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Global Power Electronics for Data Centers Market Research Report 2026(Status and Outlook)

https://marketpublishers.com/r/GD9B9708937DEN.html
Date: March 2026
Pages: 198
Price: US$ 3,200.00 (Single User License)
ID: GD9B9708937DEN

Abstracts

Power electronics for data centers refer to semiconductor power electronic devices responsible for converting, regulating, and distributing electrical power within data center systems. This category includes traditional silicon-based insulated-gate bipolar transistors (IGBTs) and MOSFETs, as well as increasingly crucial wide-bandgap (WBG) devices like silicon carbide (SiC) and gallium nitride (GaN) MOSFETs and diodes. These components underpin essential functions such as AC?DC front-end rectification, uninterruptible power supply (UPS), DC?DC conversion, and server power supply units (PSUs), ensuring efficient, reliable, and low-EMI power delivery in environments with demanding performance, thermal, and density requirements.Looking forward, three key trends are shaping the adoption and evolution of power electronics in data centers:Wide-Bandgap Revolution (SiC & GaN): WBG devices offer significantly lower switching and conduction losses, higher thermal stability, and faster switching speeds compared to traditional silicon components. For instance, SiC MOSFETs can improve PSU efficiency by reducing conversion losses by ~1%, translating to substantial energy savings and heat reduction. GaN-based converters regularly exceed 98% efficiency, making them ideal for high-density rack-mounted power systems.Energy Efficiency & Sustainability Imperatives: With global data center power consumption projected to surpass 1,000?TWh by 2026, integrating high-efficiency power devices is critical. Wider temperature and voltage operation ranges of SiC and GaN allow designers to simplify cooling architectures and lower PUE. Analysts estimate WBG adoption could reduce data center energy use by up to 10%, saving billions in electricity and cooling costs annually while significantly cutting carbon emissions.System Integration & Power Density Scaling: As rack-level power densities climb past 100?kW, power supply modules are evolving into compact, high-performance assemblies. This shift favors WBG devices for their efficiency and thermal resilience. Leading OEMs and cloud providers are launching power modules embedding SiC and GaN in high-power

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applications like server PSUs and UPS systems.In summary, power semiconductors for data centers are transitioning from silicon-based devices to wide-bandgap technologies. SiC and GaN offer transformative benefits in energy efficiency, thermal performance, and system size?addressing constraints in modern AI-driven and high-density data centers. Adoption is expected to accelerate, driven by industry-wide goals for sustainability and cost-effective operation, with WBG power electronics set to become mainstream in next-generation power architectures.

The global Power Electronics for Data Centers market size was estimated at USD 534.0 million in 2025 and is projected to grow at a compound annual growth rate (CAGR) of 11.00% during the forecast period.

This report offers a comprehensive and in-depth analysis of the global Power Electronics for Data Centers market, covering all critical facets from a broad macroeconomic overview to detailed micro-level insights. It examines market size, competitive landscape, emerging development trends, niche segments, key drivers and challenges, as well as conducts SWOT and value chain analyses.

The insights provided enable readers to understand the competitive dynamics within the industry and formulate effective strategies to enhance profitability and market positioning. Additionally, the report presents a clear framework for evaluating the current status and future outlook of business organizations operating in this sector.

A significant focus of this report lies in the competitive landscape of the global Power Electronics for Data Centers market. It offers detailed profiles of major players, including their market shares, performance metrics, product portfolios, and operational status. This enables stakeholders to identify leading competitors and gain a nuanced understanding of market rivalry and structure.

In summary, this report serves as an essential resource for industry participants, investors, researchers, consultants, and business strategists, as well as anyone planning to enter or expand their presence in the Power Electronics for Data Centers market.

Global Power Electronics for Data Centers Market: Market Segmentation Analysis

This research report provides a detailed segmentation of the market by region (country), key manufacturers, product type, and application. Market segmentation divides the overall market into distinct subsets based on factors such as product categories, end-

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user industries, geographic locations, and other relevant criteria.

A clear understanding of these market segments enables decision-makers to tailor their product development, sales, and marketing strategies more effectively to meet the unique needs of each segment. Leveraging market segmentation insights can significantly enhance targeted approaches, optimize resource allocation, and accelerate product innovation cycles by aligning offerings with the specific demands of diverse customer groups.

Key Company

STMicroelectronics
Infineon
Wolfspeed
Rohm
onsemi
BYD Semiconductor
Microchip (Microsemi)
Mitsubishi Electric
Semikron Danfoss
Fuji Electric
Navitas (GeneSiC)
Toshiba
Texas Instruments
San'an Optoelectronics
Littelfuse
CETC 55
WeEn Semiconductors
BASiC Semiconductor
Renesas Electronics
Diodes Incorporated
SanRex
Alpha & Omega Semiconductor
Sanken Electric
Semtech
KEC Corporation
PANJIT Group
Nexperia
Vishay Intertechnology

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Zhuzhou CRRC Times Electric
China Resources Microelectronics Limited

Market Segmentation (by Type)

Si MOSFET
SiC MOSFET
IGBT
Diodes
Others

Market Segmentation (by Application)

Enterprise Data Center
HPC Data Center
Hyperscale Data Center

Geographic Segmentation

North America (USA, Canada, Mexico)

Europe (Germany, UK, France, Russia, Italy, Rest of Europe)

Asia-Pacific (China, Japan, South Korea, India, Southeast Asia, Rest of Asia-Pacific)

South America (Brazil, Argentina, Columbia, Rest of South America)

The Middle East and Africa (Saudi Arabia, UAE, Egypt, Nigeria, South Africa, Rest of MEA)

Key Benefits of This Market Research:

Industry drivers, restraints, and opportunities covered in the study
Neutral perspective on the market performance
Recent industry trends and developments
Competitive landscape & strategies of key players
Potential & niche segments and regions exhibiting promising growth covered

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Historical, current, and projected market size, in terms of value
In-depth analysis of the Power Electronics for Data Centers Market
Overview of the regional outlook of the Power Electronics for Data Centers Market:

Customization of the Report

In case of any queries or customization requirements, please connect with our sales team, who will ensure that your requirements are met.

Chapter Outline

Chapter 1 mainly introduces the statistical scope of the report, market division standards, and market research methods.

Chapter 2 is an executive summary of different market segments (by region, product type, application, etc), including the market size of each market segment, future development potential, and so on. It offers a high-level view of the current state of the Power Electronics for Data Centers Market and its likely evolution in the short to mid-term, and long term.

Chapter 3 makes a detailed analysis of the market's competitive landscape of the market and provides the market share, capacity, output, price, latest development plan, merger, and acquisition information of the main manufacturers in the market.

Chapter 4 is the analysis of the whole market industrial chain, including the upstream and downstream of the industry, as well as Porter's five forces analysis.

Chapter 5 introduces the latest developments of the market, the driving factors and restrictive factors of the market, the challenges and risks faced by manufacturers in the industry, and the analysis of relevant policies in the industry.

Chapter 6 provides the analysis of various market segments according to product types, covering the market size and development potential of each market segment, to help readers find the blue ocean market in different market segments.

Chapter 7 provides the analysis of various market segments according to application, covering the market size and development potential of each market segment, to help readers find the blue ocean market in different downstream markets.

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Chapter 8 provides a quantitative analysis of the market size and development potential of each region and its main countries and introduces the market development, future development prospects, market space, and capacity of each country in the world.

Chapter 9 shares the main producing countries of Power Electronics for Data Centers, their output value, profit level, regional supply, production capacity layout, etc. from the supply side.

Chapter 10 introduces the basic situation of the main companies in the market in detail, including product sales revenue, sales volume, price, gross profit margin, market share, product introduction, recent development, etc.

Chapter 11 provides a quantitative analysis of the market size and development potential of each region in the next five years.

Chapter 12 provides a quantitative analysis of the market size and development potential of each market segment in the next five years.

Chapter 13 is the main points and conclusions of the report.

Key Reasons to Buy this Report:

Access to date statistics compiled by our researchers. These provide you with historical and forecast data, which is analyzed to tell you why your market is set to change

This enables you to anticipate market changes to remain ahead of your competitors

You will be able to copy data from the Excel spreadsheet straight into your marketing plans, business presentations, or other strategic documents

The concise analysis, clear graph, and table format will enable you to pinpoint the information you require quickly

Provision of market value data for each segment and sub-segment

Indicates the region and segment that is expected to witness the fastest growth as well as to dominate the market

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Analysis by geography highlighting the consumption of the product/service in the region as well as indicating the factors that are affecting the market within each region

Competitive landscape which incorporates the market ranking of the major players, along with new service/product launches, partnerships, business expansions, and acquisitions in the past five years of companies profiled

Extensive company profiles comprising of company overview, company insights, product benchmarking, and SWOT analysis for the major market players

The current as well as the future market outlook of the industry concerning recent developments which involve growth opportunities and drivers as well as challenges and restraints of both emerging as well as developed regions

Includes in-depth analysis of the market from various perspectives through Porter?s five forces analysis

Provides insight into the market through Value Chain

Market dynamics scenario, along with growth opportunities of the market in the years to come

6-month post-sales analyst support

Customization of the Report

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