

RF Gallium Nitride Market by Device (Discrete RF Device, Integrated RF Device), wafer size, end user (Telecom Infrastructure, Satellite Communications, Military & Defense) and Region - Global Forecast to 2028

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Report description:

The global RF gallium nitride market was valued at USD 1.3 billion in 2022 and is projected to reach USD 2.8 billion by 2028; it is expected to register a CAGR of 12.9% during the forecast period. Advantages of GaN over traditional Si, heightened demand from consumers and enterprises and automotive vertical for power electronics devices, continuous emergence of technologies in GaN ecosystem, suitability of GaN in RF applications, and increasing adoption of GaN RF semiconductor devices for military, defense, and aerospace applications are driving the growth of the RF GaN market, whereas higher efficacy of alternative such as Silicon Carbide (SiC) for high-voltage semiconductor applications restraining the growth of the RF GaN market.

The Integrated RF device segment is expected to grow at a higher CAGR during the forecast period

The Integrated RF device segment is also expected to grow at a higher CAGR during the forecast period. RF GaN integrated devices have reformed the field of RF and microwave electronics, offering improved power density, efficiency, and linearity. They find applications in various industries, including wireless communications, radar systems, satellite communications, and defense. Integrated RF devices are made smaller and lighter as they do not require separate components for the gate driver, protection circuitry, and other auxiliary functions. The RF GaN integrated devices market is expected to grow significantly in the coming years, driven by the increasing demand for these devices.

200 and above segment by deployment to register growth at a higher CAGR

Additionally, the 200 and above segment is expected to grow at a higher CAGR during the forecast period. A wafer size of 200 mm and above can be processed more quickly and efficiently than smaller wafer sizes. This can lead to higher yields and lower costs. Also, they can accommodate larger devices with higher current ratings, hence are suitable for well-suited production of

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high-power RF GaN devices.

The satellite communication segment is likely to grow at the highest CAGR

The satellite communication segment is expected to grow at a highest CAGR during the forecast period. RF GaN technology provides scalability for future satellite communication systems. It can support evolving standards, such as higher-frequency bands for increased data rates and system capacities. The versatility of RF GaN devices allows for easy adaptation to new communication protocols and emerging technologies, ensuring long-term compatibility and future-proofing of satellite networks.

North America to register growth at highest CAGR

North America is also expected to witness the highest CAGR during the forecast period. Governments in North America are also supporting the growth of the RF GaN market through various initiatives. For instance, in October 2022, US Senator Patrick Leahy and GlobalFoundries, a global leader in feature-rich semiconductor manufacturing, declared USD 30 million in federal funding to advance the development and production of next-generation gallium nitride (GaN). This funding will enable GlobalFoundries to purchase tools and extend the development and implementation of 200mm GaN wafer manufacturing. Such initiatives in the region are growing the demand for RF GaN devices.

Breakdown of primaries

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

- By Company Type - Tier 1 - 35%, Tier 2 - 45%, Tier 3 - 20%
- By Designation- C-level Executives - 40%, Marketing Directors - 30%, Others - 30%
- By Region-North America - 20%, Europe - 40%, Asia Pacific - 30%, RoW - 10%

The RF GaN market is dominated by a few globally established players such as Sumitomo Electric Device Innovations, Inc. (Japan), Qorvo, Inc. (US), WOLFSPEED, INC. (US), NXP Semiconductors (Netherlands), MACOM (US). The study includes an in-depth competitive analysis of these key players in the RF GaN market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the RF GaN market and forecasts its size by device type, wafer size, end-use, and region. The report also discusses the drivers, restraints, opportunities, and challenges pertaining to the market. It gives a detailed view of the market across four main regions-North America, Europe, Asia Pacific, and RoW. Supply chain analysis has been included in the report, along with the key players and their competitive analysis in the RF GaN ecosystem.

Key Benefits to Buy the Report:

- Analysis Of key drivers (Advantage of GaN over traditional Si, heightened demand from consumers and enterprises and automotive vertical for power electronics devices, continuous emergence of technologies in GaN ecosystem, suitability of GaN in RF applications, and increasing adoption of GaN RF semiconductor devices for military, defense, and aerospace applications). Restraint (Higher efficacy of alternatives such as Silicon Carbide (SiC) for high-voltage semiconductor applications). Opportunity (Evolving renewable energy applications of GaN, potential use of GaN in 6G infrastructure development, applications in electric and hybrid electric vehicles, consolidating trend of smart manufacturing). Challenges (High material and fabrication costs, complexities associated with designing of electrical layout of GaN devices)
- Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the RF GaN market

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- Market Development:** Comprehensive information about lucrative markets - the report analyses the RF GaN market across varied regions
- Market Diversification:** Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the RF GaN market.
- Competitive Assessment:** In-depth assessment of market shares, growth strategies, and service offerings of leading players like Sumitomo Electric Device Innovations, Inc. (Japan), Qorvo, Inc. (US), WOLFSPEED, INC. (US), NXP Semiconductors (Netherlands), MACOM (US), Infineon Technologies AG (Germany), ROHM Co., Ltd. (Japan), Texas Instruments Incorporated (Texas), Toshiba Corporation (Japan), STMicroelectronics N.V. (Switzerland) among others in the GaN market.

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**RF Gallium Nitride Market by Device (Discrete RF Device, Integrated RF Device),
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