

Microelectromechanical Systems (MEMS) Market Status, By Players, Types, Applications and Forecast to 2030

CALIFORNIA, UNITED STATES, December 7, 2023 /EINPresswire.com/ -- Microelectromechanical systems (MEMS) are miniaturized devices and structures that combine electrical and mechanical components utilizing semiconductor fabrication techniques. Prominent end uses of MEMS technology include consumer electronics, automotive, industrial, and medical applications.

Market Dynamics:

The growing consumer electronics industry, coupled with the increasing demand for miniaturization of components and devices are contributing to the growth of the microelectromechanical systems market. MEMS offer greater functionality and significantly lower power requirements compared to other technologies. In addition, the emergence of wearable devices and smartphones are augmenting the demand for MEMS-based sensors such as accelerometers and gyroscopes. Furthermore, advancements in automotive electronics led by the integration of technologies such as advanced driver-assistance systems and connected car solutions are spurring the adoption of MEMS technology. The use of MEMS in airbag control systems, engine management systems, anti-lock braking systems, and electronic stability control is expected to propel the market growth over the forecast period.

According to Coherent Market Insights study, The global [microelectromechanical systems \(MEMS\) market size](#) was valued at USD 23,858 million in 2021 and is anticipated to witness a compound annual growth rate (CAGR) of 9.3% from 2022 to 2030.

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Microelectromechanical Systems Market Drivers, Restraints, Opportunities and Trends

Increasing Demand From Automotive Industry Driving Growth in MEMS Market

The automotive industry has been rapidly adopting MEMS technology for advanced driver-assistance systems, navigation, vehicle safety, and other infotainment purposes. MEMS inertial sensors like accelerometers and gyroscopes are helping automakers developed advanced driver-assistance systems like adaptive cruise control and lane-keeping assistance. Several other MEMS

devices like pressure sensors, microphones, and environmental sensors are also being integrated into modern vehicles. The growing demand for advanced safety and autonomous driving features is expected to boost the adoption of MEMS in automotive electronics in the coming years.

Rising Adoption of Smartphones and IoT Devices Fueling MEMS Demand

MEMS technology plays a vital role in enabling key features and functionalities of modern smartphones and many consumer electronics products. Devices like accelerometers, gyroscopes, compasses, microphones, image sensors are commonly used MEMS parts in smartphones. Similarly, pressure sensors, motion sensors, environmental sensors are integrated into various IoT devices and wearables. With the growing sales of smartphones worldwide and increasing number of connected IoT devices, the demand for MEMS from consumer electronics industry is projected to witness strong growth over the next decade.

Stringent Environment Regulations Restricting Growth of Certain MEMS Applications

MEMS production involves the use of various hazardous chemicals and gases that are toxic in nature. Strict environment protection regulations in different regions regarding the use and disposal of such chemicals pose a barrier for MEMS manufacturers. Complying with these regulations increases overall production costs. Regulations around the use of hazardous substances like lead in electronics is negatively impacting the MEMS market for certain legacy applications that still use such prohibited substances. However, innovative green MEMS manufacturing processes can help tackle this challenge.

Opportunity for MEMS in Emerging Applications Like Drones, VR/AR and Medical Devices

MEMS technology is extending its reach into many emerging application areas with huge market potential. Drones and unmanned aerial vehicles represent a promising growth market for MEMS inertial sensors and modules. Similarly, virtual reality and augmented reality headsets require advanced MEMS gyroscopes, accelerometers and image sensors for enabled high-quality interactive experiences. The medical devices industry is witnessing rising adoption of MEMS for surgical instruments, imaging, diagnostics, drug delivery and lab-on-a-chip applications. All these emerging domains open up new lucrative opportunities for the overall MEMS market.

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Trend Towards Miniaturization and Integration Driving Innovation in MEMS Design

A key market trend in the MEMS industry is the continuous advancement towards ultra-miniaturized device footprint and higher levels of sensor integration. This enables the development of new form factors and multi-sensor system-on-chip solutions. Miniature MEMS

are enabling the proliferation of wearable devices and portable consumer electronics. Integrated modules pack multiple sensors and functionalities into a single package. This latest technology trend will allow new use cases and help expand the usage of MEMS beyond existing markets into new application segments over the coming decade. MEMS manufacturers are racing ahead to reduce device dimensions and integrate more sensing modalities.

The major players operating in the market include:

- Nxp Semiconductors N.V.
- Analog Devices Inc.
- Knowles Corporation

These companies are focusing on new product development, partnerships, collaborations, and mergers and acquisitions to increase their market share and maintain their position in the market.

Detailed Segmentation:

Global Microelectromechanical Systems (MEMS) Market, By Type

Sensor

- Gyroscopes
- Accelerometers
- Pressure Sensor
- Inertial Combos
- Microphones
- Magnetometers
- Others

Actuator

- Inkjet Systems
- Optical MEMS
- Oscillators & Resonators
- Microfluidic & Biochip
- RF MEMS
- Others

Global Microelectromechanical Systems (MEMS) Market, By Application

- Consumer Electronics
- Automotive
- Industrial
- Aerospace & Defense

- Healthcare
- Telecommunication

Market segment by Region/Country including:

- North America (United States, Canada and Mexico)
- Europe (Germany, UK, France, Italy, Russia and Spain etc.)
- Asia-Pacific (China, Japan, Korea, India, Australia and Southeast Asia etc.)
- South America (Brazil, Argentina and Colombia etc.)
- Middle East & Africa (South Africa, UAE and Saudi Arabia etc.)

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Frequently Asked Questions (FAQs):

- What are the key factors hampering growth of the Microelectromechanical Systems (MEMS) market?
- What are the major factors driving the global Microelectromechanical Systems (MEMS) market growth?
- Which is the leading component segment in the Microelectromechanical Systems (MEMS) market?
- Which are the major players operating in the Microelectromechanical Systems (MEMS) market?
- Which region will lead the Microelectromechanical Systems (MEMS) market?
- What will be the CAGR of Microelectromechanical Systems (MEMS) market?
- What are the drivers of the Microelectromechanical Systems (MEMS) market?

Mr. Shah

Coherent Market Insights Pvt. Ltd.

+ +1 206-701-6702

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