SCOTTS INTERNATIONAL

Semiconductor Packaging Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 148 pages | Mordor Intelligence

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Report description:

The semiconductor packaging market is expected to witness a CAGR of 6.84% over the forecast period. Packaging has witnessed a continuous transformation in terms of characteristics, integration, and energy efficiency of the product owing to the growing demand across various end-user verticals of the industry. Additionally, owing to this increasing demand, packaging has witnessed a continuous transformation in terms of characteristics, integration, and energy efficiency of the product.

Key Highlights
Outsourced Semiconductor Assembly and Testing (OSAT) suppliers have seen a significant increase in demand from all end-user industries, particularly from consumer electronics and automotive applications, as a result of the increased demand for high-end packaging solutions and rising packaging costs.
Moreover, as the demand for smartphones, devices, and Internet of Things (IoT) increases in tandem with the market revenue for semiconductor packaging, specifically fan-out wafer-level packaging, semiconductor packaging suppliers are developing procedures and strategies to lower the overall cost of advanced packaging and provide maximum operational efficiency. Due to their expensive operation, these are mostly employed for high-end products and applications pertaining to specialized markets, such as wafers and die fabrication.
Additionally, suppliers in the market may benefit from a wide range of growth prospects due to ongoing improvements in packaging solutions. New packaging solutions can be created by FAB-LESS and other kinds of semiconductor design companies; but they will always need an OSAT vendor to put them into practice and make the new package technology a reality. The main cause is the absence of internal or in-house assembly and testing facilities, which frequently call for significant investments. Depending on OSAT is the greatest method to save costs while advancing new package developments.
A significantly high initial investment is required in the designing, developing, and setting up of semiconductor packaging units as per the requirement of different industries, such as automotive, consumer electronics, healthcare, IT & telecommunication, and

aerospace and defense. This can restrict the growth of the semiconductor packaging market.
It is expected that COVID-19 may encourage the production of cutting-edge medical tools and equipment to address such crises in the future. The market is also expected to be driven by the rising medical device output.

Semiconductor Packaging Market Trends

Consumer Electronics Segment to Hold Significant Market Share

Consumer electronics is one of the main end-user industries for semiconductor manufacturers. The growth of the smartphone market, rising wearable and smart device adoption, and increasing consumer IoT device penetration in applications like smart homes are a few of the major factors influencing the segment's growth.
Over the past ten years, the smartphone market has grown significantly in both hardware and software. Despite a decline in global smartphone unit shipments during the COVID-19 pandemic, there was high penetration in many markets, including China. Sales of new smartphones will continue to rise in the coming years, driven by trends like biosensors, 5G smartphones, and more AI features. The proliferation of 5G smartphones will also significantly improve connected device density, wireless data communication bandwidth, and latency.
In the upcoming years, many semiconductor producers anticipate that 5G smartphones with higher silicon contents will be widely adopted worldwide. The use of semiconductor components per device will rise as a result of the need for 5G smartphones to have higher power efficiency, faster speeds, and more complex functionalities. As a result, the consumer electronics industry is anticipated to experience a significant increase in demand for semiconductor packaging solutions.
The growing use of consumer electronics due to rising per capita incomes worldwide and the increased affordability of electronic equipment due to higher living standards is expected to drive the growth of the global semiconductor packaging market. Consumer electronic products such as laptops, tablets, fitness bands, smartwatches, and other electronic devices that require complex semiconductor integration are expected to aid the semiconductor packaging industry's growth.
Simultaneously, in order to meet the demand for continuous miniaturization and functional diversification of electronic products, the demand for chip integration is growing by the day. Not only is the process side improving chip circuit resolution, but it is also achieving higher-density circuit layouts to reduce product volume. The continuous evolution of packaging technology is also a big help, and the performance of packaging materials will be one of the main points of focus. In recent years, packaging materials have continued to move toward features such as low dielectric loss (Low Df) and filler (Filler) particle size miniaturization, designed to meet the changing needs of chip packaging.
The semiconductor industry is responsible for this wave of gains due to a variety of new technologies, including big data, high-performance computing (HPC), artificial intelligence (AI), edge computing, advanced memory, 5G infrastructure expansion, adoption of 5G smart mobile phones, growth in the use of electric vehicles, and improved car safety features, to name a few. Advanced packaging technologies and a new generation of chips with high performance, reliability, and integration are made possible by packaging materials, which are essential to the growth of advanced technology applications.

Asia-Pacific Expected to be the Fastest Growing Market

In the Asia-Pacific region, Japan's electronic products industry is one of the largest in the world and is one of the most significant factors driving demand for semiconductors packaging in the region.
The rising disposable income of the people and their preferences for smart homes and smart business environments are important drivers for the growth of consumer electronics in Japan. The increasing demand for consumer electronics in the region is expected to promote the need for semiconductor packaging in the region.

The Chinese mainland currently has 1.425 million installed 5G base stations that support more than 500 million 5G users nationwide, making it the biggest network in the world, as per MIIT. The growing implementation of 5G in the region is also expected to promote the demand for 5G-enabled devices, thereby increasing the need for semiconductor packaging in the APAC region.
Recently, AI semiconductors have witnessed higher demand from data center operators in the region, which require the chips to process huge amounts of data efficiently. Such an increase in the demand for semiconductor chips in the data centers is expected to promote the demand for semiconductor packaging solutions on parallel lines.
Furthermore, the Ministry of Science and ICT announced that five South Korean data center companies, including Naver Cloud, Douzone Bizon, Kakao Enterprise, NHN, and KT, and the Artificial Intelligence Industry Cluster Agency signed a memorandum of understanding with local server chip companies SK Telecom, Rebellions, FuriosaAI, and the Electronics and Telecommunications Research Institute for expanding the use of locally developed AI semiconductors in data centers. Such an increase in the demand for semiconductors from the data centers in the region is estimated to fuel the demand growth for various semiconductor packaging solutions in the APAC market during the forecast period.

Semiconductor Packaging Market Competitor Analysis

The semiconductor packaging market is moderately fragmented as there are various packaging solution providers for the semiconductor market. Players adopt strategies like product innovation, expansions, and partnerships to stay ahead of the competition and expand their market reach. The competition will likely only increase considering the anticipated demand from new customers from end-user industries like Consumer Electronics and Automotive.

In July 2022, ChipMOS Technologies Inc. agreed to spend NTD 12.5 billion (USD 418.2 million) on Taiwan capacity expansion, according to the Ministry of Economic Affairs, which accepted the driver IC and memory chip test and packager's proposal to join in a governmental incentive program. The capacity increase would enable ChipMOS to pursue new commercial prospects in the 5G and automotive sectors.

In June 2022, ASE Group announced VIPack, an advanced packaging platform designed to enable vertically integrated packaging solutions. The VIPack represents ASE's next-generation 3D heterogeneous integration architecture that expands design rules and delivers ultra-high density and performance.

Additional Benefits:

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

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