Global Semiconductor Front-End Equipment Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 100 pages | Mordor Intelligence

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Report description:

The semiconductor front-end equipment market is expected to register a CAGR of 8.34% during the forecast period (2023 - 2028). The manufacture of a blank wafer to a completed wafer is referred to as front-end semiconductor manufacturing. The wafer is spun in many front-end processes. Smartphones and other applications spanning consumer electronics, automotive applications, and other industries are driving the semiconductor industry, as these industries have been driven by technology transitions such as wireless technologies (5G) and artificial intelligence.

Key Highlights
The semiconductor front-end manufacturing equipment market is driven by rising demand for semiconductor fabrication facilities, a growing semiconductor industry, rising demand for semiconductor parts in electric and hybrid vehicles, and surging demand for AI chips driven by future AI-driven workloads and applications.
Due to the constant advancements in products such as vehicles, medical devices, smart gadgets, smart homes, and wearables, semiconductor integration has become a prevalent factor. Furthermore, the trend of combining semiconductors on a single chip is growing due to consumer demand for handheld computers. In such a circumstance, semiconductor manufacturing equipment is gaining traction because it allows semiconductors to be assembled on a single chip.
According to a report released by SEMI in June 2021, semiconductor manufacturers began construction on 19 new high-volume fabs in 2021, with another ten fabs planned for 2022. The increase in fabs is primarily due to the rising demand for chips in various applications, including communications, computing, healthcare, online services, and automotive.
The rapid expansion of the APAC automotive semiconductor industry is expected to be fueled by the rising demand for electric vehicles. Automobile manufacturers must continue to innovate, create, and develop self-driving cars, which have already attracted many customers in key automotive manufacturing countries.
The semiconductor manufacturing process is hampered by the complexity of patterns and functional defects. The production of

semiconductors mandates using a clean room and clean equipment. Small dust particles can obstruct the complete manufacturing process, costing the company a huge sum. Order cancellations and customers switching to other suppliers occur due to the delivery delay caused by production problems.
Further, due to the covid scenario, Automotive semiconductors will continue to be a limiting constraint on the automotive market through the first half of 2022, but barring any unforeseen shutdowns or semiconductor manufacturing issues, supply should gradually improve through the second half of the year.

Semiconductor Front-End Equipment Market Trends

Increasing Needs of Consumer Electronic Devices Boosting the Manufacturing Prospects

The smartphone is the largest consumer of semiconductors. Consumer electronics (CE) is a multi-billion-dollar industry constantly evolving and improving with technology, adding new product lines to meet changing lifestyles. Various end-user sectors rapidly adopt innovative solutions to improve their operations due to the Internet of Things.
In recent years, the smartphone market has been extremely competitive. Mobile phone usage is expected to grow, propelling the market worldwide. According to Ericsson, global monthly data traffic from smartphone devices is expected to increase to 221 exabytes by 2026, up from 32 exabytes in 2019.
In 2021, the United States government called for USD 50 billion in funding to support domestic chip manufacturing. TSMC is weighing plans to pump tens of billions of dollars more into the chip factories in the US state of Arizona than it had previously disclosed. TSMC will likely compete against Intel Corp and Samsung Electronics Co Ltd for subsidies from the US government in building the plants.
In March 2021, Intel committed to Arizona's two more new fabrication plants, or fabs. The news comes during a global chip shortage that is snarling industries from automobiles to electronics and worries the United States is falling behind in semiconductor manufacturing. The foundry is poised to manufacture a range of chips, including chips based on ARM technology, which are used in mobile devices, and has historically competed with Intel's favored x86 technology.
Due to increased consumer demand, Lenovo announced intentions to expand manufacturing capabilities in India across different product categories, including PCs, laptops, and smartphones, in September 2021. Reliance stated in March 2022 that it would invest USD 220 million in a joint venture with Sanmina Corp, a publicly traded corporation in the United States, to manufacture electronic products in Asian countries.

Asia Pacific is Expected to Register the Fastest Growth Rate

Asia-Pacific region has the most prominent share of semiconductor foundries globally, with major companies such as TSMC, Samsung Electronics, etc. Taiwan, South Korea, Japan, and China have a significant market share in the region.
China has a very ambitious semiconductor agenda. Backed by USD 150 billion in funding, the country is developing its domestic IC industry and plans to make more of its chips. Greater China, which encompasses Hong Kong, China, and Taiwan, is a geopolitical hotspot. The US-China trade war is compounding tensions in an area where all the leading process technology is located, forcing many Chinese companies to invest in their semiconductor foundries.
India's share of the global electronic systems manufacturing industry has recently increased significantly in recent years. Transitions in technology, such as the deployment of 5G networks and the Internet of Things, are accelerating the adoption of electronic items. Initiatives like the 'Digital India' and 'Smart City' programs have boosted demand for IoT in the electronics devices industry, ushering in a new era for electronic gadgets.
As stated by the National Investment Promotion and Facilitation Agency of the Government of India, the Domestic electronic

devices market in India to reach USD 300 Billion by FY26. This is analyzed to create significant opportunities for the semiconductor industry.

Semiconductor Front-End Equipment Market Competitor Analysis

The market for semiconductor front-end equipment is mature, with a limited number of significant players responsible for the majority of revenue, profit, and growth. The substantial research and development investments and capital expenditures required to compete in the industry drive firm specialization. Some major players are Applied Materials Inc., ASML Holding Semiconductor Company, and KLA Corporation. Key developments are -

August 2021 - Lam Research Corporation announced the expansion of its global manufacturing capacity by opening the company's largest facility in Batu Kawan, Malaysia. This new manufacturing site will allow Lam to work closely with key customers and supply chain partners in the region while fortifying the resiliency of the company's manufacturing network and supporting growth amid rising demand for semiconductor technology.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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