

## Is the Microelectromechanical Systems (MEMS) Market Thriving, and What's Its Valuation?

The Microelectromechanical Systems (MEMS) Market is estimated for 2023 for the forecast period 2023-2030, as highlighted in a new report published by CMI.

CALIFORNIA, UNITED STATES, November 29, 2023 /EINPresswire.com/ -- Market Overview:

Microelectromechanical systems (MEMS) are microscopic devices and systems that combine electrical and mechanical functionality on a small silicon chip. They are used in various consumer electronics products such as smartphones, wearables, and automotive electronic components.

Market Dynamics:

The growing demand for smart devices such as smartphones, tablets, wearables, and electronic automotive components is expected to drive the growth of the microelectromechanical systems market during the forecast period. The rising adoption of automation across various industries is also boosting the market growth. Further, the development of more advanced and customized MEMS sensors is estimated to open new avenues for market growth. The advancements in MEMS technology are lowering their production costs, making their integration viable across a variety of applications. However, complex manufacturing processes and high production costs associated with MEMS pose challenges to widespread adoption.

According to Coherent Market Insights study, The global <u>microelectromechanical systems</u> (<u>MEMS</u>) <u>market</u> 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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Growing demand for consumer electronics is driving the MEMS market

The growing demand for consumer electronics such as smartphones, tablets, wearable devices and automotive infotainment systems are majorly driving the growth of the MEMS market. Microelectromechanical systems find widespread applications in these devices in the form of accelerometers, gyroscopes, pressure sensors, microphones and other sensing components. As the functionality and features of consumer devices continue to increase, the demand for smaller, more precise and low-cost MEMS components is surging. For example, modern smartphones contain several MEMS devices to enable key features like digital image stabilization, step counting, crash detection and more. Additionally, the rising popularity of the Internet of Things is propelling the penetration of connected devices which use MEMS components. With consumer preference rapidly shifting towards smart and connected products, the demand from the electronics industry will keep rising and drive MEMS market growth.

Increasing adoption of MEMS technology in automotive industry poses a market restrain

While the MEMS market is growing due to increasing demand from various end-use sectors, the high cost of manufacturing MEMS components creates a major restrain. The small size and complex electronic design of MEMS devices make their fabrication an intricate and expensive process. Producing MEMS on a mass scale requires specialized infrastructure and cleanroom facilities which escalate the capital expenditure. Additionally, achieving economy of scale to reduce costs becomes difficult due to small production volumes and custom requirements of different MEMS products. The high fixed costs are eventually passed on to consumers making MEMS-based solutions costly. This pricing challenge restricts the widespread adoption of MEMS technology especially in cost-sensitive segments like automotive. However, continuous yield improvements, mass production techniques and technological advances are helping chipmakers gradually lower the manufacturing costs.

Expansion into new industrial verticals presents a promising opportunity

The scope for applying MEMS technology is exponentially increasing with its penetration into several new industrial domains presenting lucrative opportunities. One such area is healthcare diagnosis and treatment which is opening up new growth avenues. MEMS sensors, actuators and microfluidic components are enhancing the functionality of medical tools. For example, MEMS pressure sensors are improving insulin pumps while accelerometers in pacemakers monitor body motion. Similarly, the agriculture industry can leverage MEMS for smart irrigation control and crop monitoring. Other prospects include augmented reality/virtual reality devices, 3D printing systems, robotics and energy harvesting applications. With continuous R&D, the applications of MEMS will keep diversifying into untapped sectors. This expanding scope will drive more product innovation and demand creation compensating for the high costs to some extent. The emerging opportunities will push the MEMS market towards new developments and support its long-term growth prospects.

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Emergence of 5G connectivity driving technology miniaturization trend

A prominent trend impacting the MEMS industry is the advancement towards miniaturized

systems driven by the rollout of 5G networks and related technologies. 5G requires compact, low-power consuming components to enable applications like IoT, augmented reality and autonomous vehicles. This creates a need for highly integrated sensing modules within tight form factors. MEMS suppliers are responding by designing ultra-miniature sensors, actuators and microfluidic chips with 5G compatibility usingSystem-in-Package assembly and 3D stacking techniques. Another trend is the increase in processing power and functionality of MEMS through sophisticated material deposition processes, 3D micromachining, photolithography and packaging improvements. MEMS foundry services are also emerging as an important trend offering design and fabrication services on a cloud-computing model. These technology miniaturization and capability enhancement trends will keep expanding MEMS scope and fuel the overall market growth.

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
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?

U 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?

D Which region will lead the Microelectromechanical Systems (MEMS) market?

U What will be the CAGR of Microelectromechanical Systems (MEMS) market?

U What are the drivers of the Microelectromechanical Systems (MEMS) market?

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