

# **Global Automotive Microcontroller Unit (MCU) Market: Analysis By Product Type (32-bit MCUs, 16-bit MCUs, 8-bit MCUs), By Vehicle Type (Passenger Vehicles, Commercial Vehicles and Electric Vehicles), By Application (Chassis & Powertrain, Body Electronics, Safety & Security Systems, and Infotainment & Telematics), By Region Size and Trends with Impact of COVID-19 and Forecast up to 2028**

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## **Abstracts**

The global automotive microcontroller unit (MCU) market in 2022 was valued at US\$6.42 billion. The market is expected to reach US\$9.35 billion by 2028. The automotive microcontrollers refer to self-contained systems consisting of processors, memory, and peripherals, and used as an embedded system. MCU, a core chip for vehicle control, finds application in body control, driving control, infotainment and driving assistance. An automotive microcontroller enables automatic control sensing, enhances safety features in vehicles and increases speed of execution in vehicles.

Automobile companies have experienced huge boost regarding introduction of automation in vehicles which eventually leads them to provide better and advanced features to the consumers. As a result, microcontrollers are a crucial part of the automotive sector, and the industry's rapid development supports the automotive microcontroller unit market's growth. Therefore, rapid developments in the automotive industry are predicted to drive the demand for automotive microcontroller unit (MCU) in the forthcoming years. The market is expected to grow at a CAGR of approx. 6.5% during the forecasted period of 2023-2028.

## Market Segmentation Analysis:

**By Product Type:** The report provides the bifurcation of the market into four segments based on the product type: 32-bit MCUs, 16-bit MCUs, 8-bit MCUs. In 2022, 32-bit MCUs lead the automotive microcontroller unit (MCU) market with the majority of market share. On the other hand, the 16-bit MCUs segment is expected to experience high growth, as they provide excellent performance with significant power savings and offer the perfect middle ground in terms of cost, size, and processing speed between 8-bit and 32-bit controllers, which would drive the market growth.

**By Vehicle Type:** The report further provides the segmentation based on the vehicle type: Passenger Vehicles, Commercial Vehicles and Electric Vehicles. The passenger vehicles segment held the highest share in the market. The passenger vehicle segment is expected to be the fastest-growing vehicle type in the market, owing to its vital role in the transportation industry and the increased demand for better and more efficient vehicles equipped with advanced components.

**By Application:** The report provides the categoriation of the market into four key segments based on the application: Powertrain & Chassis, Safety & Security Systems, Body Electronics, and Infotainment & Telematics. Powertrain & Chassis was the market leader in 2022 and is anticipated to remain dominant throughout the forecasted period. Automotive microcontrollers are gaining traction in the powertrain & chassis of vehicles, owing to their feature of reducing vehicle fuel consumption. In addition, they help operate various other features associated with the vehicle, such as an advanced driving system, which supplements the market growth.

**By Region:** The report provides insight into the automotive microcontroller unit (MCU) market based on the regions namely Asia Pacific, North America, Europe and Rest of the world. Asia Pacific dominated the market in 2022, as major companies in the automobile industry have concentrated on growing in Asia by setting up their corporate offices or manufacturing facilities in nations like China, Japan, and India, which are the region's automotive hubs. Asia Pacific is further divided into five regions: China, India, Japan, South Korea and Rest of Asia Pacific.

In North America, the US is expected to be the largest and fastest growing region in the forecasted period. Whereas, in the Europe region, Germany held the majority of share in the market. Germany automotive microcontroller unit (MCU) market is expected to grow in the future due to rising adoption of electric vehicles which are equipped with advanced electronic features such as internet connectivity, infotainment systems, and

safety control system in the region.

#### Market Dynamics:

**Growth Drivers:** The global automotive microcontroller unit (MCU) market has been growing over the past few years, due to factors such as surging demand for electric vehicles, increasing disposable income, growing demand for advanced driver assistance systems (ADAS), rising installation of enhanced safety features and rise in demand for in-vehicle infotainment system (IVI), and many other factors. The expansion of the automotive microcontrollers has been seemed to be fueled by widespread demand for electric vehicles. The transition to electric mobility is well underway, presenting automobile industry with new hurdles. A phase-out of the combustion engine appears all but unavoidable in the face of increasingly ambitious climate targets, and is a set policy in an increasing number of countries. The main element projected to lead to the development of a mainstream market for electric vehicles in the near future is the declining cost of components such as lithium-ion batteries, sensors, and microcontrollers. Furthermore, governments worldwide are vigorously promoting electric vehicles due to their critical role in reducing carbon emissions and addressing air pollution. All these factors have led to the surge in the demand for automotive microcontroller unit (MCU). Thus, surging demand for electric vehicles has encouraged the growth of the global automotive microcontroller unit (MCU) market.

**Challenges:** However, the market has been confronted with some challenges specifically, security risks and high costs and functional and operational failures in extreme climatic conditions, etc.

**Trends:** The market is projected to grow at a fast pace during the forecast period, due to various latest trends such as upsurge in demand for autonomous vehicles, increasing semiconductor content in vehicles, soaring use of connected technologies in vehicles and rising government regulations on emission reduction.

#### Impact Analysis of COVID-19 and Way Forward:

The COVID-19 pandemic has put staggering strains on supply chain disruptions in in global automotive MCU market, resulting in bottlenecks in labor, manufacturing, transportation, and logistics, as well as significant demand fluctuations. The leading companies such as Infineon Technologies AG, NXP Semiconductors, Texas Instruments Incorporated, and STMicroelectronics have witnessed a significant fall in revenues in the first two quarters of 2020. While in 2021, the automotive microcontroller

unit (MCU) market rebounded as people are now more transilient for electric and safer vehicles, which is increasing the use of ADAS in cars, thus driving the demand of automotive microcontroller units.

#### Competitive Landscape:

The global automotive microcontroller unit (MCU) market is highly fragmented, with a large number of small- and medium-sized manufacturers operating in the market.

The key players in the global automotive microcontroller unit (MCU) market are:

Renesas Electronics Corporation

NXP Semiconductor N.V.

Infineon Technologies AG

Texas Instruments

Microchip Technology Inc.

STMicroelectronics N.V

ROHM Semiconductor

Toshiba Corporation

ON Semiconductor Corporation

NVIDIA Corporation

Analog Devices, Inc. (Maxim Integrated)

Taiwan Semiconductor Manufacturing Company Limited

Silicon Laboratories, Inc.

Players in the market are diversifying the service offering to maintain market share. All

of the major players in the market are focused on developing products with increasing investment in research & development that are compatible with the latest trends & technologies. For instance, in August 2022, NXP Semiconductors announced it had signed a memorandum of understanding with Hon Hai Technology Group ("Foxconn") to jointly develop platforms for a new generation of smart connected vehicles.?

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