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Global Wide-Bandgap Power (WBG) Semiconductor Devices Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Wide-Bandgap Power (WBG) Semiconductor Devices market size is expected to reach $ 25140 million by 2032, rising at a market growth of 20.5% CAGR during the forecast period (2026-2032).

Wide Bandgap (WBG) power devices, based on semiconductor materials such as silicon carbide (SiC) and gallium nitride (GaN), offer superior performance compared to traditional silicon devices thanks to their higher critical electric field, faster switching speeds, lower conduction losses, and enhanced high-temperature operation. The main product categories include SiC MOSFETs, JFETs, Schottky diodes, GaN HEMTs, GaN FETs, and integrated power modules. These devices are widely deployed in electric vehicle traction inverters, onboard chargers (OBCs), fast charging stations, photovoltaic and wind inverters, data center power supplies, industrial motor drives, and high-voltage direct current (HVDC) transmission systems.

The global WBG power device market is currently experiencing rapid expansion. Key growth drivers include rising electric vehicle adoption, accelerated deployment of renewable energy, surging demand for high-efficiency power supplies in data centers and high-performance computing, and policy initiatives supporting carbon neutrality and energy transition. Market opportunities lie in EV powertrains, onboard charging, solar-plus-storage systems, and 5G/high-frequency power supplies. Meanwhile, cost reductions through economies of scale and improved manufacturing processes are accelerating WBG adoption. However, challenges remain, such as the high cost of SiC epitaxial wafers and GaN substrates, manufacturing yield and reliability issues, supply chain concentration, and long qualification cycles for certain applications.

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In terms of competitive landscape, the SiC device market is currently dominated by STMicroelectronics, onsemi, Wolfspeed, Infineon, ROHM, BYD Semiconductor, Bosch, and United Nova Technology, together accounting for over 85% of global market share. For GaN devices, leading players include Innoscience, Power Integrations, Inc., Efficient Power Conversion Corporation (EPC), Navitas, Transphorm, Infineon (GaN Systems), as well as Renesas Electronics (Transphorm), with applications focused on fast charging, server power supplies, and automotive electronics. With the entry of more IDMs and foundries, alongside the rise of Chinese companies such as Sanan, Silan, and CR Micro, competition is expected to intensify and market shares will gradually diversify in the coming years.

This report studies the global Wide-Bandgap Power (WBG) Semiconductor Devices production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Wide-Bandgap Power (WBG) Semiconductor Devices 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 Wide-Bandgap Power (WBG) Semiconductor Devices that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Wide-Bandgap Power (WBG) Semiconductor Devices total production and demand, 2021-2032, (K Units)

Global Wide-Bandgap Power (WBG) Semiconductor Devices total production value, 2021-2032, (USD Million)

Global Wide-Bandgap Power (WBG) Semiconductor Devices production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)

Global Wide-Bandgap Power (WBG) Semiconductor Devices consumption by region & country, CAGR, 2021-2032 & (K Units)

U.S. VS China: Wide-Bandgap Power (WBG) Semiconductor Devices domestic production, consumption, key domestic manufacturers and share

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Global Wide-Bandgap Power (WBG) Semiconductor Devices production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)

Global Wide-Bandgap Power (WBG) Semiconductor Devices production by Material, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

Global Wide-Bandgap Power (WBG) Semiconductor Devices production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Wide-Bandgap Power (WBG) Semiconductor Devices market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include onsemi, STMicroelectronics, Infineon (GaN Systems), Wolfspeed, BYD Semiconductor, Bosch, United Nova Technology, Innoscience, Navitas (GeneSiC), Guangdong AccoPower Semiconductor, 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 Wide-Bandgap Power (WBG) Semiconductor Devices 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 Material, 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 Wide-Bandgap Power (WBG) Semiconductor Devices Market, By Region:

United States

China

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Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Wide-Bandgap Power (WBG) Semiconductor Devices Market, Segmentation by Material:

SiC Power Device

GaN Power Device

Global Wide-Bandgap Power (WBG) Semiconductor Devices Market, Segmentation by Application:

Automotive

EV Charging

Industrial Motor/Drive

PV, Energy Storage, Wind Power

UPS, Data Center & Server

Rail Transport

Consumer Electronics

Defence & Aerospace

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Others

Companies Profiled:

onsemi

STMicroelectronics

Infineon (GaN Systems)

Wolfspeed

BYD Semiconductor

Bosch

United Nova Technology

Innoscience

Navitas (GeneSiC)

Guangdong AccoPower Semiconductor

Rohm

San'an Optoelectronics

Efficient Power Conversion Corporation (EPC)

Power Integrations, Inc.

Semikron Danfoss

Mitsubishi Electric

BASiC Semiconductor

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Fuji Electric

SemiQ

PN Junction Semiconductor (Hangzhou)

Zhuzhou CRRC Times Electric

InventChip Technology

Microchip (Microsemi)

CETC 55

Toshiba

WeEn Semiconductors

Littelfuse (IXYS)

Renesas Electronics (Transphorm)

Yangzhou Yangjie Electronic Technology

Vishay Intertechnology

China Resources Microelectronics Limited

Nexperia

SK powertech

Texas Instruments

Alpha & Omega Semiconductor

SanRex

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StarPower

Changzhou Galaxy Century Microelectronics

GE Aerospace

Hangzhou Silan Microelectronics

KEC

PANJIT Group

Diodes Incorporated

Cissoid

Key Questions Answered:

1. How big is the global Wide-Bandgap Power (WBG) Semiconductor Devices market?
2. What is the demand of the global Wide-Bandgap Power (WBG) Semiconductor Devices market?
3. What is the year over year growth of the global Wide-Bandgap Power (WBG) Semiconductor Devices market?
4. What is the production and production value of the global Wide-Bandgap Power (WBG) Semiconductor Devices market?
5. Who are the key producers in the global Wide-Bandgap Power (WBG) Semiconductor Devices market?
6. What are the growth factors driving the market demand?

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