

# US Silicon Carbide Power Semiconductor Market - Strategic Insights and Forecasts (2026-2031)

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## Abstracts

The US Silicon Carbide Power Semiconductor Market is projected to rise from USD 1.3 billion in 2026 to USD 3.8 billion by 2031, registering a CAGR of 24.0%.

The US SiC power semiconductor market is strategically positioned to support energy transition and electrification efforts. Silicon carbide devices, as wide-bandgap semiconductors, handle higher voltages and temperatures than traditional silicon, enabling efficient power conversion. This performance advantage addresses growing demand in electric vehicles, renewable energy, industrial motor drives, and grid modernization, where operational efficiency, thermal reliability, and reduced losses are essential.

### Market Drivers

Rapid EV adoption drives demand for SiC in traction inverters, onboard chargers, and powertrain components. SiC MOSFETs reduce conduction and switching losses, enabling lighter and more compact designs that extend vehicle range. Renewable energy expansion further fuels uptake, particularly in grid-scale inverters and energy storage systems requiring high-voltage, high-temperature operation. Industrial motor drives benefit from variable frequency control using SiC devices, which lowers energy consumption. Federal support, notably the CHIPS and Science Act, accelerates domestic SiC production, enhancing availability for automotive and energy applications.

### Market Restraints

High production costs constrain SiC adoption, as epitaxial wafer fabrication requires specialized equipment, increasing unit prices and limiting yield optimization.

Dependence on Asian suppliers for wafers and chemicals exposes the supply chain to volatility, with tariffs and geopolitical tensions exacerbating disruptions. These factors temper demand from cost-sensitive end-users, particularly in consumer electronics and non-critical industrial applications.

### Technology and Segment Insights

The market is segmented by Type, Voltage Range, Application, and End-User Industry, highlighting diverse adoption vectors:

#### By Type:

**SiC Discrete Devices:** MOSFETs and diodes for power conversion in EVs, industrial drives, and energy systems.

**SiC Module:** Integrated devices for high-voltage inverters and multi-phase converters.

**Others:** Hybrid or emerging SiC packaging and device technologies.

#### By Voltage Range:

**Low Voltage (1,700V):** Suited for grid-scale converters, industrial motor drives, and high-power renewable installations.

#### By Application:

**Power Supplies and Inverters:** For energy conversion across industrial, automotive, and grid sectors.

**EV Components and Charging Infrastructure:** Traction inverters, onboard chargers, and bidirectional fast-charging systems.

**Industrial Motor Drives:** Variable frequency drives and energy-efficient industrial controls.

**Renewable Energy Systems:** Solar, wind, and energy storage inverters

operating at high voltage and temperature.

Others: Aerospace, consumer electronics, and specialty high-power applications.

#### By End-User Industry:

Automotive: EV powertrains, auxiliary drives, and ADAS power modules.

Energy & Power: Utilities and distributed energy systems.

Industrial: Motor drives, automation, and manufacturing equipment.

Consumer Electronics: High-performance power supply modules.

Aerospace & Defense: High-reliability power electronics in extreme environments.

Others: Specialty applications requiring high-efficiency, high-voltage power conversion.

#### Competitive and Strategic Outlook

The US SiC landscape is led by vertically integrated players such as Wolfspeed, Infineon, and ONSEMI. Wolfspeed focuses on end-to-end wafer-to-module control, expanding 200mm wafer production under the CHIPS Act to lower costs and meet EV inverter demand. Infineon's CoolSiC MOSFET G2 and Kulim 200mm fab enable high-power, high-efficiency solutions for automotive and charging infrastructure. ONSEMI's acquisition of SiC JFET technology strengthens its EliteSiC portfolio for AI data center power supplies and solid-state circuit breakers. Strategic investments in domestic fabrication and partnerships with utilities underpin market penetration and adoption.

The US SiC power semiconductor market is poised for robust growth through 2031, driven by EV adoption, renewable energy deployment, industrial motor optimization, and federal incentives. Cost and supply chain challenges remain, but domestic production expansions and technological maturation support scalable adoption. SiC's efficiency, thermal resilience, and voltage handling position it as a critical enabler of electrification,

grid modernization, and industrial energy savings.

### Key Benefits of this Report

**Insightful Analysis:** Gain detailed market insights across regions, customer segments, policies, socio-economic factors, consumer preferences, and industry verticals.

**Competitive Landscape:** Understand strategic moves by key players to identify optimal market entry approaches.

**Market Drivers and Future Trends:** Assess major growth forces and emerging developments shaping the market.

**Actionable Recommendations:** Support strategic decisions to unlock new revenue streams.

**Caters to a Wide Audience:** Suitable for startups, research institutions, consultants, SMEs, and large enterprises.

### What Businesses Use Our Reports For

Industry and market insights, opportunity assessment, product demand forecasting, market entry strategy, geographical expansion, capital investment decisions, regulatory analysis, new product development, and competitive intelligence.

### Report Coverage

Historical Data: 2021-2024, Base Year: 2025, Forecast Years: 2026-2031

Growth opportunities, challenges, supply chain outlook, regulatory framework, and trend analysis

Competitive positioning, strategies, and market share evaluation

Revenue growth and forecast assessment across segments and regions

Company profiling including strategies, products, financials, and key

developments

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