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Semiconductor Market Assessment, By Type [Intrinsic {Si (Silicon), and Ge (Germanium)}, and Extrinsic (pure Si & Ge)], By Components [Memory Devices, Logic Device, Analog IC, MPU, Discrete Power Devices, MCU Sensors, and Others], By Node Size [180 nm, 130 nm, 90 nm, 65 nm, 45/40 nm, 32/28 nm, 22/20 nm, 16/14 nm, 10/7 nm, 7/5 nm, and 5nm], By Applications [Networking and Communications, Consumer Electronics, Automotive, Data Processing, Aerospace, Medical, Military & Defence, and Others], By Region, Opportunities, & Forecasts, 2018-2032F

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Abstracts

The Global Semiconductor Market was worth USD 823.1 billion in 2024 and is anticipated to reach up to USD 1973.4 billion in 2032 with an adequate CAGR of 11.55% throughout the forecasted period of 2024 to 2032.

The continuous rise in the usage of consumer electronics products worldwide is regarded as one of the main factors driving the market growth. Additionally, the advent of the Internet of Things (IoT), artificial intelligence (AI), & machine learning (ML) technologies are also boosting the market growth significantly. Because of these innovations, memory chips can process huge volumes of data more quickly. Also, throughout the projected period, the market expansion will be driven by the rising need for faster and more sophisticated memory chips for industrial use.

Significant Advancements in Artificial Intelligence & The Internet of Things (IoT)

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The rapid advancement in artificial intelligence (AI) & the Internet of Things (IoT) has resulted in the development of chips integrated with more powerful computing capabilities and high-quality, purpose-built chips for specific applications.

The combination of AI and IoT has also enabled semiconductor manufacturers to develop solutions for specific use cases and applications rapidly. AI-enabled chips can optimize the performance of autonomous robots, while IoT-enabled chips can power connected devices. One example of AI and IoT-enabled semiconductors in robotics is the NVIDIA Jetson platform, which consists of a family of embedded systems-on-module (SoMs) and developer kits designed to provide high-performance computing for AI and computer vision applications in robotics.

Growth of the Related Industries driving Market Growth

Dependent industries such as automotive (EVs), data storage, wireless telecom etc. rely heavily on semiconductor technology. The batteries and other components need to be powered to operate efficiently, leading to an increase in demand for reliable and efficient semiconductor technology, which has, in turn, driven the development of better and more advanced semiconductor components. Similarly, the amount of data being created and stored has grown exponentially, and the need for semiconductors for storing and processing this data has also surged. This has led to the development of more advanced memory chips, processors, and other semiconductor components that can store and process vast amounts of data in a short timeframe.

Collaboration Between Market Players Drives Market Growth

Collaboration between market players is a key driver of the global semiconductor market, and through strategic partnerships and alliances, companies can strengthen their technological advancements and innovations. Collaborations allow a huge number of resources for research and development, introducing more high-performance and more efficient semiconductor solutions. Working collaboratively, companies can lessen risks linked with supply chain disruptions, fluctuating demand patterns, and geopolitical tensions. In addition, joint ventures, partnerships, and other collaborations allow companies to navigate dynamics more effectively and bring together experts from different fields to solve complex problems and develop innovative products, further propelling global semiconductor market growth in the forecast period. Companies in the

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market are collaborating to introduce technologies including smart cards to emerging countries and bring expertise to address the growing demand.

For instance, in January 2025, Bartronics India Ltd partnered with PTW Group to transform the semiconductor industry and advance India’s ambition of becoming a global semiconductor hub by surging manufacturing, innovation, R&D, and others.

Government Schemes and Initiatives

Government expenditures on the technological advancements of the semiconductor industry have been increasing steadily, allowing for more research and development in the field. The emergence of new schemes and policies aimed at boosting the semiconductor market has also been a contributing factor. In January 2025, a Fiscal Support Agreement was signed between the India Semiconductor Mission, CG Power and Industrial Solutions Ltd., and CG Semi Pvt. Ltd. This agreement facilitates the establishment of a semiconductor Outsourced Semiconductor Assembly and Test (OSAT) unit in Sanand, Gujarat, with an investment of approximately ?7,600 crore (equivalent to around USD 880 million. The project is set to produce 15 million chips per day, significantly enhancing India's semiconductor manufacturing capabilities.

Covid-19 Impact on Global Semiconductor Market

The pandemic has led to a sudden and unexpected increase in the demand for consumer electronic devices, which has caused a surge in global semiconductor revenues. The COVID-19 pandemic, with its global impact, endangered production in the entire supply chain industry. After a steep decline in global semiconductor revenues, a shortage of chip production caused extensive disruptions in the automotive industry, with huge revenue losses. These losses are expected to continue throughout the years to come, making the industry a low priority among global fabricators.

Looking ahead, the semiconductor market's post-COVID-19 situation is expected to remain stable. The adoption of digital technologies is likely to continue, thereby driving the demand for semiconductors across various industries, including automotive and healthcare. However, the industry is facing challenges such as supply chain disruptions, rising costs, and geopolitical tensions.

Impact of The Russia-Ukraine War on the Global Semiconductor Market

The conflict between Russia and Ukraine has had a significant impact on the Global

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Semiconductor Market. The war has caused an increase in the prices of semiconductors, leading to a decrease in their demand. The rise in prices of semiconductors has been driven by the political uncertainty between the two countries, as well as the sanctions imposed on Russia by NATO. This has resulted in a decrease in the supply of Russian semiconductors, causing prices to surge significantly. The war has also influenced the value of Russian currency, increasing the cost of semiconductors imported from Russia.

Key Players' Landscape and Outlook (Competitive Landscape Analysis)

The Global Semiconductor Market offers a 360-degree competitive landscape analysis based on some significant choices made by the leading market players of the industry. To expedite the overall share of the market, several businesses are sheer focusing on various collaboration projects. However, the SMEs are leveraging their respective expansion abilities to gain new contracts and deep dive into brand-new markets due to various product innovation opportunities and technological improvisations. For instance, in January 2025, Indichip Semiconductors Limited, in partnership with Japan's Yitoa Micro Technology Limited, signed a Memorandum of Understanding with the Andhra Pradesh government to set up India's first private semiconductor manufacturing facility. With an investment of over INR 14,000 crore (approximately USD 1.62 billion, this facility focuses on manufacturing Silicon Carbide (SiC) chips, aligning with India's technological advancement and sustainability goals. The facility is expected to begin with a production capacity of 10,000 wafers per month, ramping up to 50,000 wafers per month within two to three years.

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