

Global Silicon Carbide Market Size to reach USD 7.79 Billion in 2030

Increasing demand for SiC devices in power electronics and reduction in size of SiC-enabled devices are the key factors expected to drive market revenue growth.

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The Silicon Carbide (SiC) market size is expected to reach USD 7.79 Billion in 2030 and register revenue CAGR of

11.4% over the forecast period, according to the latest report by Reports and Data. Increasing demand for SiC devices in power electronics and reduction in size of SiC-enabled devices are the key factors driving market revenue growth over the forecast period.



Reports And Data

Increasing demand for cleaner environment, reduction in global warming, and the reduction of dependency on fossil fuels increase demand for hybrid and electric vehicles offering superior fuel efficiency, less emission, and can be digitally well-connected than the traditional vehicles. Demand for SiC devices increases with the surge of demand for electric vehicles (EVs) as they are capable of increasing the efficiency and range of EVs and reducing the weight and size, thus increasing the overall power density of vehicle electronics. The SiC devices are increasingly used in high voltage power converters and their higher thermal conductivity makes them ideal for use in high temperatures with significantly lower on-state resistance and switching losses, thus allowing faster heat dissipation. Furthermore, the energy conversion requirement of EVs is optimally fulfilled by SiC devices which helps to reach maximum efficiency and drive growth of the market.

SiC semiconductors, capable of operating at high temperatures are perfect for applications such as onboard charging and inverters used in the case of electric and hybrid vehicles for rapid charging solutions. They ensure that EVs can operate long distances and get charged within a reasonable timeframe with highest efficiency. In addition, support and initiative from governments of various countries help in development and improvement of this critical technology. For instance, in April 2019, the University of Arkansas received a USD 1.5 Million grant from the US Department of Energy, as an aid for development of next-generation SiC-based power modules designed for hybrid and EVs. The benefit of SiC semiconductors is that it

enhances the overall efficiency of EVs by increasing range and reducing the amount of time for getting recharged, is expected to drive growth of the market over the forecast period.

However, the high material and fabrication cost of silicon carbide hampers growth of the market as SiC is manufactured in elevated temperature conditions which makes it costlier than raw silicon material. In addition, the use of gallium nitride as an alternative compound bearing similar properties of bandwidth, energy efficiency, high-temperature sustainability, etc. further hampers growth of the market during the forecast period.

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Some major companies operating in the global market include STMicroelectronics N.V., Infineon Technologies AG, Rohm Co Ltd, Wolfspeed, , ON Semiconductor Corporation, Fuji Electric Co., Ltd., Renesas Electronics Corporation, Microchip Technology Inc., Toshiba Corporation, General Electric Company, GeneSiC Semiconductor Inc., ESD-SiC B.V., Entegris, Inc., Powerex Inc., and SEMI Co. Ltd.

Some Key Highlights in the Report

- Black silicon carbide segment is expected to account for largest market share over the forecast period owing to its applications such as grinding and polishing titanium alloys, stainless steel, jewelry, etc. for its high strength and low density. In addition, as an excellent deoxidizer, it helps in maintaining composition and quality of steel during manufacturing and processing, which drives growth of the segment.
- Automotive segment is expected to account for largest market revenue share during the forecast period owing to growing popularity and increase in demand for electrical vehicles worldwide and the application of SiC power electronics devices with high temperature bearing capacity, which significantly increases the range an EV can travel. Furthermore, demand for a clean environment with low emission of carbon dioxide across the world is expected to drive growth of the segment.
- Asia Pacific is expected to account for largest market share during the forecast period owing to increase in demand for SiC devices for advanced and latest technologies across various sectors such as power, electronics, automotive, defense, renewable energy, and others in the region. In addition, rise in infrastructural development leads to increase in demand for steel, which consequently increases demand for SiC, which is a raw material for the refractories and acts as a deoxidizing agent in the manufacture of steel. Furthermore, the region is the world's largest market for semiconductors, which further drives growth of the market in the region.
- In February 2022, Infineon Technologies AG announced the launch of power semiconductors with CoolSiC MOSFET and XT technology in XHP 2 package for rail services with an increase in energy efficiency and focus on green mobility. This will help to maintain the trend of reduction of dependency on fossil fuels, with eco-friendly electric solutions.

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[carbide-sic-market](#)

For this report, Reports and Data has segmented [silicon carbide market](#) based on product, device, wafer size, application, end-use, and region.

Device Outlook (Revenue, USD Billion, 2019-2030)

- SiC Discrete
 - o Silicon Diode
 - o Silicon MOSFET
- SiC Bare Die
- SiC Module

Application Outlook (Revenue, USD Billion, 2019-2030)

- Power Grid Devices
- Flexible AC Transmission Systems
- High-Voltage Direct Current Systems
- Power Supplies & Inverters
- EV Motor Drives & Charging Stations
- Others

Wafer Size Outlook (Revenue, USD Billion, 2019-2030)

- 2-inch
- 4-inch
- 6-inch

Vertical size Outlook (Revenue, USD Billion, 2019-2030)

- Energy & Power
- Automotive
- Defense
- Electronics
- Telecommunications

Regional Outlook (Revenue, USD Billion; 2019-2030)

- North America
 - o U.S.
 - o Canada
 - o Mexico
- Europe

- o Germany
- o U.K.
- o France
- o Italy
- o Spain
- o Sweden
- o BENELUX
- o Rest of Europe
- Asia-Pacific
- o China
- o India
- o Japan
- o South Korea
- o Rest of APAC
- Latin America
- o Brazil
- o Rest of LATAM
- Middle East & Africa
- o Saudi Arabia
- o UAE
- o South Africa
- o Israel
- o Rest of MEA

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Key questions covered in the global Silicon Carbide market report:

- What is the expected market size of the global Silicon Carbide market during the forecast period?
- What factors are expected to hamper global Silicon Carbide market growth over the forecast period?
- What key factors are expected to drive global revenue growth between 2021 and 2028?
- Which application segment is expected to dominate other application segments over the forecast period?
- Which region is expected to dominate in terms of revenue during the forecast period?
- What are the key outcomes of Porter's Five Forces analysis and SWOT analysis?
- Which leading players are operating in the global Silicon Carbide market?

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