Global Power Semiconductors Market, by Material (Silicon carbide, GaN, Silicon), by Application (Industrial, Automotive, Aerospace, Military, Consumer electronics), by Component (Rectifier, Diode, Thyristor, Power MOSFET, Inverter) - Forecast 2023

A semiconductor is a substance that, is characterized for "conducting" electricity easily, while at the same time, working as an "insulator" to prevent the flow of electricity. Power semiconductors can handle high voltages and large currents. They possess a structure that is different from regular semiconductors, enabling them to handle high voltages and large currents without damage. Power semiconductors are mostly used in power conversion such as in changing voltages and frequencies, as well as changing DC to AC and AC to DC. Power semiconductors play a huge and indispensable role in accurately driving motors from low to high speeds, supplying power grids with power generated from solar cells with less power loss, and providing a stable source of electricity to various home appliances and electrical equipment.

The major growth driver of Power Semiconductor Market includes growth in renewable energy sectors such as wind and solar power generation, increasing urbanization especially in Asia-Pacific, growing consumer electronics market, and rise in domestic income in emerging market among others.

The high growth of semiconductor market Infineon technologies has announced in August 2016 that it is going to supply security chips for the electronic access control to the Korean airports who are implementing CIPURSE based security for the public environment. CIPURSE is an open standard system based on advanced encryption standards which provides rapidly access solutions which are secure, interoperable and cost efficient. ST Microelectronics has introduced a new product portfolio of wide creepage transistors with super junction MOSFET’s in the arcing resistant package in August, 2016. These transistors is ideal for power transistors commonly used in products such as television sets, PC’s among others.

Power semiconductor manufacturers have been busy innovating and the result is many new standards, technologies and products. Probably the strongest technology trend this year has been the rapid increase in availability of wide band gap semiconductor products - those based on silicon carbide (Sic) and gallium nitride (GaN) materials. Switches made from these materials can operate at higher switching frequencies than traditional silicon power transistors; replacing silicon MOSFETs with Sic ones in a switching power supply means it can switch three times as fast, or faster. They can also withstand higher voltages and temperatures, and can vastly reduce energy losses.

The global power semiconductor market is expected to grow at 13% CAGR through the forecasted period.
APAC is expected to hold the largest market share and dominate the RF power semiconductor market between 2017 and 2023. The established electronics industry and adoption of innovative technologies are the reasons for the high growth rate in the region. The RF power semiconductor market in Asia-Pacific is expected to grow at a high rate in consumer, telecommunication and data communication, and medical sectors among others. The increasing number of players in the region is further expected to drive the growth of the APAC RF power semiconductor market.

Some of the major players in Global Power Semiconductor Market include Infineon technologies AG (Germany), Texas instruments Inc. (U.S.), ST Microelectronics (Switzerland), Qualcomm Inc.(U.S.), NXP semiconductor (Netherlands), Fairchild semiconductor (U.S.), Renesas electronic corporation (Japan), Broadcom limited (U.S.), Toshiba corporation (Japan), and Mitsubishi Electric Corporation (Japan) among others

The market for global power semiconductors is classified in to components, materials, application and region. On the basis of components the segment is further divided in to Diodes, Switching devices, Power integrated circuits, Thyristor, Power MOSFETs, and Rectifiers. On the basis of materials the segment is divided in to Silicon, Silicon carbide (Sic), Gallium nitride (GaN), Gallium Arsenide, and Silicon germanium. Power semiconductors caters wide area of applications like Automotive, consumer electronics, military & aerospace, industrial (inverters, wind/solar power generation).

By Component
- Thyristor
- Power MOSFET
- Rectifiers

By Material
- Silicon
- Silicon Carbide (Sic)
- Gallium Nitride (GaN)
- Gallium Arsenide
- Silicon Germanium

By Application
- Automotive
- Consumer Electronics
- Military & Aerospace
- Industries

By Region
- North America
- Europe
- Asia pacific
- Rest of the world

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- Manufacturers
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