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Silicon Wafers Market Research Report - Global Forecast till 2032

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Description:

Global Silicon Wafers Market Overview:

Silicon Wafers Market Size was valued at USD 12.1 Billion in 2022. The Silicon Wafers market industry is projected to grow from USD 12.5961 Billion in 2023 to USD 17.37168461 Billion by 2032, exhibiting a compound annual growth rate (CAGR) of 4.10% during the forecast period (2023 - 2032). Due to cost-cutting initiatives taken by the semiconductor industry, there is likely to be an increase in the substitution of expensive virgin and test wafers with inexpensive recovered ones throughout the course of the projection period.

Global Silicon Wafers Market Overview

Source: Secondary Research, Primary Research, MRFR Database and Analyst Review

Silicon Wafers Market Trends

- **Expanded use of GPS tracking systems is driving the market growth**

Market CAGR for silicon wafers is being driven by the expanded use of GPS tracking systems. Since practically every business now uses the GPS tracking system, the market for tracking devices is booming. Since semiconductors are a crucial component of GPS systems, these gadgets have a significant impact on the silicon wafers industry. Additionally, ongoing R&D is being done, and new developments in the GPC tracking market will help the silicon wafers market grow.

Additionally, many semiconductor facilities use recovered wafers to monitor and optimise their manufacturing processes and machinery because recovered wafers are inexpensive compared to higher-grade silicon and because it is widely used in many sectors. Additionally, it is anticipated that the rising demand for consumer electronics, including as smartphones, tablets, and laptops, which are an essential part of the integrated circuits used in these devices, will boost the demand for both recovered and virgin materials. The industry is expected to gain from a significant rise in the installation of solar panels, particularly in China, Mexico, and the United States, which is anticipated to support the region's rising demand for the product.

In particular silicon wafer-based enhanced packaging techniques, foundries are investing more and more. The development of monolithic three-dimensional integrated circuits using two-dimensional materials rather than silicon is one method being investigated by foundry vendors to increase transistor density. The chip on wafer on substrate (COWS) technology from TSMC created the largest silicon interposer in the world, measuring around 2500mm2. It has space for two enormous 600mm2 processors as well as eight HBM memory devices in a 75mm2 package. Favourable government policies in developing nations like China opened up a wealth of prospects for the semiconductor industry, which is anticipated to drive growth in the silicon wafer market for semiconductors over the course of the projected period. For instance, the State Council of the People's Republic of China has released a policy framework that aspires to make sophisticated semiconductor packaging solutions a top technology priority for the semiconductor industry.

For instance, in May 2022, Industrial wearable devices, which improve quality and safety in the processing industry, may have a sizable market, according to Siemens. By 2022, wearables are anticipated to be adopted by 40–50% of manufacturers worldwide, according to Zebra Technologies Corporation. The development of wearable technology will provide market suppliers tremendous growth potential. Thus, driving the Silicon Wafers market revenue.

Silicon Wafers Market Segment Insights:

Silicon Wafers Wafer Size Insights

The Silicon Wafers Market segmentation, based on wafer size, includes 0-100 mm, 100-200 mm, 200- 300 mm, and more than 300 mm. The 200-300 mm category dominated the market due to increasing product demand from the solar energy industry. The economic advantages of recovering the 300mm wafer are also projected to propel the segment's growth over the course of the forecast period.

Silicon Wafers Type Insights

The Silicon Wafers Market segmentation, based on type, includes N-type, and P-type. The N-type category is anticipated to hold the highest market share in the coming years (9.2 billion). Compared to electrons, the concentration of holes is higher. Additionally, the p-type multicrystalline silicon (mc-Si) wafer market is expanding due to the rising demand for these materials in solar cells.

Figure 1: Silicon Wafers Market, by Type, 2022 & 2032 (USD Billion)

Silicon Wafers Market, by Type, 2022 & 2032

Source: Secondary Research, Primary Research, MRFR Database and Analyst Review

Silicon Wafers Application Insights

The Silicon Wafers Market segmentation, based on Application, includes solar cells, photoelectric cells, integrated circuits, and others. The solar cells segment dominated the market share during the forecast period due to the rising use of solar energy in North America and the Asia-Pacific region. The recycled silicon wafer doesn't dramatically alter silicon wafer production or efficiency, which encourages the solar energy industry to employ it more regularly.

Silicon Wafers End user Insights

The Silicon Wafers Market segmentation, based on end user, includes consumer electronics, automotive, industrial, telecommunications, and others. The telecommunications segment dominated the market share during the forecast period due to increased use of mobile devices to access the internet and connect with others, including computers, tablets, and smartphones. The market is also expanding as a result of the internet of things (IoT) and the widespread use of smart devices across numerous industry verticals.

Silicon Wafers Regional Insights

By region, the study provides the market insights into North America, Europe, Asia-Pacific and Rest of the World. The North America Silicon Wafers market is anticipated to dominate the market. The main clients of semiconductor foundries and wafer manufacturers are fabless semiconductor businesses. Fabless businesses produce only chip designs and sell them without a fabrication facility. AMD, Broadcom, Apple, Qualcomm, Marvell, NVIDIA, and Xilinx are the principal fabless firms in the area. In the design and production of advanced semiconductor systems, North America has played a vital role. The establishment of semiconductor wafer foundries has been increasing in the area.

Further, the major countries studied in the market report are The US, Canada, German, France, the UK, Italy, Spain, China, Japan, India, Australia, South Korea, and Brazil.

Figure 2: Silicon Wafers Market SHARE BY REGION 2022 (USD Billion)

Silicon Wafers Market SHARE BY REGION 2022

Source: Secondary Research, Primary Research, MRFR Database and Analyst Review

Asia-Pacific Silicon Wafers market accounts for the second-largest market share due to the increasing demand for consumer electronics in China, the Asia-Pacific region experienced the fastest growth in 2021. Applications for semiconductor wafers have expanded across the sector due to high automotive device sales volumes. Additionally, it is the largest EV market in the world, which will be a key area of use for semiconductor wafers in the future. For instance, Taiwan's Wafers Co Ltd said in June 2022 that it will spend USD 5 billion on a special facility xas to produce 300-millimeter silicon wafers used in semiconductors. Wafers are using the ongoing geopolitical unrest and the chip scarcity as a chance to discuss the resilience of the American semiconductor supply chain.

Further, the Chinese Silicon Wafers market held the largest market share, and the India Silicon Wafers market was the fastest growing market in the European region

The Europe Silicon Wafers Market is expected to grow at the fastest CAGR from 2023 to 2032 due to the rising demand for electric vehicles, sustainable energy, increasing data centres, 5G, and automated manufacturing, all of which require electronic components. Additionally, a lot of businesses have been working together to speed up the development of new gadgets and software to meet the needs of the industrial, automotive, and consumer electronics industries as well as biometric authentication and facial recognition applications, which is anticipated to drive the market growth.

Moreover, German Silicon Wafers market held the largest market share, and the UK Silicon Wafers market was the fastest growing market in the Asia-Pacific region.

Silicon Wafers Key Market Players & Competitive Insights

Leading market players are investing heavily in research and development in order to expand their product lines, which will help the Silicon Wafers market, grow even more. Market participants are also undertaking a variety of strategic activities to expand their global footprint, with important market developments including new product launches, contractual agreements, mergers and acquisitions, higher investments, and collaboration with other organizations. To expand and survive in a more competitive and rising market climate, Silicon Wafers industry must offer cost-effective items.

The government and private businesses are making significant investments in R&D for technological advancements in the global Silicon Wafers industry to benefit clients and increase the market sector. In recent years, the Silicon Wafers industry has advantages such as the development of advanced computing systems. Major players in the Silicon Wafers market, including Shin Etsu, Sumco, Siltronic, Zhonghuan Huanou, MEMC, LG Siltron, SAS, Okmetic, Shenhe FTS, SST, JRH, MCL, Microchips, Omm, GRITEK, Wafer Works, Simgui, and others are attempting to increase market demand by investing in research and development operations.

The seventh-largest producer of silicon wafers in the world is Okmetic. For the production of MEMS, sensors, RF filters and devices, and power applications, the company offers cutting-edge, customised silicon wafers. In the value chain of the global semiconductor industry, Okmetic is a crucial link. Since the start, research and development have been essential. The business produces numerous different kinds of silicon wafers, including SOI wafers, pattern wafers, TSV wafers, RFSi wafers, SSP wafers, and DSP wafers. Over the previous five years, the firm has invested more than 100 million euros in the Vantaa plant to speed up expansion. In May 2022, Okmetic announced an investment of over 400 MEUR to expand our fabrication facility, doubling our capacity.

Siltronic As one of the top producers of silicon wafers with a diameter of up to 300 mm, Siltronic collaborates with numerous leading chip makers and businesses in the semiconductor sector. The business provides silicon wafers of the finest quality to the global semiconductor industry. With a workforce of about 4,500 people, Siltronic controls a global network of cutting-edge manufacturing facilities in Asia, Europe, and the USA, including the most cutting-edge production facilities for 200 and 300-mm wafers in the world right now in Singapore. According to the most recent design guidelines, the firm produces polished and epitaxial wafers. The company’s exceptional innovative strengths are demonstrated by the 1,870 patents and patent applications.

Key Companies in the Silicon Wafers market include

- Shin Etsu
- Sumco
- Siltronic
- Zhonghuan Huanou
- MEMC
- LG Siltron
- SAS
- Okmetic
- Shenhe FTS
- SST
- JRH
- MCL
- Microchips
- Omm

- GRITEK
- Wafer Works
- Simgui

Silicon Wafers Industry Developments

June 2022: Siltronic made available its first promissory loan that included an ESG factor.In a challenging capital market environment, the Group was successful in securing €300 million at favourable terms. The funds will be utilised for routine corporate finance as well as strategic expansion investments. The interest rate on the promissory loan is determined by a sustainability KPI for Siltronic.

June 2022: Okmetic took part in the Position II initiative, which involved 12 nations and 43 partners across the EU. The project's goal was to develop the next generation of smart catheters and implants by utilising readily accessible technology platforms for miniaturisation, in-tip AD conversion, wireless communication, MEMS transducer technology, and encapsulation. Many different applications and consumers can use these platforms.

Silicon Wafers Market Segmentation:

Silicon Wafers Wafer Size Outlook

- 0-100 mm
- 100-200 mm
- 200- 300 mm
- More than 300 mm

Silicon Wafers Type Outlook

- N-type
- P-type

Silicon Wafers Application Outlook

- Solar Cells
- Photoelectric Cells
- Integrated Circuits
- Others

Silicon Wafers End User Outlook

- Consumer Electronics

- Automotive
- Industrial
- Telecommunications
- Others

Silicon Wafers Regional Outlook

- North America
    - US
    - Canada
- Europe
    - Germany
    - France
    - UK
    - Italy
    - Spain
    - Rest of Europe
- Asia-Pacific
    - China
    - Japan
    - India
    - Australia
    - South Korea

- Australia
- Rest of Asia-Pacific

- Rest of the World
  - Middle East
  - Africa
  - Latin America

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