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Global SiC Gel-filled Power Modules Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global SiC Gel-filled Power Modules market size is expected to reach $ 5287 million by 2032, rising at a market growth of 16.0% CAGR during the forecast period (2026-2032).

SiC gel-filled power modules refer to power modules built around SiC MOSFETs ? and, in some cases, companion SiC diodes ? in which the active area is protected by silicone-gel encapsulation or other liquid potting materials inside a conventional case-type housing. From a packaging standpoint, this is the classic case-type / housing-type module architecture, clearly differentiated from transfer-molded or overmolded solutions. Mitsubishi Electric explicitly states that power-module sealing technologies mainly include transfer molding, silicone-gel sealing, and liquid epoxy sealing, and identifies silicone-gel sealing as the typical approach for general case-type modules. onsemi likewise separates gel-encapsulated case modules from transfer-molded modules within its EliteSiC traction-inverter portfolio, while Infineon material declarations for its Easy3B and 62mm SiC module families explicitly list silicone gel. In commercial terms, the product category spans half-bridge, six-pack, buck/boost, chopper, 3-level, and industry-standard 62mm / EasyPACK / HybridPACK / SEMITRANS-type formats, while the main voltage classes remain concentrated at 750V, 1200V, and 1700V, with extensions into 2000V, 3300V and above for industrial, traction, and grid-class applications.

In terms of applications and market structure, SiC gel-filled power modules remain one of the mainstream solutions in medium-to-high power, high-current, and high-voltage power conversion. Their primary application domains include EV traction inverters, industrial motor drives, photovoltaic and storage converters, EV charging infrastructure, rail traction, grid equipment, and high-end power supplies. Infineon positions

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HybridPACK Drive with Si and SiC technology as a market-leading traction inverter module for electric vehicles; Hitachi Energy?s RoadPak SiC targets a broad range of e-mobility applications; Fuji Electric has commercialized 1200V and 1700V All-SiC modules for motor drives, renewable energy and traction; and Semikron Danfoss offers SiC module portfolios covering six-pack, half-bridge and buck/boost topologies. Based on public product positioning, the competitive landscape is led primarily by Infineon, onsemi, Semikron Danfoss, Mitsubishi Electric, Fuji Electric, Wolfspeed, and Hitachi Energy, with European and US suppliers retaining strong positions in automotive and industrial standard platforms, while Japanese suppliers remain particularly strong in high-reliability, high-voltage and traction-oriented applications.

From an industry-status and trend perspective, SiC gel-filled power modules are unlikely to be rapidly displaced by transfer-molded modules. The more probable trajectory is a dual-track market structure, in which parts of the automotive market migrate toward molded packages, while industrial, high-voltage and large-format power stages continue to rely heavily on gel-filled or potted case modules. The fact that onsemi simultaneously offers gel-encapsulated case modules and transfer-molded modules already demonstrates that both architectures coexist commercially. Mitsubishi Electric further notes that, from its fifth automotive generation onward, T-PM gradually replaced conventional silicone-gel potting in selected vehicle platforms, indicating that automotive miniaturization and power-density requirements are driving molded adoption. However, that does not eliminate the engineering value of silicone-gel sealing in larger, high-current, high-isolation modules. Mitsubishi also highlights that silicone-gel sealing offers strong heat resistance and insulation performance, and its low viscosity makes it well suited for filling narrow internal gaps. In practice, mainstream industrial and standard-housing platforms from companies such as Infineon, Wolfspeed and Semikron Danfoss remain commercially relevant. Overall, SiC gel-filled power modules continue to represent a key package form in industrial standard packages, rail, grid, high-power charging, and selected traction systems, while the market evolves from a single packaging route toward a more application-segmented coexistence model.

The long-term demand outlook for SiC gel-filled power modules remains well supported by structural growth drivers. First, EV adoption continues to be the single strongest demand engine: the IEA expects global electric-car sales to exceed 20 million in 2025, with first-quarter sales already up 35% year on year, sustaining demand for high-performance SiC modules in traction inverters, auxiliary high-voltage converters and charging systems. Second, renewable-power expansion remains a major source of medium- and high-voltage demand: the IEA projects almost 4,600 GW of additional renewable capacity between 2025 and 2030, with roughly 80% of that increase coming

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from solar PV, reinforcing the need for 1200V, 1700V and higher-voltage SiC modules in PV inverters, storage PCS and grid-side converters. Third, industrial drives, rail and grid equipment continue to require large-format, high-current, structurally mature and fully qualified module platforms. Fuji Electric explicitly positions its 1700V All-SiC modules for motor drives, renewable energy and traction, while Wolfspeed?s 62mm SiC module family directly addresses industrial test equipment, rail/traction and EV charging infrastructure. Accordingly, even as transfer-molded packaging gains ground in selected automotive platforms, SiC gel-filled power modules are expected to retain a central role in medium-to-high power, high-voltage and high-reliability applications for the foreseeable future.

This report studies the global SiC Gel-filled Power Modules production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for SiC Gel-filled Power Modules 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 SiC Gel-filled Power Modules that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global SiC Gel-filled Power Modules total production and demand, 2021-2032, (K Units)
Global SiC Gel-filled Power Modules total production value, 2021-2032, (USD Million)
Global SiC Gel-filled Power Modules production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)
Global SiC Gel-filled Power Modules consumption by region & country, CAGR, 2021-2032 & (K Units)
U.S. VS China: SiC Gel-filled Power Modules domestic production, consumption, key domestic manufacturers and share
Global SiC Gel-filled Power Modules production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)
Global SiC Gel-filled Power Modules production by Voltage Class, production, value, CAGR, 2021-2032, (USD Million) & (K Units)
Global SiC Gel-filled Power Modules production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global SiC Gel-filled Power Modules market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies

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covered as a part of this study include Infineon, Wolfspeed, Rohm, onsemi, BYD Semiconductor, Microchip (Microsemi), Mitsubishi Electric, Semikron Danfoss, Fuji Electric, Toshiba, 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 SiC Gel-filled Power Modules market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Voltage Class, 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 SiC Gel-filled Power Modules Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global SiC Gel-filled Power Modules Market, Segmentation by Voltage Class:

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1200V Gel-filled SiC Module

650?900V Gel-filled SiC Module

1700V Gel-filled SiC Module

2000-2300V Gel-filled SiC Module

3300V and Above Transfer Molded SiC Module

Global SiC Gel-filled Power Modules Market, Segmentation by Topology Type:

Sixpack

Half-bridge

Full-Bridge

Others

Global SiC Gel-filled Power Modules Market, Segmentation by Package Type:

HPD

DCM

T-PAK

Others

Global SiC Gel-filled Power Modules Market, Segmentation by Application:

Automotive

Industrial

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Household Appliances

PV/Wind Power/Energy Storage/Power Grid

UPS/Data Center/Communication

Rail Transit

Aviation and Military

Others

Companies Profiled:

Infineon

Wolfspeed

Rohm

onsemi

BYD Semiconductor

Microchip (Microsemi)

Mitsubishi Electric

Semikron Danfoss

Fuji Electric

Toshiba

CETC 55

WeEn Semiconductors

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BASiC Semiconductor

SemiQ

Bosch

GE Aerospace

Vishay Intertechnology

StarPower

Yangzhou Yangjie Electronic Technology

Guangdong AccoPower Semiconductor

Hangzhou Silan Microelectronics

United Nova Technology (UNT)

InventChip Technology (IVCT)

Leadrive Technology

HAIMOSIC (SHANGHAI)

Suzhou Xizhi Technology

Archimedes Semiconductor (Hefei)

Grecon Semiconductor (Shanghai)

Hebei Sinopack Electronic Technology

Denso

GeePak

Minebea Power Semiconductor Device

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Key Questions Answered:

1. How big is the global SiC Gel-filled Power Modules market?
2. What is the demand of the global SiC Gel-filled Power Modules market?
3. What is the year over year growth of the global SiC Gel-filled Power Modules market?
4. What is the production and production value of the global SiC Gel-filled Power Modules market?
5. Who are the key producers in the global SiC Gel-filled Power Modules market?
6. What are the growth factors driving the market demand?

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