

Power Semiconductors for EVs Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

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Abstracts

The Global Power Semiconductors For EVs Market was valued at USD 7.9 billion in 2024 and is estimated to grow at a CAGR of 12,8% to reach USD 28.2 billion by 2034.

The rapid acceleration of electric vehicle adoption is driving substantial demand for advanced power electronics capable of supporting battery systems, high-speed charging, and optimized vehicle performance. Rising global EV sales, which grew 35% year over year in the first quarter of 2025, reflect the momentum behind the electrification movement and reinforce the essential role of power semiconductors in ensuring efficient power conversion, reduced thermal losses, and enhanced system reliability. As EV platforms evolve, manufacturers require components that can withstand high temperatures, support faster charging, and maintain stable efficiency across demanding conditions. This shift continues to influence investments, technology roadmaps, and product upgrades within the semiconductor ecosystem. Collaborative efforts between automotive brands and semiconductor developers are accelerating the deployment of next-generation materials, while creating stronger supply chain frameworks to meet the rising volume and performance expectations of the global EV sector.

The silicon carbide segment held a 33.2% share in 2024 as SiC devices gain traction due to their superior switching behavior, heat resistance, and charging performance. OEMs are increasingly integrating SiC MOSFETs into traction inverters and fast-charging architectures to improve energy efficiency and extend vehicle range. Manufacturers continue to scale SiC wafer capacity and pursue vertical integration, along with engineering tailored modules that align with the performance requirements of individual EV platforms.

The MOSFET segment is expected to reach USD 20.3 billion by 2034, supported by strong demand across onboard chargers, auxiliary circuits, and DC-DC converters. Producers are working to enhance voltage ratings and thermal durability to accommodate the growing electrical loads and higher power densities of modern EV designs.

United States Power Semiconductors for EVs Market generated USD 1.9 billion in 2024. Recent funding initiatives, including federal support for power module development, highlight ongoing national efforts to strengthen charging infrastructure. This environment encourages semiconductor suppliers to prioritize high-performance SiC and GaN technologies and to collaborate closely with domestic automotive companies to address fast-charging demands and high-voltage system challenges.

Key participants in the Power Semiconductors for EVs Market include Infineon Technologies AG, ROHM Co., Ltd., Onsemi, Mitsubishi Electric Corp., Renesas Electronics Corp., Microchip Technology Inc., STMicroelectronics N.V., Wolfspeed, Inc., Littelfuse, Inc., and Fuji Electric Co., Ltd. To reinforce their market position, companies in the power semiconductors for EVs sector are implementing strategies centered on scaling production capacity and accelerating material innovation. Many are expanding SiC and GaN manufacturing lines to meet long-term EV demand while investing in vertically integrated supply chains that stabilize wafer availability and reduce production costs. Firms are also designing application-specific modules tailored to OEM performance targets, enabling stronger technical partnerships. R&D efforts focus on reducing switching losses, improving thermal management, and supporting higher power densities.

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