Global Semiconductor Device - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 220 pages | Mordor Intelligence

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Report description:

The Global Semiconductor Device Market size is estimated at USD 0.73 trillion in 2024, and is expected to reach USD 1.07 trillion by 2029, growing at a CAGR of 8.03% during the forecast period (2024-2029).

The semiconductor industry is witnessing rapid growth, with semiconductors emerging as the basic building blocks of all modern technology. The advancements and innovations in this field are resulting in a direct impact on all downstream technologies.

Key Highlights
-The semiconductor industry is estimated to continue its robust growth during the forecast period to accommodate the increasing demand for semiconductor materials in emerging technologies, such as artificial intelligence (AI), autonomous driving, Internet of Things, and 5G, coupled with competition among key players and consistent spending on R&D.
-The study covers various semiconductors offered by the vendors and the industries utilizing them. The estimates for the end-user industries are derived based on the type of application the semiconductors provide in that industry.
-The outbreak of COVID-19 across the globe has significantly disrupted the supply chain and production of the studied market in the initial phase of 2020. For circuit and chipmakers, the impact was more severe. Due to labor shortages, many of the package and testing plants in the Asia-Pacific region reduced or even suspended operations. This also created a bottleneck for end-product companies that depend on semiconductors.
-However, according to the Semiconductor Industry Association, after Q1 of 2020, the semiconductor industry started the recovery. Despite logistical challenges related to the coronavirus, semiconductor facilities located in Asia-Pacific continued to function normally with high-capacity rates. Moreover, in various countries, such as South Korea, most semiconductor operations continued uninterrupted, and chip exports grew by 9.4% in February 2020. The COVID-19 pandemic has increased the demand for semiconductors across the consumer electronics and automotive sectors, mainly due to the growing adoption of EVs

post-pandemic.

Semiconductor Device Market Trends

Integrated Circuit to Hold Significant Share

- The rising proliferation of smartphones, feature phones, and tablets is driving the market. Analog ICs are used in a wide range of applications, including third and fourth-generation (3G/4G) radio base stations and portable device batteries. RFICs (radio frequency ICs) are analog circuits that usually run in the frequency range of 3 kHz to 2.4 GHz (3,000 hertz to 2.4 billion hertz) circuits that would work at about 1 THz (1 trillion hertz). They are widely used in cell phones and wireless devices. As they are under development, the analog IC market in this segment is expected to grow.
- In the overall IC market, logic ICs are the widely adopted component and are expected to witness significant growth over the forecast period. Logic chips have a wide range of applications in almost every digital product ranging from smartphones to arithmetic-logic units (ALU). In recent years, the growth in the automotive and smartphone industry has mainly driven the growth of the logic semiconductor component. However, the growth in applications like HPC and AI is now expanding the scope of logic components.
- The market has different types of memory, such as DRAM, SRAM, Nor Flash, NAND Flash, ROM, and EPROM, among others. Semiconductor memory refers to various electronic data storage devices that find applications as computer memory in computers (PCs, laptops), consumer devices (cameras, phones), commercial IT applications (telecom, datacenters), traditional industrial applications, and the emerging spectrum of IoT applications. The increasing adoption of memory ICs in automobile electronics and the growing application of memory storage chips in electronic devices are the major factors driving the demand for DRAM products.
- The increasing demand for data centers is also boosting the demand for memory components. Currently, large data center projects in North America have contributed to the strong demand for memory, such as DRAM. However, according to the measure of data center space per user, China's internet data centers are poised to grow to at least 22 times that of the United States, or at least ten times the current space of Japan. Hence, DRAM has a significant opportunity for growth and thus is impacting the semiconductor industry.

Automotive Sector to hold a Significant Market Share

- Semiconductor chips have become an integral part of modern-day vehicles, owing to their widespread use in various functions of vehicles. Chips used in cars can take many forms ranging from single components containing a single transistor to intricate integrated circuits controlling a complex system. For instance, chips are found in the LED light elements of vehicles. Every single diode inside an LED light unit is a chip that emits light. LED headlights alone account for a vast number of chips in modern-day cars. The headlights also need control units to make them function.
- The growing need for better safety and advanced driver assistance systems (ADAS) in cars has accelerated the demand for semiconductors. Intelligent functions, like backup cameras, adaptive cruise control, blind-spot detection, lane change assist, airbag deployment, and emergency braking systems, are made possible through semiconductor technologies. Further, ADAS covers a broad array of sensors, including image and camera sensors for vision-based features, ultrasonic sensors for short-range features like parking assist, and radar and lidar sensors for object detection under dark or foggy conditions.
- In March 2022, Renesas Electronics Corporation, a supplier of advanced semiconductor solutions, announced the expansion of its collaboration with Honda in the field of ADAS. Previously, Honda adopted Renesas' R-Car automotive system on a chip (SoC) and RH850 automotive MCU for its Honda SENSING Elite system featured in the Legend. With the expansion of the partnership, Honda

will use R-Car and RH850 in the Honda SENSING 360 omnidirectional safety and driver assistance system.
- The increasing demand for electric vehicles is expected to open new growth opportunities for the studied market. An increased number of electronic devices and sensors are used in electric vehicles, driving the demand for semiconductor chips. For instance, according to the International Energy Agency (IEA), the number of battery electric vehicles (BEV) in use has increased from 1.2 million in 2016 to 11.3 million in 2021 globally.
- Furthermore, China was the leading producer of electric vehicles in 2021 (Source: IEA). Sales in the European region also showed continued robust growth (up 65% to 2.3 million) after the 2020 boom, which also increased in the United States after two years of decline. With EV sales expected to follow a similar growth pattern, the automotive industry is expected to significantly impact the growth of the studied market during the forecast period.

Semiconductor Device Industry Overview

The Global Semiconductor Device Market is witnessing fluctuation with growing consolidation, technological advancement, and geopolitical scenarios. Further, in a market where the sustainable competitive advantage through innovation is considerably high, the competition will only increase. In such a situation, the brand identity plays a major role, considering the importance of quality that the end-users expect from a semiconductor manufacturing player. With the presence of large market incumbents, such as Intel Corporation, Nvidia Corporation, Kyocera Corporation, Qualcomm Technologies Inc., and STMicroelectronics NV, the market penetration levels are also high.

The level of innovation, time-to-market, and performance are the key terms by which the players differentiate themselves in the market. Overall, the intensity of competitive rivalry is moderately growing over the forecast period.

- July 2022 - Ericsson, Qualcomm Technologies Inc., and French aerospace company Thales are planning to take 5G out of this world and across a network of Earth-orbiting satellites. After having conducted detailed research, which includes multiple studies and simulations, the parties plan to enter smartphone-use-case-focused testing and validation of 5G non-terrestrial networks (5G NTN).
- March 2022 - Intel issued the first phase of its investment plans of approximately EUR 80 billion in the European Union over the next decade across the entire semiconductor value chain, including research and development (R&D), manufacturing, and packaging technologies. In this investment, the company plans to invest approximately EUR 17 billion in establishing a semiconductor fab mega-site in Germany, along with the development of a new R&D and design facility in France, and to invest in R&D, manufacturing, and foundry services in Italy, Ireland, Poland, and Spain.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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