Semiconductor Silicon Wafer - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2021 - 2029

Market Report | 2024-02-17 | 120 pages | Mordor Intelligence

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Report description:

The Semiconductor Silicon Wafer Market size is estimated at USD 13.93 billion in 2024, and is expected to reach USD 16.81 billion by 2029, growing at a CAGR of 3.82% during the forecast period (2024-2029).

Key Highlights
-Semiconductor silicon wafer remains the core component of many microelectronic devices and forms the cornerstone of the electronics industry. With digitization and electronic mobility being the current trends in the technology landscape, these products are finding applications in many devices. Also, the demand for small-sized gadgets has increased the need for more functionalities from a single device. This means that an IC chip should now house more transistors to support more features.
-According to the Semiconductor Equipment and Materials International (SEMI), silicon wafer market sales could witness a dip amidst the looming uncertainty surrounding the impact of COVID-19. However, the demand climbed on the strength of rebounding chip sales. SEMI also estimates that silicon wafer shipments globally will reach a record high in 2022. The initial outbreak of COVID-19 in China disrupted the country's supply chain and production. Major semiconductor manufacturing industries have been significantly affected due to China becoming a world production center over the past two to three decades.
-The semiconductor industry has been a significant driver behind critical innovations in significant sectors like electronics, automobiles, and automation, with semiconductor technology emerging as the building block of all modern technologies. The advancements and innovations in this field are immediately impacting all downstream technologies.
-Foundries are increasingly investing in new advanced packaging techniques, especially silicon wafer-based. Foundry vendors are researching improving transistor density with techniques like utilizing two-dimensional materials instead of silicon as the channel to develop Monolithic 3D Integrated Circuits. For instance, TSMC's chip on wafer on Substrate technology developed the world's largest silicon interposer that featuring room for two massive processors combined with 8 HBM memory devices in a package.
-Advancements in wearable devices will create massive growth opportunities for market vendors. According to Siemens, industrial

wearables could be a massive market as these devices enhance quality and safety in the processing industry. According to Zebra Technologies Corporation, 40-50% of manufacturers globally are expected to adopt wearables by 2022. Also, the demand for small-sized gadgets has raised the need for more functionalities from a single device. This indicates that an IC chip should now house more transistors to support more functionalities.
-Favorable government policies across emerging economies like China created enormous opportunities for the semiconductor industry, which is expected to expand the semiconductor silicon wafer market during the forecast period. For instance, the policy framework published by the State Council of the People's Republic of China aims to make advanced semiconductor packaging solutions a technology priority across the semiconductor industry.

Semiconductor Silicon Wafer Market Trends

The Consumer Electronics Segment is Expected to Occupy a Significant Market Share

- In the current market scenario, many electronic devices, including laptops, smartphones, computers, etc., still use ICs and other semiconductor devices manufactured from silicon substances. Although silicon is still dominating primary applications in the consumer electronics market, new materials have replaced the previous substrates and packaging for a few uses.
- According to the Consumer Technology Association's (CTA) 'US Consumer Technology Sales and Forecast' study, CTA expects that 5G-enabled smartphone devices will reach 2.1 million units and cross USD 1.9 billion in revenue with triple-digit increases through 2021. Apple announced a contribution of USD 350 billion to the US economy by 2023 and promised 2.4 million jobs over the next five years, which comprises new investments and its existing spending with domestic companies for supply and manufacturing. The company is a prominent player in the consumer electronics industry. Hence, the announcement is expected to propel the demand for semiconductor silicon wafers.
- Recently, the Singapore-MIT Alliance for Research and Technology (SMART), MIT's research enterprise in Singapore, announced the successful development of a commercially viable way to manufacture integrated silicon III-V chips with powerful performance III-V devices inserted into their design.
- In most devices nowadays, silicon-based CMOS chips are primarily used for computing, but they are not efficient for communications and illumination, resulting in low efficiency and heat generation. Thus, current 5G mobile devices on the market get very hot upon use and shut down after a short time. However, combining III-V semiconductor devices with silicon in a commercially viable way is one of the most complex challenges the semiconductor industry faces.

North America is Expected to Hold a Significant Share

- North America is expected to be a significant revenue contributor to the market by 2021, as fabless semiconductor companies are the prominent customers for semiconductor foundries and wafer players. Fabless companies make chip designs exclusively and market them without a fabrication plant.
- The major fabless companies in the region are AMD, Broadcom, Apple, Qualcomm, Marvell, NVIDIA, and Xilinx. North America has presented a crucial role in advanced semiconductor system design and manufacturing. The region has been witnessing increased activity in establishing semiconductor wafer foundries. TSMC announced that it would spend a total of USD 12 billion from 2021 to 2029 to build a 12-inch wafer plant to manufacture chips using the advanced 5 nm process. Moreover, tech supply chains will continue to shift even after Donald Trump, who pressed foreign companies to invest and create jobs in America, was defected by Joe Biden.
- The electronics industry in the region has been growing steadily and holds a prominent share in several enterprises operating in the design and fabless space. According to the US Census Bureau, the industry revenue of semiconductors and other electronic

components in the United States during 2019 stood at USD 100.08 billion, and it is expected to reach USD 105.16 billion by 2023. Smartphones are among the most significant contributors to semiconductor consumption in the consumer electronics sector. In recent years, the region has witnessed consistent growth in smartphone sales.
- Moreover, the United States is home to some of the world's major automotive players, which are investing in electric vehicles and the self-driving potential of cars, which demand high-performance ICs. This is one of the major factors driving the demand for the semiconductor silicon wafers market.

Semiconductor Silicon Wafer Industry Overview

The Semiconductor Silicon Wafer Market is quite competitive. In terms of market share, only a few players dominate the current market, due to which the market is quite consolidated. However, players' upcoming technologies and the innovations carried out are the reason behind the significant boost in the semiconductor silicon wafers market. The market is even witnessing multiple mergers and partnerships so that the companies expand their geographical presence.

- March 2022 - SK Siltron Co. announced that it has decided to invest won 1.05 trillion over the next three years to expand its facilities for 300 mm wafers, which are located in Gumi National Industrial Complex 3. The company will begin the expansion work in 2022 to start mass production in 2024.
- January 2022 - GlobalWafers Co., one of the global leading silicon wafer suppliers, added around 20,000 advanced 12-inch wafers each month from local fabs. GlobalWafers estimates capacity to rise 10-15% at plants in South Korea, Japan, Taiwan, and Italy as a result of the expansions to satisfy strong demand.

Additional Benefits:

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

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