SiC and GaN Power Devices Market Set for Strong Growth Driven by EVs, Renewables, and 5G Expansion

The SiC and GaN Power Devices market is experiencing strong growth driven by rising demand for energy-efficient solutions in electric vehicles

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VANCOUVER, BRITISH COLUMBIA, CANADA, August 19, 2025 /EINPresswire.com/ -- The global Silicon Carbide (SiC) and Gallium Nitride (GaN) Power Devices Market is projected to grow significantly, rising from USD 2.1 billion in 2024 to USD 5.7 billion by 2034, with a healthy CAGR of 10.50%. This growth is fueled by the increasing demand for energy-efficient solutions across industries, particularly in electric vehicles (EVs), renewable energy systems, and advanced communication infrastructure.

Market Drivers: Electrification and Efficiency at the Core

The rapid shift to electrification is one of the strongest forces driving this market. EV adoption continues to accelerate globally, with sales expected to rise by 15% annually. SiC and GaN devices are proving crucial in improving EV performance by enhancing powertrain efficiency, reducing energy loss, and extending driving range.

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Public policies are adding momentum. The European Union's Green Deal, targeting a 55% emissions reduction by 2030, and the U.S. Department of Energy's $1.5 billion investment in semiconductor research are creating opportunities for SiC and GaN adoption. Automotive leaders such as Tesla and Toyota are already integrating these devices into EV models, with Tesla reporting a 5% efficiency gain from using SiC inverters.

Beyond EVs, renewable energy installations are projected to rise by 20% annually, boosting demand for efficient inverters and power management solutions. Additionally, the expansion of

5G networks and growth in data centers—both requiring high-performance, compact power devices—are accelerating adoption of GaN technology.

Market Restraints: Costs and Supply Challenges

Despite strong prospects, the market faces hurdles. The cost of SiC and GaN devices remains higher than traditional silicon-based options, with SiC production costs about 20% greater. Regulatory compliance, including strict European Union directives such as RoHS and WEEE, adds further pressure on manufacturers.

Supply chain challenges are another concern. Limited availability of high-quality substrates often leads to production bottlenecks. A survey by the Semiconductor Industry Association revealed that 45% of manufacturers face issues scaling up due to substrate shortages. Furthermore, the lack of standardized testing processes makes some buyers cautious about transitioning from silicon to newer technologies.

Market Segmentation Insights

By Product Type:
SiC Power Devices will dominate, expected to reach USD 3.5 billion by 2034, growing at 11% CAGR. GaN Power Devices, while smaller in market share, will grow faster at 12% CAGR, driven by applications in telecom and consumer electronics.

By Application:
Inverters will remain the largest application area, expected to reach USD 2 billion by 2034, supported by EVs and renewable energy systems. Power Supplies will be the fastest-growing segment, at 13% CAGR, due to rising demand from data centers and telecom infrastructure. RF Devices will also expand steadily, benefiting from 5G rollout.

By End User:
Automotive will lead the market, projected to reach USD 2.8 billion by 2034. Telecommunications will grow the fastest at 14% CAGR, fueled by 5G expansion. Industrial and consumer electronics sectors will also see steady growth, driven by clean energy adoption and compact device demand.

By Technology:
Discrete devices will account for the largest share, projected at USD 3 billion by 2034. However, Modules will grow at 15% CAGR, reflecting the shift towards integrated solutions in automotive and industrial uses.

By Distribution Channel:
Direct Sales will dominate, with USD 3.2 billion by 2034, as large OEMs prefer direct procurement. Distributors will expand at 12% CAGR, supported by small and mid-sized

enterprises accessing wider product ranges.

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Regional Outlook: Asia Pacific in the Lead

Asia Pacific is expected to lead the global market, thanks to rapid industrialization, strong government support for renewable energy, and a robust electronics manufacturing base. Countries like China, Japan, and South Korea are major contributors, with local companies investing heavily in production capacity. North America and Europe will also remain important markets, driven by EV adoption, regulatory incentives, and advancements in clean energy technologies.

SiC and GaN Power Devices Competitive Strategies

Part 1: Top 10 Companies

Infineon Technologies

Cree, Inc.

ON Semiconductor

STMicroelectronics

ROHM Semiconductor

Mitsubishi Electric Corporation

Toshiba Corporation

Texas Instruments

NXP Semiconductors

Renesas Electronics Corporation

Strategy

Top players in the SiC and GaN Power Devices Market are competing through strategic partnerships, R&D investments, and product innovations. Infineon Technologies, with a 20% market share, is focusing on expanding its product portfolio and enhancing its manufacturing

capabilities. Cree, Inc. is investing in capacity expansion and strategic collaborations to strengthen its market position.

ON Semiconductor is leveraging its strong distribution network and customer relationships to drive market growth. Strategic moves such as mergers and acquisitions are also prevalent, with companies seeking to enhance their technological capabilities and market reach.

SiC and GaN Power Devices Market Segmentation

By Product Type

SiC Power Devices

GaN Power Devices

By Application

Power Supplies

Inverters

RF Devices

By End User

Automotive

Industrial

Telecommunications

Consumer Electronics

By Technology

Discrete

Module

By Distribution Channel

Direct Sales

Distributors

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Debanjan Biswas
Reports and Data
+91 80872 27888
purushottam@reportsanddata.com

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