

Global Insulated Gate Bipolar Transistor (IGBT) Market: Analysis By IGBT type, By Application, By Region Size and Trends with Impact of COVID-19 and forecast up to 2026

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Abstracts

In 2021, the global IGBT market was valued at US\$6.96 billion and is expected to grow to US\$11.32 billion by 2026. Insulated Gate Bipolar Transistor (IGBT) is a bipolar transistor with an insulated gate terminal. IGBTs are suitable for high-voltage, high-current applications and needs a minimal voltage on the gate to keep a system functioning. The IGBT combines the main features of both BJT (Bipolar Junction Transistor) and MOSFET (Metal Oxide Semiconductor Field Effect Transistors) into a single device. The main advantages of IGBT over other type of transistor devices are: Fast switching speed and combined with zero gate drive current, ease of drive, high pulse current tolerance, high input impedance, high voltage capability.

Due to various factors such as rising adoption of EVs, renewable energy generation, home appliances consumption, etc., the market would see a notable growth. The IGBT market is expected to grow at a CAGR of 10.40% over the forecast period of 2022-2026.

Market Segmentation Analysis:

By IGBT Type: The report identifies three segments on the basis of IGBT type: IGBT Module, Discrete IGBT and Intelligent Power Module (IPM). In 2021, IGBT Module segment lead the market, accounted for more than 50% share of the market because IGBT modules are widely employed in three primary fields: industrial control and power, new energy, and inverter white home appliances and other applications. The discrete IGBT market is expected to grow at the highest CAGR, due to simple structure and low

cost.

By Application: The report includes the bifurcation of market into five segments on the basis of application: Automotive, Home Appliances, Industrial, Power Grid and Railway and Renewable Energy. The automotive segment dominated the market with a share of 30% of the market. The growth in automotive sector was primarily driven by rising adoption of electric vehicles.

By Region: In the report, the global IGBT market is divided into four regions: Asia Pacific, Europe, North America and RoW. Asia Pacific dominated the market in 2021 with almost 58.7% share of the global market. The factor driving the IGBT market in Asia Pacific is the presence of various global and domestic players especially in China. China is the leading IGBT market in the Asia Pacific region. The rapid growth of automotive market in countries like China, Japan, Taiwan, etc. would boost IGBT market of Asia Pacific region in the years to come. North America IGBT market provides lucrative opportunities in the coming years. The rapid development in industrial sector and government initiatives to strengthen semiconductor chips production capacity, gives a resilient opportunity for IGBT market.

Global IGBT Market Dynamics:

Growth Drivers: The market has been growing over the past few years, due to factors such as rising wind power generation, rising solar power generation, rising household appliances consumption, escalating industrial activities, increasing adoption of electric vehicles, growing use of IGBT in railways, etc. The consumption of household appliances such as air conditioner, refrigerator, inverter, microwave oven, etc. are rapidly increasing. IGBTs are commonly used in household appliances as a voltage resonance power converter. Rising sales of household appliances clearly indicates the increasing demand of IGBT.

Challenges: However, the market has been confronted with some challenges specifically, latch up issue in IGBT, availability of alternatives, etc. Alternatives like silicon carbide based MOSFET can replace traditional Si based IGBTs. The main challenge for IGBT is the Latch-up issue which is considered as a serious problem in IGBT. Latch-Up is a functional chip failure associated with excessive current going through the chip and this is mainly caused by weak design.

Trends: The market is projected to grow at a fast pace during the forecast period, due to various latest trends such as rising adoption of silicon carbide (SiC), new generation

IGBTs, etc. Since SiC occupies a very small area of the chip and have a high current density, their ability to withstand short circuits that can cause thermal breaks tends to be lower than that of silicon-based devices. The demand for these newly introduced modern technologies have increased as people become more concerned about energy consumption. The shift towards renewable energy is also acting as a most important trend in the IGBT market.

Impact Analysis of COVID-19 and Way Forward:

The global impact of COVID-19 has been unexpected and staggering, with insulated gate bipolar transistors witnessing a negative impact on demand across all regions. Insulated gate bipolar transistor manufacturing has been extremely disturbed in the first quarter of 2020, due to the lack of components availability. Moreover, unavailability of the total workforce affected the insulated gate bipolar transistor production capacity and market growth. Due to the imposed lockdown, the automakers around the world cut the orders as vehicle sales plummeted. This was an important factor that had a detrimental impact on the market of insulated gate bipolar transistors. Thus, in the year 2020, the market experienced slow growth rate as compared to pre pandemic level. As lockdown restrictions were normalized in the second half of 2020, demand for power semiconductors were returned to pre pandemic level.

Competitive Landscape:

The global IGBT market is dominated with the presence of few major players. The top three players occupied more than 50% share of the market.

The key players of the global IGBT market are

Infineon Technology

Mitsubishi Electric

ABB Ltd.

Toshiba Corporation

Renesas Electronic Corporation

STMicroelectronics N.V.

Fuji Electric

Hitachi, Ltd.

ROHM Semiconductor

NXP Semiconductor N.V.

Vincotech

Semikron

Danfoss Group

StarPower Semiconductor

Infineon is more diverse in terms of types of IGBT it provides and the company is present in all the regions. In China's IGBT market, global players took most market share. Infineon took most of the shares of China's IGBT market. Among domestic players, Starpower acquired the highest share. It is expected that StarPower to gain further market share over the next few years on the back of the positive outlook for the China IGBT market, and China's semiconductor localization trend.

Scope of the Report:

The report titled "Global Insulated Gate Bipolar Transistor (IGBT) Market: Analysis By IGBT type, By Application, By Region Size and Trends with Impact of COVID-19 and forecast up to 2026", includes:

An in-depth analysis of the global IGBT market by value, by IGBT type, by application, by region, etc.

The regional analysis of the IGBT market, including the following regions:

Asia Pacific (China, Japan and Rest of Asia Pacific)

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

North America (The US and Rest of North America)

RoW

A detailed analysis of the China IGBT market by value and by application.

Comprehensive information about emerging markets. This report analyses the market for various segments across geographies.

Provides an analysis of the COVID-19 impact on the global IGBT market.

Assesses the key opportunities in the market and outlines the factors that are and will be driving the growth of the industry. Growth of the overall IGBT market has also been forecasted for the period 2022-2026, taking into consideration the previous growth patterns, the growth drivers, and the current and future trends.

Evaluation of the potential role of IGBT to improve the market status.

Identification of new technological developments, R&D activities, and product launches occurring in the IGBT market

In-depth profiling of the key players, including the assessment of the business overview, market strategies, regional and business segments of the leading players in the market.

The recent developments, mergers and acquisitions related to mentioned key players are provided in the market report.

The in-depth analysis provides an insight into the Market, underlining the growth rate and opportunities offered in the business.

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