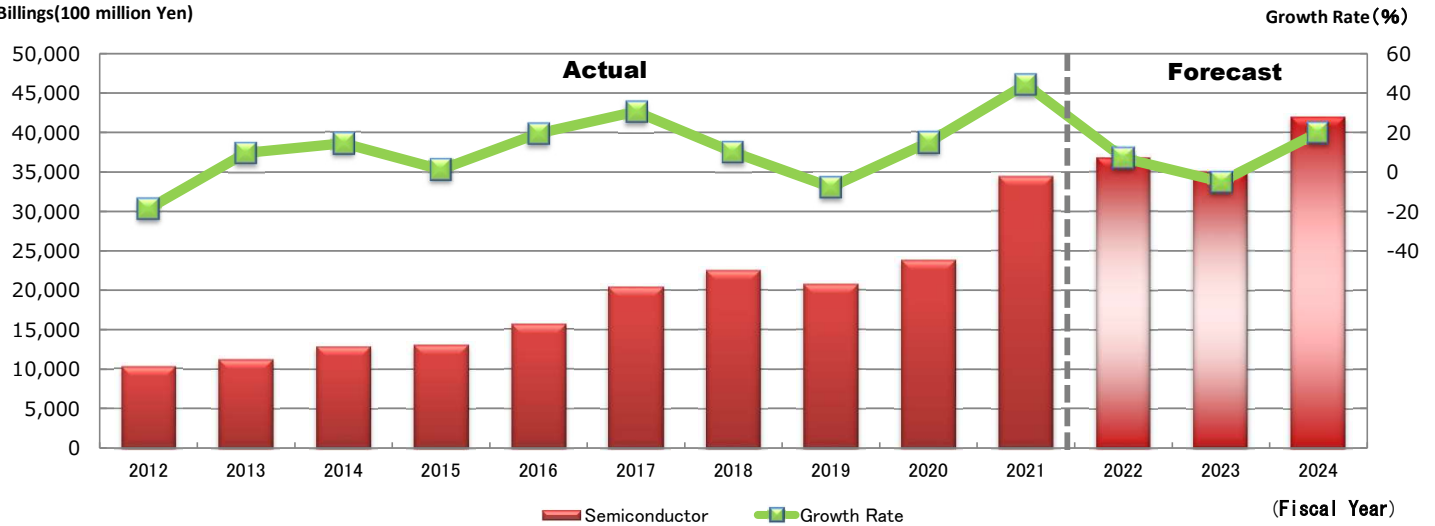
* The names and amounts of the companies participating in the statistics are not disclosed.

January 2023 Forecast for Semiconductor and FPD Manufacturing Equipment

2. Semiconductor Manufacturing Equipment 【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing" = Japanese manufacturers Domestic and Oversea Billing.

Billings(100 million Yen)



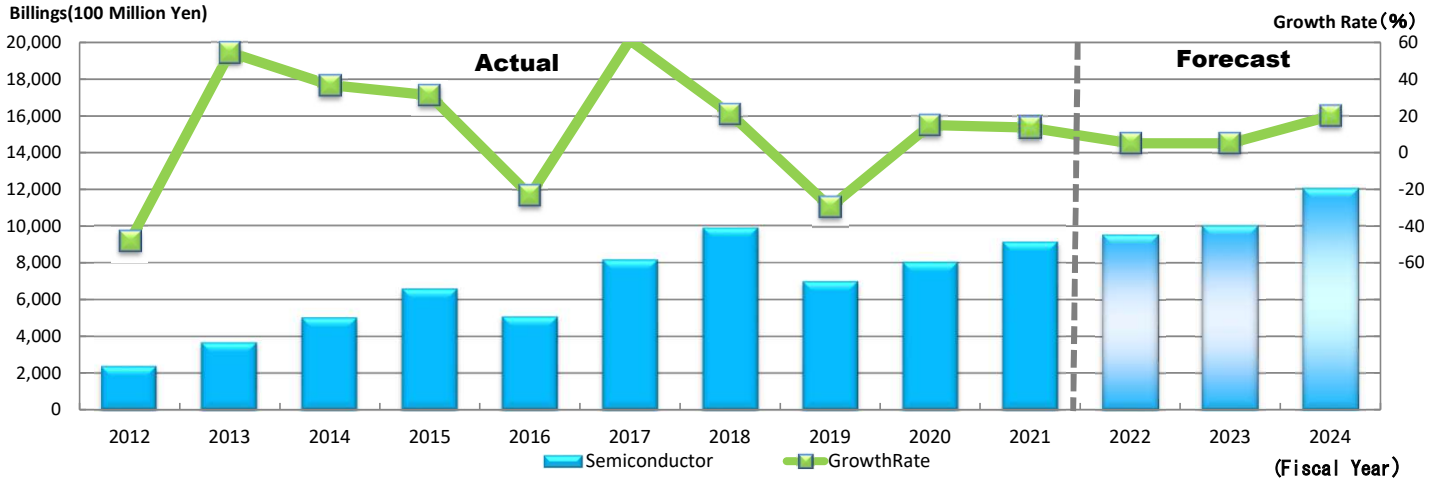
(CAGR : 2021-2024)

	Actual										Forecast			
Fiscal Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR
Total (100 million yen)	10,284	11,278	12,921	13,089	15,642	20,436	22,479	20,730	23,835	34,430	36,840	34,998	41,997	
Growth Rate (%)	-18.6	9.7	14.6	1.3	19.5	30.6	10.0	-7.8	15.0	44.4	7.0	-5.0	20.0	6.8%

【Forecast for Japanese Market Billing】

* "Japanese Market Billing" = Domestic Billing of Japanese and Foreign manufacturers.

Billings(100 Million Yen)



(CAGR : 2021-2024)

	Actual										Forecast			
Fiscal Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR
Total (100 million yen)	2,363	3,653	5,000	6,562	5,047	8,138	9,878	6,961	8,009	9,103	9,558	10,036	12,043	
Growth Rate (%)	-48.1	54.6	36.9	31.2	-23.1	61.3	21.4	-29.5	15.1	13.7	5.0	5.0	20.0	9.8%

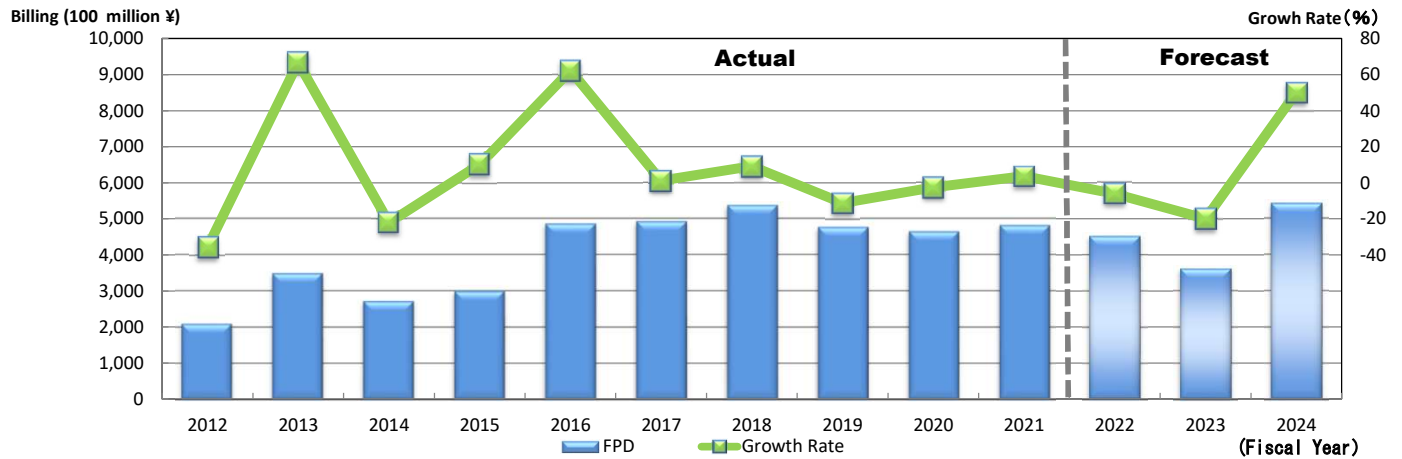
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January 2023 Forecast for Semiconductor and FPD Manufacturing Equipment

■3. FPD Manufacturing Equipment

【Forecast for Japanese Equipment Billing】

* "Japanese Equipment Billing " = Japanese manufacturers Domestic and Oversea Billing.



	Actual										Forecast			
Fiscal Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR
Total (100 million yen)	2,089	3,485	2,717	2,993	4,857	4,916	5,364	4,758	4,638	4,809	4,520	3,616	5,425	
Growth Rate (%)	-35.7	66.8	-22.0	10.2	62.3	1.2	9.1	-11.3	-2.5	3.7	-6.0	-20.0	50.0	4.1%

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