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Global Automotive-Grade SiC Power Chip Market Growth 2026-2032

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Abstracts

The global Automotive-Grade SiC Power Chip market size is predicted to grow from US$ 5001 million in 2025 to US$ 19132 million in 2032; it is expected to grow at a CAGR of 21.1% from 2026 to 2032.

Automotive-Grade SiC Power Chips are silicon carbide-based power semiconductor chips specifically developed for new energy vehicles and other automotive high-voltage electrical systems, and are required to meet strict automotive standards for reliability, consistency, long service life, high-temperature resistance, high-voltage endurance, vibration tolerance, and stable operation under harsh working conditions. They are widely used in traction inverters, onboard chargers, DC/DC converters, electric compressors, auxiliary power supplies, and high-voltage power distribution units. These chips are designed to address the limitations of traditional silicon-based power devices in automotive applications, particularly high power loss, excessive heat generation, bulky cooling requirements, and constraints on overall vehicle efficiency under high-voltage and high-frequency operating conditions. By taking advantage of the superior material properties of silicon carbide, including high breakdown electric field, high thermal conductivity, high electron saturation drift velocity, and wide bandgap, automotive-grade SiC power chips enable higher switching frequency, lower conduction and switching losses, and greater power density, thereby helping improve driving range, shorten charging time, and optimize vehicle thermal management and lightweight system design. Their development has been closely tied to the electrification of the automotive industry and the transition toward higher-voltage vehicle platforms. Early automotive power semiconductors were dominated by silicon IGBT and MOSFET technologies, while the rise of 800V architectures, ultra-fast charging, and high-efficiency electric drivetrains has accelerated the adoption of SiC devices from industrial and premium applications into mainstream automotive use. Upstream supply mainly

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includes SiC substrates, epitaxial wafers, photoresists, masks, electronic gases, wet chemicals, and sputtering targets, as well as packaging-related materials and components such as leadframes, bonding wires, ceramic substrates, DBC substrates, encapsulation resins, thermal management materials, and connectors, together with semiconductor manufacturing equipment and processes used for lithography, etching, ion implantation, thin-film deposition, dicing, packaging, testing, and reliability validation.In 2025, the global production capacity of automotive-grade silicon carbide power chips reached 500 million units, while sales volume amounted to 390 million units. The average selling price was USD 13.1 per unit, and the gross profit margin of manufacturers ranged from 30% to 40%.

The automotive-grade SiC power chip market has moved beyond the stage of limited adoption in premium vehicle programs and is now entering a phase of faster penetration driven by high-voltage vehicle platforms. Demand remains centered on traction inverters, onboard chargers, and other high-voltage auxiliary systems, where automakers are seeking better range, faster charging, simplified thermal management, and improved overall vehicle efficiency. Competition is therefore no longer defined only by chip-level performance, but increasingly by co-development with OEMs and Tier 1 suppliers, packaging integration, quality systems, and long-term supply capability. Wolfspeed?s supply partnership with Jaguar Land Rover and ROHM?s mass-production deployment of SiC bare chips in Schaeffler inverter bricks for a major Chinese automaker both illustrate that automotive-grade SiC is moving more deeply into serial vehicle production.

Over the next few years, the market is likely to develop along three closely linked directions: higher-voltage vehicle architectures, more integrated packaging, and more mature large-diameter manufacturing platforms. The expansion of 800V and higher-voltage systems will continue to support deeper SiC adoption in traction inverters and high-voltage charging-related applications, while growing module integration in OBC, DC/DC, and e-drive systems will push chip, package, and thermal design to evolve together. At the manufacturing level, the industry is clearly accelerating toward 200mm SiC production to improve scale economics, process consistency, and long-term cost competitiveness. ST has stated that its new SiC campus in Catania is progressing toward 200mm production, while Wolfspeed has commercialized its 200mm SiC materials platform, reinforcing that the long-term industry direction is now centered on manufacturing stability, productivity, and cost-down execution.

At the same time, broader market expansion still faces several constraints. Automotive qualification standards remain extremely demanding in terms of reliability, lifetime,

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consistency, and functional safety, which creates long validation cycles and high barriers for new entrants. Although SiC offers strong advantages in efficiency and power density, its adoption pace is still shaped by substrate economics, manufacturing yield, advanced packaging complexity, and supply-chain coordination, while silicon IGBTs remain highly competitive in cost-sensitive vehicle segments. In addition, capacity expansion across the SiC industry has not been frictionless. Wolfspeed?s 2025 restructuring and tighter focus on its 200mm platform underline that, despite strong long-term demand drivers, the sector still faces practical challenges in capital intensity, ramp execution, and profitability timing. Overall, the key drivers remain vehicle electrification, higher-voltage systems, and charging-performance upgrades, while the main restraints lie in cost, qualification barriers, and supply-chain maturity.

LP Information, Inc. (LPI) ' newest research report, the ?Automotive-Grade SiC Power Chip Industry Forecast? looks at past sales and reviews total world Automotive-Grade SiC Power Chip sales in 2025, providing a comprehensive analysis by region and market sector of projected Automotive-Grade SiC Power Chip sales for 2026 through 2032. With Automotive-Grade SiC Power Chip sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US$ millions of the world Automotive-Grade SiC Power Chip industry.

This Insight Report provides a comprehensive analysis of the global Automotive-Grade SiC Power Chip landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Automotive-Grade SiC Power Chip portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms? unique position in an accelerating global Automotive-Grade SiC Power Chip market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Automotive-Grade SiC Power Chip and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Automotive-Grade SiC Power Chip.

This report presents a comprehensive overview, market shares, and growth opportunities of Automotive-Grade SiC Power Chip market by product type, application, key manufacturers and key regions and countries.

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Segmentation by Type:

SiC MOSFET Modules

SiC MOSFET Discretes

SiC Diode/SBD

Segmentation by Wafer Size:

4-inch SiC Power Chip

6-inch SiC Power Chip

8-inch SiC Power Chip

Segmentation by Voltage Range:

Below 650V SiC Power Chip

650V-1200V SiC Power Chip

Above 1200V SiC Power Chip

Segmentation by Application:

Automotive & EV/HEV

EV Charging

PV, Energy Storage, Wind Power

Others

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This report also splits the market by region:

- Americas
  - United States
  - Canada
  - Mexico
  - Brazil
- APAC
  - China
  - Japan
  - Korea
  - Southeast Asia
  - India
  - Australia
- Europe
  - Germany
  - France
  - UK
  - Italy
  - Russia
- Middle East & Africa

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Egypt

South Africa

Israel

Turkey

GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

STMicroelectronics

Infineon

Wolfspeed

Rohm

onsemi

BYD Semiconductor

Microchip (Microsemi)

Mitsubishi Electric (Vincotech)

Semikron Danfoss

Fuji Electric

Navitas (GeneSiC)

Toshiba

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Qorvo (UnitedSiC)

San'an Optoelectronics

Littelfuse (IXYS)

CETC 55

WeEn Semiconductors

BASiC Semiconductor

SemiQ

Diodes Incorporated

SanRex

Alpha & Omega Semiconductor

Bosch

KEC Corporation

PANJIT Group

Nexperia

Vishay Intertechnology

Zhuzhou CRRC Times Electric

China Resources Microelectronics Limited

Key Questions Addressed in this Report

What is the 10-year outlook for the global Automotive-Grade SiC Power Chip

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market?

What factors are driving Automotive-Grade SiC Power Chip market growth, globally and by region?

Which technologies are poised for the fastest growth by market and region?

How do Automotive-Grade SiC Power Chip market opportunities vary by end market size?

How does Automotive-Grade SiC Power Chip break out by Type, by Application?

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13 KEY PLAYERS ANALYSIS

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