

Gallium Nitride Semiconductor Devices Market anticipated to surpass US\$18.158 billion by 2030 at a CAGR of 18.29%

The gallium nitride semiconductor devices market is anticipated to grow at a CAGR of 18.29 from US\$7.839 billion in 2025 to US\$18.158 billion by 2030.



NOIDA, UTTAR PRADESH, INDIA, November 25, 2024 /EINPresswire.com/ -- According to a new study published by Knowledge Sourcing Intelligence, the [gallium nitride semiconductor devices market](#) is projected to grow at a CAGR of 18.29% between 2025 and 2030 to reach US\$18.158 billion by 2030.

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The rapid growth of different industries such as 5G telecommunications, [consumer electronics](#), defense & aerospace, electric mobility, etc. is increasing the demand for gallium nitride semiconductor devices. The demand for [electric vehicles](#) increased significantly. There were 14 million new electric cars registered globally in 2023. The share of electric vehicles increased from 4% in 2020 and reached 18% in 2023. This increased demand for electric vehicles increased the demand for gallium nitride semiconductor devices applied for electric vehicles.

Significant research and development are taking place in

wide bandgap semiconductors (WBG), as WBG semiconductors enable electronic components to be smaller, lighter, faster, more reliable, and more energy-efficient than silicon-based ones. Various research is based on the development of application readiness maps for different WBG materials, such as silicon carbide (SiC) and gallium nitride (GaN). These projects can save significant amounts of energy, such as 28 TWh/year in data centers, 10 TWh/year in solar photovoltaic (PV) inverters, and 35 TWh/year in wind power generators. The 4E TCP (Technology Collaboration Programme) member countries funded this project, specifically the governments of Austria, Denmark, Sweden and Switzerland.

Further, the advancement in technologies, such as, Infineon Technologies AG announced in

September 2024, that the company succeeded in developing the world's first 300 mm power gallium nitride (GaN) wafer technology. Further, pushing the market growth. Infineon is the first company in the world to master this technology in a scalable high-volume manufacturing environment. This breakthrough would substantially drive the market for GaN-based power semiconductors. Chip production on 300 mm wafers is technologically advanced and significantly efficient compared to 200 mm wafers since the bigger wafer diameter fits 2.3 times as many chips per wafer.

Besides, in November 2024, MACOM Technology Solutions Inc. announced that it was selected to lead a development project to establish advanced gallium nitride-on silicon carbide process technologies for radio frequency and microwave applications. This project is funded by the CHIPS and Science Act through the United States Department of Defense (DoD).

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By product, the gallium nitride semiconductor devices market is segmented into GaN Radio Frequency Devices, Opto-semiconductors, and Power Semiconductors. The different devices are required for different industrial and domestic purposes.

By wafer size, the gallium nitride semiconductor devices market is segmented into 2-inch, 4-inch, 6-inch, and 8-inch. The different wafer sizes are required for the different devices and components. The size of the wafer depends on the amount of energy required for the devices.

By component, the gallium nitride semiconductor devices market is segmented into transistors, diodes, rectifiers, power ICs, and others. Moreover, Correcting and Replacing power integrations launched 1700 v gan switcher IC, setting a new benchmark for gallium nitride technology in November 2024. The new device featured the industry's first 1700 V gallium nitride switch. It is fabricated using the company's proprietary PowiGaN technology. Power Integrations introduced a new InnoMux-2 family of single-stage, independently regulated multi-output offline power supply ICs.

By end-user, the gallium nitride semiconductor devices market is segmented into automotive, consumer electronics, defense & aerospace, healthcare, industrial & power, information & communication technology, and others. The world automotive industry has been witnessing a significant increase in production to 10% in 2023 from last year, the total number of vehicles produced was 67,133,570 in the same year. Further, Gallium nitride power semiconductor devices are expected to contribute to the realization of small, low-loss power electronics equipment. This could be possible because of better durability, the ability to tolerate greater power densities, the ability to operate at higher voltages, and wider operating bandwidth. Hence the usage of gallium nitride semiconductor devices will expand substantially during the forecast period.

Based on geography North America is segmented into the USA, Canada, and Mexico. In 2022, the US imported US\$629,871 million worth of consumer electronic equipment, which is significant in terms of trade volumes. Further, US-based companies such as Texas Instruments announced it has begun production of gallium nitride (GaN)-based power semiconductors at its factory in Aizu, Japan in October 2024. Coupled with its existing GaN manufacturing in Dallas, Texas. TI would now internally manufacture four times more GaN-based power semiconductors, as Aizu ramps to production. TI successfully piloted the development of GaN manufacturing on 300mm wafers.

As a part of the report, the major players operating in the gallium nitride semiconductor devices market, that have been covered are Efficient Power Conversion Corporation, Fujitsu Ltd., GaN Systems, Infineon Technologies AG, NexgenPowerSystems, NXP Semiconductor, Qorvo, Inc.

The market analytics report segments the gallium nitride semiconductor devices market on the following basis:

- By Product
 - o GaN Radio Frequency Devices
 - o Opto-semiconductors
 - o Power Semiconductors
- By Component
 - o Transistor
 - o Diode
 - o Rectifier
 - o Power IC
 - o Others
- By Wafer Size
 - o 2-inch
 - o 4-inch
 - o 6-inch
 - o 8-inch
- By End-User
 - o Automotive
 - o Consumer Electronics
 - o Defense & Aerospace
 - o Healthcare

- o Industrial & Power
- o Information & Communication Technology
- o Others

- By Geography

- o North America

- USA
- Canada
- Mexico

- o South America

- Brazil
- Argentina
- Others

- o Europe

- Germany
- UK
- France
- Spain
- Others

- o Middle East and Africa

- Saudi Arabia
- UAE
- Others

- o Asia Pacific

- China
- Japan
- South Korea
- India
- Indonesia
- Others

Companies Profiled:

- Efficient Power Conversion Corporation
- Fujitsu Ltd.
- GaN Systems
- Infineon Technologies AG
- NexgenPowerSystems
- NXP Semiconductor
- Qorvo, Inc.

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