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Wide Band Gap (WBG) Power Device Market By Type (GaN, SiC), By Application (Communication, Automotive, Consumer Electronics, Aerospace, Healthcare, Others) : Global Opportunity Analysis and Industry Forecast, 2024-2033

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Abstracts

Wide Band Gap (WBG) Power Device Market

The wide band gap (WBG) power device market was valued at $0.9 billion in 2023 and is projected t%li%reach $2.5 billion by 2033, growing at a CAGR of 10.9% from 2024 t%li%2033.

WBG power device is a category of semiconductor devices utilizing materials with high energy differences, such as silicon carbide (SiC) or gallium nitride (GaN) during their manufacturing. SiC and GaN are known t%li%offer excellent thermal conductivity, thus ensuring reliability and enabling efficient heat dissipation in demanding applications. WBG power devices are ideal for power conversion and control in diverse industries, including renewable energy, automotive, consumer electronics, and industrial applications. The key attributes of WBG power devices include fast switching speeds, low conduction losses, and high breakdown voltages.

The telecommunications, aerospace, and consumer electronics sectors are the major drivers of the wide band gap (WBG) power device market as their applications are subject t%li%space & weight constraints. WBG devices enable the miniaturization of power electronics, hence witness a high demand. In addition, the devices are observing a significant requirement in the renewable energy sector for the integration of energy resources int%li%power grid. T%li%optimize power consumption in real time, the deployment of AI and the Internet of Things (IoT) is trending in the market. These

technologies are enhancing the remote monitoring and smart management of power devices.

Despite the advantages, the challenges pertaining t%li%material defects, reliability problems, and manufacturing intricacies act as a major restraint for the wide band gap (WBG) power device market. Furthermore, the deployment of advanced WBG devices int%li%existing framework requires intensive testing and modifications, which limits the expansion of the market. On the contrary, the accelerating adoption of electric vehicles (EVs) is presenting lucrative opportunities for the market. WBG power devices play a critical role in refining the performance of EVs, by offering quick switching speeds and high operating temperatures. As per the International Energy Agency, EVs are expected t%li%account for more than 60% of the total vehicles sales by 2030. Such soaring figures are an indicator of a bright future for the wide band gap (WBG) power device market.

Segment Review

The wide band gap (WBG) power device market is segmented int%li%type, application, and region. On the basis of type, the market is bifurcated int%li%GaN and SiC. Depending on application, it is divided int%li%communication, automotive, consumer electronics, aerospace, healthcare, and others. Region wise, it is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

Key Findings

On the basis of type, the GaN segment dominates the wide band gap (WBG) power device market.

Depending on application, the consumer electronics segment accounts for a high market share.

Region wise, Asia-Pacific is the highest revenue generator in the wide band gap (WBG) power device market.

Competition Analysis

The major players operating in the global wide band gap (WBG) power device market include Infineon Technologies AG, ROHM CO., LTD., Mitsubishi Electric Corporation, STMicroelectronics, Fuji Electric Co., Ltd., TOSHIBA CORPORATION, Microchip

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Technology Inc., Cree LED, Inc., GeneSiC, and GaN systems. These major players have adopted various key development strategies such as business expansion, new product launches, and partnerships, t%li%strengthen their foothold in the competitive market.

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Investment Opportunities

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Scenari%li%Analysis & Growth Trend Comparison

Upcoming/New Entrant by Regions

Technology Trend Analysis

Patient/epidemiology data at country, region, global level

Regulatory Guidelines

Additional company profiles with specific t%li%client's interest

Additional country or region analysis- market size and forecast

Average Selling Price Analysis / Price Point Analysis

Expanded list for Company Profiles

Historic market data

Import Export Analysis/Data

SWOT Analysis

Key Market Segments

By Type

GaN

SiC

By Application

Communication

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Automotive

Consumer Electronics

Aerospace

Healthcare

Others

By Region

North America

U.S.

Canada

Mexico

Europe

Germany

UK

France

Spain

Italy

Rest of Europe

Asia-Pacific

China

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India

Japan

South Korea

Australia

Rest of Asia-Pacific

LAMEA

Brazil

Saudi Arabia

South Africa

Rest of LAMEA

Key Market Players

Infineon Technologies AG

ROHM CO., LTD.

Mitsubishi Electric Corporation

STMicroelectronics

Fuji Electric Co., Ltd.

TOSHIBA CORPORATION

Microchip Technology Inc.

Cree LED, Inc.

GeneSiC

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GaN systems

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