Global MEMS Packaging - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 120 pages | Mordor Intelligence

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Report description:

The Global MEMS Packaging Market is expected to register a CAGR of 17.8% during the forecast period.

Key Highlights
- MEMS packaging has evolved from packaging MEMS devices to packaging MEMS systems as the application of MEMS devices has expanded significantly. Innovative and efficient packaging technology is becoming increasingly important, as are new packaging materials.
- The recent technological development of CMOS-compatible MEMS manufacturing processes for low-temperature wafer bonding and other single-chip integration are among the driving innovations in the MEMS packaging market. Another emerging trend is the application of bare wafer stacks for low-cost lead-free semiconductor packages. This enables a low-cost, small-pin package for high-volume production.
- The increasing adoption of MEMS is also contributing to new demand in the embedded die packaging market. The technology is not unique to the market, but its high cost and low yields have diversified it into niche applications, but the potential for future development is immense. Advancements in Bluetooth and RF modules and the rise of WiFi-6 will likely accelerate investment in this technology further.
- The growing adoption of MEMS devices is also encouraging the MEMS packaging vendors to develop innovative packaging techniques further to enhance these devices' efficiency and operational performances. For instance, in 2021, T-SMART, a leading semiconductor manufacturing company, announced that it is working towards a new MEMS packaging technology based on Heterogeneous Integration for the thermopile sensor.
- Furthermore, according to IEEE, MEMS packaging is more challenging than IC packaging due to the diversity of MEMS devices and the need for many devices to be in contact with and protected from the environment simultaneously. In addition, there are also challenges within MEMS packaging, such as die handling, die attachment, interfacial tension, and outgassing. These new

MEMS packaging challenges require urgent R&D efforts.
- The usage of MEMS in the chip industry has witnessed immense growth as technology companies around the world accelerated innovation in the fight against the COVID-19 pandemic. The need for tiny devices drives advances in electronics, ranging from thermal imaging and faster point-of-care testing to microfluidics-based polymerase chain reaction (PCR) tools and techniques to detect SARS-CoV-2. However, the pandemic has changed the perception of the global supply chain in manufacturing, where more localized value chains and regionalization have come into the picture.

MEMS Packaging Market Trends

Growing Adoption of Smartphones and Connected Devices is Expected to Drive the Demand

- The number of smartphone users is rising enormously worldwide. Consumers are switching to smartphones to access various functionality they offer, including connectivity, payment, gaming, photography, and GPS. As multiple sensors are integrated into the smartphone's hardware to enable such functionality, the growing number of smartphone users is expected to positively impact the studied market growth.
- According to Ericsson Mobility Report, smartphone subscription in India is expected to grow from 810 million in 2020 to 1.2 billion in 2026. With rural areas driving the sale of internet-enabled phones, demand for smartphones is expected to increase as Internet connectivity spreads further.
- Moreover, MEMS devices are also revolutionizing the consumer electronics market. Combining the MEMS microphones and CMOS image sensors found in all smartphones and tablets, the consumer electronic device manufacturing companies are turning the traditional devices into connected ones that can easily be remotely controlled through smartphones.
- The increasing health consciousness, especially after the outbreak of COVID-19, drives the market for connected wearable devices that use sensors to track users' biological data. As MEMS devices play an integral role in these devices, the increasing demand is expected to impact the studied market positively. For instance, according to CISCO Systems, the total number of wearable devices is expected to reach 1.1 billion globally by 2022.

North America to Hold Significant Market Share

- The North American region traditionally has been a major shareholder of the global electronics industry owing to factors such as higher R&D capabilities, the presence of some of the biggest semiconductor and tech companies such as Intel, Dell, etc., along with higher penetration of electronic devices, IoT, and advanced automotive technologies. For instance, the region is considered one of the pioneers in adopting ADAS-enabled vehicles and autonomous transportation solutions. According to Deutsche Bank, ADAS vehicle production in the US is expected to grow to 18.45 million by 2021.
- Automotive companies are increasingly adopting MEMS devices to add unique functionality to their vehicles. For instance, MEMS-based LiDARs were an alternative to autonomous/driverless cars, industrial robots, UAVs, etc.; in September 2021, General Motors selected Cepton for the supply of MEME-based LiDAR for 2023 production. General Motor is expected to use the Cepton LiDAR to enhance ADAS capabilities for automatic emergency braking and pedestrian detection and to enable its upcoming Ultra Cruise system.
- Companies are also focused on innovating the latest sensors and are receiving recognition for their innovative products. For instance, in April 2022, Unisem, a North American and global semiconductor assembly and test services provider, won the Packaging Process Showdown at MEMS and SENSORS Technical Congress (MSTC) for its presentation, MEMS Cavity Packages.
- The recent push to the local semiconductor industry amid the global chip shortage has forced the governments in the North American region to increase their investment in the semiconductor and related industries. For instance, through a USD 240 million

investment in early 2022, the government Canadian government has committed to work with local researchers and companies to strengthen Canada's position in the industryfurther. Such instances are expected to create a favorable market scenario for the growth of the studied market.
- Furthermore, the smartphone and consumer electronics also are among the leading industries driving the demand for MEMS devices which n turn is positively impacting the demand for packaging services in the region. For instance, according to the Consumer Technology Association (CTA), the 5G smartphone shipments in the United States was expected to reach 106 million in 2021.

MEMS Packaging Industry Overview

The MEMS packaging market is moderately competitive. As the industry is capital intensive, major vendors in the market are banking on diverse product portfolios and product development to gain an edge. The innovation capabilities of the vendors are highly dependent on their R&D investments. Additionally, the industry's capital-intensive nature poses an entry barrier to new entrants. Some key players operating in the market are ChipMos Technologies Inc., AAC Technologies, Bosch Sensortec GmbH, Infineon Technologies AG, and Analog Devices, Inc., among others.

- August 2022 - MEMSIC, a leading MEMS technology solution provider, releases the first MEMS 6-axis inertial sensor (IMU) MIC6100HG. The product integrates a 3-axis accelerometer and a 3-axis gyroscope, which can support motion-sensing interactive systems such as smart remote controls and game controllers with sensitive sensing. Additionally, the MIC6100HG 6-axis IMU sensor has a large FIFO and supports I2C/I3C/SPI communication mode. The LGA package size is 2.5x3x0.83mm, and the data output frequency is 2200Hz.
- February 2022 - STMicroelectronics introduced its third generation of MEMS sensors. According to the company, the new sensors are designed to enable the next leap in performance and features for smart industries, consumer mobiles, healthcare, and retail sectors. The newly launched LPS22DF and waterproof LPS28DFW barometric pressure sensors, which operate from 1.7□A and have absolute pressure accuracy of 0.5hPa and are packed in one of the smallest footprints (2.0 x 2.0 x 0.74mm).

Additional Benefits:

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

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