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Semiconductor Market Forecasts to 2030 – Global Analysis by Component (Integrated Circuits (ICs), Discrete Semiconductors, Optoelectronics and Sensors), Material, Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Semiconductor Market is accounted for $714.6 billion in 2024 and is expected to reach $1823.7 billion by 2030 growing at a CAGR of 16.9% during the forecast period. A semiconductor is a material with electrical conductivity between that of a conductor and an insulator, typically silicon or gallium arsenide. Its conductivity can be controlled by doping or external electrical fields, making it essential in modern electronics. Uses include microchips, transistors, diodes, and solar cells, powering devices like computers, smartphones, and medical equipment. Semiconductors are crucial in automotive, telecommunications, and renewable energy industries, enabling advanced computing, signal processing, and energy conversion.

According to the Semiconductor Industry Association, the United States exported $61.1 billion in semiconductors in 2022.

Market Dynamics:

Driver:

Growing Demand for Consumer Electronics

The rising demand for consumer electronics, such as smartphones, laptops, wearables, and smart home devices, is a major driver of the semiconductor market. Manufacturers of semiconductors are experimenting with smaller nodes, AI integration, and better chip

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layouts as consumers want more sophisticated features, processing power, and energy efficiency. The need for high-performance CPUs is further fueled by the growth of 5G, IoT, and AR/VR. Furthermore, the popularity of semiconductors is accelerating due to global trends toward digitization, making them an essential part of contemporary electronics, thus it propels market growth.

Restraint:

High Manufacturing Costs

High manufacturing costs in the semiconductor market hinder innovation, limit production scalability, and raise product prices. These costs, driven by expensive raw materials, advanced fabrication processes, and R&D investments, create barriers for new entrants, reducing competition. Smaller companies struggle to compete, leading to market consolidation. Additionally, higher costs slowly down technological advancements, delaying new product releases and affecting overall industry growth.

Opportunity:

Advancements in AI, IoT, and 5G

By raising demand for high-performance chips, improved connectivity, and edge computing, developments in AI, IoT, and 5G are substantially propelling the semiconductor business. While IoT growth drives demand for low-power, high-efficiency processors, AI accelerates the need for sophisticated GPUs and AI-specific semiconductors. In the meantime, 5G needs sophisticated network processors and RF components to enable lower latency and faster data rates. Together, these technologies drive innovation in semiconductor manufacturing, design, and materials, which promotes industry expansion and competition.

Threat:

Supply Chain Disruptions

Supply chain disruptions in the semiconductor industry cause significant production delays, increased costs, and decreased supply, impeding industry growth. The consumer electronics, automotive, and industrial industries are all impacted by manufacturing setbacks caused by raw material shortages, geopolitical unrest, and logistics bottlenecks. These disturbances also create pricing volatility, require

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companies to redesign products, and undermine technological developments, ultimately impacting global competitiveness and economic stability in the semiconductor industry.

Covid-19 Impact

The COVID-19 pandemic disrupted the semiconductor market through supply chain bottlenecks, factory shutdowns, and component shortages, leading to increased lead times and price hikes. However, rising demand for remote work devices, cloud computing, and healthcare technology offset losses. Governments and companies invested in localized production to reduce dependency on global supply chains, accelerating long-term industry resilience and reshaping market dynamics.

The integrated circuits (ICs) segment is expected to be the largest during the forecast period

The integrated circuits (ICs) segment is expected to account for the largest market share during the forecast period, as the need for AI, IoT, and 5G applications grows, integrated circuits (ICs) are developing to provide increased performance, efficiency, and shrinking. System-on-chip (SoC) and application-specific integrated circuit (ASIC) innovation is further fueled by the expansion of the consumer electronics, automotive, and industrial sectors. The growth of this sector shapes the industry's future by accelerating semiconductor research, manufacturing, and technological advancements.

The healthcare segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the healthcare segment is predicted to witness the highest growth rate, because of the need for AI-powered diagnostics, and sophisticated medical equipment. High-performance, low-power chips are necessary for semiconductor technologies, which enable advancements in smart implants, and remote patient monitoring. The need for safe, energy-efficient semiconductors is further increased by the growth of telemedicine and connected healthcare. Healthcare is a major source of income for the semiconductor industry, since developments in biosensors technologies are also growing semiconductor uses in medical diagnostics.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share because of significant investments in R&D and manufacturing, as well as

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developments in AI, 5G, and IoT. Innovation is fueled by the region's thriving ecosystem of chipmakers, design firms, and tech giants. To lessen dependency on imports, government programs like the CHIPS Act are increasing domestic production. North America is becoming a major player in the creation of semiconductors worldwide due to the market's rapid expansion and rising demand from sectors including consumer electronics, healthcare, and the automotive industry.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, owing to rapid technological advancements, strong government initiatives, and increasing demand for consumer electronics, automotive applications, and industrial automation. Countries like China, Taiwan, and Japan dominate global semiconductor manufacturing, benefiting from robust supply chains and heavy investments in R&D. The rise of AI, 5G, and IoT further accelerates market expansion. Additionally, supporting domestic chip production and geopolitical shifts are reshaping supply dynamics, boosting growth and competitiveness in the sector.

Key players in the market

Some of the key players profiled in the Semiconductor Market include Advanced Micro Devices (AMD), Analog Devices, Inc. (ADI), Applied Materials, Broadcom Inc., GlobalFoundries, Infineon Technologies, Intel Corporation, Marvell Technology Group, MediaTek Inc., Micron Technology, NVIDIA Corporation, NXP Semiconductors, ON Semiconductor (onsemi), Qualcomm Incorporated, Renesas Electronics, Samsung Electronics, SK Hynix, STMicroelectronics, Taiwan Semiconductor Manufacturing Company and Texas Instruments.

Key Developments:

In January 2025, Samsung Electronics unveiled Samsung Vision AI at the CES 2025 First Look, delivering personal AI-powered screens to enrich everyday life. Samsung also unveiled the latest flagship Neo QLED 8K QN990F and exciting updates to its Lifestyle TVs and future display technologies, reflecting Samsung’s vision to transform screens into adaptive, intelligent companions to simplify and enrich everyday living.

In October 2024, Samsung Electronics teamed up with NTT DOCOMO to jointly research the application of AI in next-generation mobile communications technology.

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In September 2024, Samsung Electronics announced the signing of a strategic technology partnership agreement with Hyundai Motor and Kia. To elevate users' connectivity experiences by fully integrating the SmartThings IoT platform with Hyundai and Kia's software-defined vehicles (SDVs).

Components Covered:

- Integrated Circuits (ICs)
- Discrete Semiconductors
- Optoelectronics
- Sensors

Materials Covered:

- Silicon
- Silicon Carbide (SiC)
- Gallium Nitride (GaN)
- Other Materials

Technologies Covered:

- FinFET
- MOSFET
- Super Junction
- Silicon on Insulator (SOI)

Applications Covered:

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- Consumer Electronics
- Automotive
- Industrial
- Telecommunications
- Healthcare
- Aerospace & Defense
- Other Applications

End Users Covered:

- Original Equipment Manufacturers (OEMs)
- Foundries
- Fabless Semiconductor Companies
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany

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- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

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Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

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Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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