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GaAs Wafer Market Research Report – Forecast to 2027

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Description:

GaAs Wafer Market Overview

Globally, the GaAs Wafer Market is expected to grow from USD 625 million in 2017 to USD 1224.3 million by 2023, at a CAGR of 12% during the forecast period. Increasing adoption of 4G and 5G networks drives the GaAs wafer market. However, the high production cost is restraining the market growth.

According to the latest research report, the global GaAs wafer market size is expected to witness significant growth during the forecast period. A combination of gallium and arsenic, gallium arsenide (GaAs) is a compound semiconductor of gallium that is produced by melting metals such as aluminum and zinc, as well as Arsenic. While gallium is believed to be more rare than gold, arsenic is reported to be harmful, despite the fact that it is both rare and valuable.

For a long time, GaAs were only employed in high-frequency applications requiring great efficiency and minimal noise, such as military and mobile phones. Mobile internet sales, along with the creation of new communication technologies like 4G and 5G, are anticipated to continue to fuel the growth of the GaAs wafer market in the near future. A growing number of mobile devices and storage is a factor that will have a significant effect on the GaAs wafer market in the future, even after the projection period covered in this research is completed. When compared to other semiconductor components, GaAs has the benefit of producing less noise, making them particularly suitable for signal amplification applications. Gallium arsenide is now being utilized in diodes, light-emitting diodes, field-effect transistors, and integrated circuits, among other applications. High-frequency radio frequency applications, as well as applications needing fast electronic switching, benefit from GaAs's performance. GaAs cells are also more insensitive to heat, compared to other types of cells. Another factor contributing to the expansion of this industry is the rise in the size of the GaAs wafer, which, in turn, helps to lower the production costs of the wafers themselves. Research and development are being carried out in large quantities in universities, research institutes, and corporate laboratories all around the globe, and the results are being published. This is also anticipated to have a beneficial effect on the market.

This report contains all the information on the global GaAs wafer market analysis and its strengths. The report also contains the culmination of dynamics, segmentation, key players, regional analysis, and other important factors. And a detailed analysis of the global GaAs wafer market forecast for 2023 is also included in the report.

Covid 19 Analysis

As a consequence of the covid 19 epidemics, the global food and beverage sector is one of the main industries experiencing significant disruptions, including supply chain breakdowns, cancellations of technology events, and workplace closures, among others. China is the global production center, and it is home to both the biggest raw material suppliers and the largest manufacturers. The general market breakdown caused by COVID-19 is also having an impact on the development of the bacon market, since manufacturers are closing, there are bottlenecks in the distribution chain, and the global economy is experiencing a slump.

Market Dynamic

• Drivers

The rising use of smartphones, as well as the increasing penetration of light-emitting diode (LED) technology in general illumination, are the most important growth factors for GaAs Wafer Market. The introduction of the Internet of Things (IoT) has been cited as one of the primary causes for the market's upward trajectory. As a result of the advancement in technology, there is a growing need for high-frequency communications systems built using GaAs integrated circuits.

In addition, as a result of several expanding businesses their communications network, the demand for GaAs-based devices is expected to rise, which will, in turn, propel the expansion of the GaAs wafer market in the coming years. GaAs wafers are expected to account for a significant portion of the market in the coming years. In recent years, there has been an increase in the demand for GaAs devices across a variety of end-user sectors including aerospace and military, electronics, and telecommunications, which has, in turn, increased the demand for GaAs wafer market trends worldwide.

• Opportunities

Several businesses are extending their communications network, which will lead to an increase in the need for GaAs-based devices in the future years. This, in turn, will lead to a rise in the demand for the GaAs wafers market in the coming years. In recent years, there has been an increase in the demand for GaAs devices across a wide range of end-user sectors such as aerospace and military, electronics, and telecommunications, which has resulted in an

increase in the demand for GaAs wafers across the world.

- **Restraints**

Unfortunately, the high manufacturing costs of single-crystal GaAs substrates, as well as the absence of natural oxide in contrast to silicon wafers, are significant restraints on the market's expansion.

- **Challenges**

The greatest challenges on GaAs Wafer Market are the high production costs for single-crystal GaAs substrates and the lack of natural oxide as opposed to silicon wafers.

Cumulative Growth Analysis

GaAs substrates are widely employed in radio-frequency devices that are utilized in wireless communication applications like wireless local area networks (WLAN), telephony, 4G/5G base stations, satellite tracking, and Wi-Fi communication systems. The advancement of next-generation, elevated, ultra-compact RF front-end chipsets, which are required for 4G and 5G smartphones and other devices, is marked by the emergence of this trend. GaAs wafer demand has been boosted by the increasing penetration of the internet across the globe, particularly in emerging nations like India and Brazil. As a result, the supply for backhaul, base stations, and fiber-optic networks in wireless transmission infrastructure and Wi-Fi interconnection products has increased, which is helping to support the increasing penetration of the web around the world, which is, in turn, helping to drive the implementation of GaAs wafers up the value chain.

Value Chain Analysis

According to the reports, the global GaAs wafer market is segmented on the basis of type, technology, application, and regions. By manufacturing technique, the vertical gradient freeze (VGF) and liquid encapsulated czochralski (LEC) segments led the market in 2019, and they are expected to continue to expand at a rapid pace at a compound annual growth rate (CAGR) of XX percent throughout the forecast period. The increasing use of VGF and LEC technology by different manufacturing firms for the production of GaAs wafers are propelling the market's expansion. Semiconductor Wafer Inc., for example, offers both polycrystalline and single-crystal GaAs wafers to the micro-electronics and optoelectronics industries, which are used in the production of LEDs, microwave circuits, and solar cell applications, among other things. It provides single-crystal GaAs wafers manufactured using LEC and VGF crystal growth methods, which give clients the broadest range of GaAs materials with excellent uniformity of electrical characteristics and outstanding surface quality, as well as the most cost-effective solution.

Segmentation Overview

The GaAs Wafer Market is segmented on the basis of type, technology, application, and region. The global GaAs wafer market is expected to witness decent growth during the forecast period.

By production method, the GaAs Wafer Market is segmented into vertical gradient freeze (VGF), Liquid encapsulated Czochralski (LEC), Molecular Beam Epitaxy (MBE), Metal-Organic Vapor Phase Epitaxy (MOVPE).

By application, the market is segmented into mobile devices, photovoltaic devices, wireless communication, optoelectronic devices, aerospace & defense, and others.

By region, the GaAs Wafer Market is segmented into North America, Europe, Asia-Pacific and the rest of the world.

Regional Analysis

According to the reports, on the basis of region, the global GaAs wafer market is divided into North America, Europe, Asia Pacific, and the rest of the world. Asia-Pacific is the world's largest market for GaAs wafers, due to the region's huge population as well as the region's increasing smartphone penetration. One of the major driving factors in this region is the increasing demand for advanced technological devices such as smart devices, smartphones, computers, and laptops. As a result of the increased introduction of advanced innovation devices like smart devices, cell phones, computer systems, and laptop computers, the demand for GaAs wafers in the region is growing at a promising rate. China has a monopoly on the electronics industry's global market. Government assistance is substantial in this area, which is assisting in the expansion of the sector. For example, the Chinese government is boosting its domestic technology sector by providing financial assistance to industry participants. The demand for solar cells in different nations is expected to rise as a result of the need for safe, dependable, and environmentally friendly energy sources. This would in turn aid the growth of the GaAs wafer market share.

Competitive landscape

The worldwide gallium arsenide manufacturers are extremely consolidated, with a few firms controlling a large portion of the market. Companies that have already established themselves are reinforcing their positions by spending significantly on research and development and offering their consumers better and more technologically sophisticated goods and services.

Major Key Players

- Semiconductor Wafer Inc
- AXT Inc.
- Sumitomo Electric Industries Ltd.
- Freiburger Compound Materials GmbH
- Xiamen Powerway Advanced Material Co. Ltd.

Report Overview

The following report comprises of

- Market overview
- Covid 19 Analysis
- Market Dynamic
- Drivers
- Opportunities
- Restraints
- Challenges
- Cumulative Growth Analysis
- Value Chain Analysis
- Segmentation Overview
- Regional Analysis
- Competitive landscape

Recent Developments

- October 2019 - PAM-XIAMEN voltage applied crystal growth and epitaxy technologies, which range from the first generation Germanium wafer to the second generation Gallium Arsenide with filtration development and epitaxy on III-V silicon doped n-type semiconductor materials based on Ga, Al, In, As, and P grown by MBE or MOCVD, to the third generation Silicon carbide and Gallium Nitride for LED and power device applications, as well as the fourth generation Silicon carb.

Gallium Arsenide Wafer Market By Production Method

- vertical gradient freeze (VGF)
- Liquid encapsulated Czochralski (LEC)
- Molecular Beam Epitaxy (MBE)
- Metal-Organic Vapor Phase Epitaxy (MOVPE)

Gallium Arsenide Wafer Market By Application

- mobile devices
- photovoltaic devices
- wireless communication
- optoelectronic devices
- aerospace & defense
- others

Gallium Arsenide Wafer Market by Region

- North America
- United States
- Canada
- Mexico
- Europe
- United Kingdom
- Germany
- Asia Pacific
- China
- Taiwan
- Japan
- The Rest of the World

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