

Global RF & Microwave Small Signal Transistors - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Global RF & Microwave Small Signal Transistors Market is expected to register a CAGR of 3.61% during the forecast period.

RF & Microwave small-signal transistors are semiconductors made primarily of Si and Ge. These devices are doped with impurities to change their electrical behavior. Furthermore, these devices are designed to handle radio frequency and microwave signals.

RF modules are increasingly being used in the automotive industry. Some major applications of RF modules in automobiles include vehicle monitoring, telemetry, remote control, and access control systems. As the industry is fast approaching its goal to develop autonomous vehicles, new use cases for RF modules are expected to be identified during the forecast period.

Furthermore, the recent advancement in IoT technology further supports the studied market's growth. For instance, according to Ericsson, the total number of short-range IoT connections is expected to increase to 24.3 billion by 2027.

The microwave and RF technologies facilitate connectivity among the devices and are primarily used in the antenna module of IoT-enabled devices; as RF & Microwave, small-signal transistors are predominantly used to amplify these signals, their demand is expected to grow significantly.

However, the miniaturization of semiconductor-based products per Moore's law makes it increasingly difficult for manufacturers to downsize the transistors while maintaining high performance. The requirement of advanced technologies to achieve this is further impacting the cost of production of these devices, which may negatively impact the market's growth.

COVID-19 had a major impact on the studied market, as due to imposition of various restrictions disrupted the supply chain and

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reduced the demand for a small period. However, with the condition returning to normalcy, the market is expected to witness growth similar to the pre-pandemic level and more.

RF & Microwave Small Signal Transistors Market Trends

Proliferation of IoT Technology to Drive the Growth of the Market

IoT, in recent years, has emerged to become one of the fastest-growing technologies owing to the benefits associated with it. The technology facilitates communication between devices, the cloud, and the devices themselves. Hence, enterprises are increasing their investment in IoT technology to make their process highly interconnected. For instance, according to the Institute for Electric Efficiency forecasts, the number of smart meters installed in the United States is expected to increase to 115 million units in 2021.

Radio Frequency (RF) & Microwaves are among the key technologies to facilitate communication between IoT-enabled devices owing to the benefits such as low power consumption, good operating range, and data penetration transmission rate. As the amplification of signals is a key step in facilitating effective communication, the RF small-signal transistors are expected to witness a growth in demand.

Furthermore, the increasing investment in smart city projects across various parts of the world is also expected to drive the demand for IoT-enabled devices. For instance, in February 2021, London and five European partner cities triggered an investment of EUR 250 million in smart technologies through the Sharing Cities program. The program is intended to promote the use of smart technologies to address urban challenges and support the shift to low-carbon transport and buildings.

As smart devices such as smart lock, smart lighting, etc. increases, RF & Microwave small signal transistors with major application in signal amplification are expected to witness increased demand.

Asia Pacific to Hold Significant Share

- The Asia Pacific region is expected to drive the growth of the studied market owing to the rapid growth of several end-user industries of RF & microwave small-signal transistors. For instance, according to the Ministry of Industry and Information Technology, over 25 million vehicles will be sold in China in 2020. Furthermore, according to ITA, the domestic production of automobiles is expected to reach 35 million cars by 2025.
- As the automotive industry is among the major consumer of transistors, the increasing production of vehicles that incorporate advanced technologies such as ADAS, GPS, cruise control, etc., is expected to support the growth of the studied market. For instance, the RF transistors are used in the antenna module of the vehicles to facilitate features such as self-parking and remote control of cars.
- Small Signal RF & Microwave transistors are also used in various consumer electronic devices such as set-top boxes and mobile phones primarily as signal amplifiers. The growth of the consumer electronics industry in the APAC region is expected to create a favorable market scenario for the development of the studied market.
- For instance, according to IBEF, India's appliances and consumer electronics industry stood at USD 9.84 billion in 2021 and is expected to more than double to reach USD 21.18 billion (INR 1.48 Lakh Crore) by 2025.

RF & Microwave Small Signal Transistors Industry Overview

The Global RF & Microwave Transistors Market is moderately competitive and is expected to grow in competition during the forecast period owing to the increasing demand for these devices across various end-user verticals. The vendors are expected to

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increase their investment in product innovation and facility expansion to strengthen their market presence. Some major players operating in the market include Toshiba Electronic Devices & Storage Corporation, STMicroelectronics, NXP Semiconductors, Infineon Technologies, etc.

- May 2022 - STMicroelectronics and MACOM Technology Solutions Holdings Inc., a leading supplier of semiconductor products for the Industrial, Telecommunications, Industrial, Defense, and Datacenter industries, announced the successful production of radio-frequency Gallium-Nitride-on Silicon (RF GaN-on-Si) prototypes. With this progress, ST and MACOM are expected to further expand their efforts to accelerate the delivery of advanced RF GaN-on-Si products to the market.
- February 2022 - United Monolithic Semiconductors announced the release of the CHK8101-SYC, a 15W GaN Power transistor assembled in a fully hermetic metal-ceramic flange power package. According to the company, these GaN transistors can be used for RF power applications up to 6GHz with high performance.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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