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Global 8-bit Automotive Microcontrollers (MCU) Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global 8-bit Automotive Microcontrollers (MCU) market size is expected to reach $ 1292 million by 2032, rising at a market growth of -3.3% CAGR during the forecast period (2026-2032).
Global sales of 8-bit automotive microcontrollers (MCUs) are projected to reach 4.6 billion units by 2025, with an average selling price of approximately $319 per thousand units.
An 8-bit automotive microcontroller (MCU) is an 8-bit computing core chip specifically designed for automotive electronics. It integrates a CPU, memory (ROM/RAM/Flash), I/O interfaces, and peripheral modules (such as ADCs, PWM, and timers), achieving low power consumption, low cost, and high reliability control through a simplified instruction set. Its core function is to process sensor data in real time and drive actuators. It is widely used in vehicle body control (such as windows, wipers, and lights), powertrain systems (such as motor control), and driver assistance systems (such as tire pressure monitoring). The industry's gross profit margin is approximately 40%-50%.
Upstream: Includes raw material suppliers such as silicon wafers and photoresists, as well as suppliers of lithography machines and testing equipment; Midstream: MCU design companies manufacture through IDM or fabless models; automotive-grade MCUs must pass AEC-Q100 and functional safety certifications; Downstream: Used in powertrain systems, chassis control, body electronics, and smart cockpits, with automakers and Tier 1 suppliers as core customers.
Market drivers mainly include the following:
Accelerated demand upgrades due to automotive intelligence and electrification; Scenarios such as smart cockpits and autonomous driving require the deployment of more sensors and actuators, driving up the usage of MCUs. For example, Level 3 autonomous driving requires the integration of 20-30 MCUs, 3-5 times more than traditional gasoline vehicles. Simultaneously, the demand for high-precision ADCs and

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low-power MCUs in electric vehicle battery management systems (BMS) is surging, making 8-bit MCUs the preferred choice for entry-level models due to their cost advantage.

Domestic substitution policies and supply chain security drive localization. International manufacturers have long monopolized the automotive-grade MCU market (accounting for over 90%), but geopolitical risks and chip shortages have prompted automakers to accelerate domestic substitution. Domestic policies support local companies in achieving automotive-grade certifications (such as AEC-Q100 and ISO 26262) through tax incentives and R&D subsidies. Companies like ChipON Microelectronics and BYD Semiconductor have already achieved mass production for pre-installed applications, breaking the international monopoly.

Functional safety and low-power requirements spur technological iteration. Automotive electronics have stringent reliability requirements, needing to operate stably for over 15 years in environments ranging from -40? to 150?. 8-bit MCUs improve anti-interference capabilities by optimizing internal oscillation circuits and integrating hardware CRC checks, while employing low-power designs (such as dynamic voltage regulation) to extend battery life, meeting the needs of new energy vehicles and intelligent connected vehicles. In addition, some manufacturers have reduced their R&D costs by leveraging the RISC-V open-source ecosystem, further promoting the application of 8-bit MCUs in the automotive field.

This report studies the global 8-bit Automotive Microcontrollers (MCU) production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for 8-bit Automotive Microcontrollers (MCU) and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of 8-bit Automotive Microcontrollers (MCU) that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global 8-bit Automotive Microcontrollers (MCU) total production and demand, 2021-2032, (Million Units)

Global 8-bit Automotive Microcontrollers (MCU) total production value, 2021-2032, (USD Million)

Global 8-bit Automotive Microcontrollers (MCU) production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Million Units), (based on production site)

Global 8-bit Automotive Microcontrollers (MCU) consumption by region & country, CAGR, 2021-2032 & (Million Units)

U.S. VS China: 8-bit Automotive Microcontrollers (MCU) domestic production,

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consumption, key domestic manufacturers and share
Global 8-bit Automotive Microcontrollers (MCU) production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Million Units)
Global 8-bit Automotive Microcontrollers (MCU) production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)
Global 8-bit Automotive Microcontrollers (MCU) production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)
This report profiles key players in the global 8-bit Automotive Microcontrollers (MCU) market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Infineon Technologies, NXP Semiconductors, Renesas Electronics, Microchip Technology, STMicroelectronics, Texas Instruments, Analog Devices, Silicon Laboratories, Toshiba, Giga Device Semiconductor, etc.
This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.
Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World 8-bit Automotive Microcontrollers (MCU) market
Detailed Segmentation:
Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (Million Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.
Global 8-bit Automotive Microcontrollers (MCU) Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

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Rest of World

Global 8-bit Automotive Microcontrollers (MCU) Market, Segmentation by Type:

Vehicle To Vehicle (V2V) Connectivity

Vehicle To Infrastructure (V2I) Connectivity

Vehicle To Cloud (V2C) Connectivity

Global 8-bit Automotive Microcontrollers (MCU) Market, Segmentation by Technology:

Basic Control Type

Functional Safety Type

Global 8-bit Automotive Microcontrollers (MCU) Market, Segmentation by Functional Category:

Power Domain MCU

Chassis Domain MCU

Global 8-bit Automotive Microcontrollers (MCU) Market, Segmentation by Application:

Powertrain and Chassis

Body Electronics

Safety and Security Systems

Infotainment and Telematics

Other

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Companies Profiled:

Infineon Technologies

NXP Semiconductors

Renesas Electronics

Microchip Technology

STMicroelectronics

Texas Instruments

Analog Devices

Silicon Laboratories

Toshiba

Giga Device Semiconductor

Key Questions Answered:

1. How big is the global 8-bit Automotive Microcontrollers (MCU) market?
2. What is the demand of the global 8-bit Automotive Microcontrollers (MCU) market?
3. What is the year over year growth of the global 8-bit Automotive Microcontrollers (MCU) market?
4. What is the production and production value of the global 8-bit Automotive Microcontrollers (MCU) market?
5. Who are the key producers in the global 8-bit Automotive Microcontrollers (MCU) market?
6. What are the growth factors driving the market demand?

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