Semiconductor Devices for High-Temperature Applications: Market Opportunities

Market Research Report | 2025-03-28 | 141 pages | BCC Research

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Report description:

Description

Report Scope
This report provides an overview of the global semiconductor devices for high-temperature applications market and analyzes market trends. It provides the global revenue (in $ millions) for segments and regions, considering 2023 as the base year, with estimated market data for 2024 through 2029. The market is based on materials, device types, operating temperatures, industries and regions. Geographical segments covered are North America (U.S., Canada, Mexico), Europe (U.K., Germany, France, Italy, Rest of Europe), Asia-Pacific (China, Japan, South Korea, Rest of Asia-Pacific) and the Rest of the World (RoW), which includes South America, Middle East and Africa. The report also focuses on emerging technologies and vendor landscape. It concludes with profiles of the major players in the market.
Report Includes
- 59 data tables and 54 additional tables
- An analysis of the global market for semiconductor devices for high-temperature applications
- Analyses of the global market trends, with data from 2023, estimates for 2024, forecasts for 2025 and 2026, and projections of compound annual growth rates (CAGRs) through 2029
- Evaluation of the market potential for semiconductor devices for high- temperature applications, industry growth drivers, and forecasts for this market's segments and sub-segments
- Estimates of the actual market size and revenue forecast for the global market for semiconductor devices for high-temperature applications, and a corresponding market share analysis by material type, device type, operating temperature, industry and region
- Description of gallium nitride (GaN), silicon carbide (SiC) and gallium arsenide (GaAs); their products and applications
- Discussion of the market dynamics and shifts, and the regulations, industry challenges, and macroeconomic factors affecting the demand for semiconductor devices for high-temperature applications
- Discussion on the industry's ESG challenges and practices

- Identification of the companies that are best positioned to meet this demand because of their proprietary technologies, strategic alliances or other advantages
- Insights into the industry structure for semiconductor devices for high-temperature applications, and the competitive landscape
- Company profiles of major players within the industry, including Infineon Technologies AG, NXP Semiconductors, TDK Corp., Wolfspeed Inc., and Allegro MicroSystems LLC.

Executive Summary

Summary:

The global market for semiconductor devices for high-temperature applications is estimated to increase from $11.8 billion in 2024 to reach $18.5 billion by 2029, at a compound annual growth rate (CAGR) of 9.4% from 2024 through 2029.

Semiconductor devices for high-temperature applications are devices that can work with full reliability and efficiency at operating temperatures higher than 125C. The market is growing, driven by the emergence of III-V materials such as silicon carbide (SiC) and gallium nitride (GaN), growing demand for high-temperature applications across increasing electric vehicles (EVs) worldwide and expanding renewable energy infrastructure.

Semiconductor devices for high-temperature applications use a variety of materials such as silicon, SiC, GaN and others. These materials offer different benefits in high-temperature environments. Silicon can work beyond temperatures of 125C, although it is more suitable for temperatures below 125C due to less reliability when exposed to a high-temperature range. However, due to its technological maturity and cost-effectiveness, industries still prefer silicon over other materials. The use of materials such as GaN and SiC is increasing globally, due to their ability to work in high-temperature environments.

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TEXAS INSTRUMENTS INC.
TOSHIBA CORP.
WOLFSPEED INC.

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