

Global Memory Market: Analysis By Type (DRAM, NAND and Others), By Demand, By Supply, By Region Size & Forecast with Impact Analysis of COVID-19 and Forecast up to 2028

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Abstracts

Memory is the electronic holding place for the instructions and data a computer needs to reach quickly. It's where information is stored for immediate use. Memory is one of the basic functions of a computer, because without it, a computer would not be able to function properly. Memory is also used by a computer's operating system, hardware and software. In 2022, the global memory market was valued at US\$110.16 billion, and is probable to reach US\$166.04 billion by 2028.

The memory market would experience decline in 2023 due to inflation and weakening demand in end markets, particularly those relying on consumer spending. The Global chip shortage has made it difficult for companies to get the memory chips they need. This has led to a backlog of demand, which is likely to be released once the chip shortage is resolved. However, as the demand for faster, more reliable, and power-efficient memory solutions rises, the market is expected to expand, opening new opportunities for businesses operating in this sector. The rise in demand for memory and storage devices in next-generation connected automobiles and automotive safety systems is credited for the market's growth. The global memory market value is projected to grow at a CAGR of 19.54%, during the forecast period of 2023-2028.

Market Segmentation Analysis:

By Type: According to the report, the global memory market is segmented into three types: DRAM, NAND and Others. DRAM segment acquired majority of share in the market in 2022 and has the fastest CAGR, as this technology proves indispensable

across a multitude of industries and applications, spanning high-performance computing, cloud services, gaming, artificial intelligence, and machine learning. As technology continues evolving, the DRAM market maintains its robustness, driven by the escalating demand for robust computing systems, data-centric applications, and the ever-expanding universe of mobile devices and cloud-driven services. The DRAM value declined in 2022 due to weak demand and significant vendor inventory, this will create oversupply resulting in strong price declines.

By Demand: The DRAM and NAND memory market are shown on the basis of their demand in the report. DRAM plays a crucial role in providing the necessary memory capacity and speed for modern processors. Also, the growth of cloud computing and data center services has led to a substantial increase in the demand for DRAM. The demand for DRAM would increase in 2023, on the back of minor green shoots in inventory restocking in mobile and PC. The DRAM market demand is further segmented on application (Server, Mobile DRAM, PC DRAM and Others). Server segment acquired majority of share in the market in 2022, as servers used in AI and ML tasks often feature high-capacity and high-speed DRAM to meet the memory demands of these workloads.

Similarly, it is expected that demand growth for NAND across applications to continue heading in the coming years, mainly driven by the replacement cycle and demand for faster, efficient technology. NAND memory market demand is further sub segmented on the basis of application (SSD, Smartphones, Tablets, Flash cards, USB and others). SSD NAND memory demand acquired majority of share in the market in 2022, as they allow SSDs to store data permanently and to provide high performance and durability.

By Supply: The DRAM and NAND memory market are also shown on the basis of their demand in the report. The DRAM supply is expected to rise as the semiconductor industry continually advances its manufacturing processes, allowing for the production of smaller and more efficient DRAM chips.

In recent years, NAND memory manufacturers have announced billions of dollars in investments in new fabs. This will lead to a significant increase in NAND memory supply in the coming years. For instance, in January 2023, TSMC announced that it had begun mass production of its new 5 nm process.

By Region: The report provides insight into the memory market based on the supply, namely South Korea, Japan, China, Taiwan and the US. South Korea memory market supply enjoyed the highest market share in 2022, as South Korean companies are

expanding the business which would grow the market in the future, for instance, SK Hynix is evaluating India's semiconductor manufacturing incentive scheme and is in touch with the Centre to explore the prospects of setting up a packaging facility in the country. Whereas, China memory market supply has the highest CAGR in the market, as China is attempting to produce DRAM and NAND chips. The Chinese government has made significant investments in the semiconductor industry in recent years. This investment is helping to boost domestic production of memory chips and reduce reliance on imports.

Global Memory Market Dynamics:

Growth Drivers: 5G technology plays a pivotal role in driving growth in the global memory market due to its transformative impact on the way one communicate, connect, and interact with technology. Streaming 4K and eventually 8K video content, augmented reality (AR) and virtual reality (VR) applications, cloud gaming, and high-resolution video conferencing will become more prevalent. These data-heavy tasks will create a surge in demand for memory components. Further, the market is expected to increase due to rising penetration of IOT devices, proliferation of smartphones, increasing use of semiconductor components across various industries, increasing demand for data storage, growing establishment of data centers, rise in gaming & entertainment industry, etc.

Challenges: The market's expansion is projected to be hampered by cyclical demand. The memory market is highly cyclical, with periods of oversupply and price declines followed by periods of high demand and price increases. Managing these cycles poses a significant challenge for manufacturers. Memory products often exhibit seasonal demand patterns. The other challenges that memory market faces include barriers to entry, etc.

Trends: One of the most distinct and pervasive trends observed in the global memory market is growth in high bandwidth memory TAM. HBM is a new type of CPU/GPU memory ("RAM") that vertically stacks memory chips, like floors in a skyscraper. As gamers increasingly expect smaller and more powerful PCs, the elimination of bulky GDDR5 chips in favor of HBM can enable devices with exciting new form factors that pack a punch in a smaller size. More trends in the market are believed to augment the growth of memory market during the forecasted period include, artificial intelligence and machine learning, next-generation memories like MRAM memories, etc.

Impact Analysis of COVID-19 and Way Forward:

The COVID-19 had a significant impact on memory market. The market increased in 2020 due to the increased use of laptops and other devices in work from home, which impacted positively for memory market.

Competitive Landscape and Recent Developments:

Global memory market is concentrated, with two main suppliers in the market, namely Samsung and Micron accounting for more than 50% of the market.

Key players of global memory market are:

Samsung Electronics Co., Ltd.

Micron Technology, Inc.

Infineon Technologies AG

Intel Corporation

Microchip Technology Inc.

Macronix International Co. Ltd.

SK Hynix Inc.

Winbond Electronics Corporation

Nanya Technology Corp

KIOXIA Holdings Corporation

Yangtze Memory Technologies Corp

Integrated Silicon Solution, Inc.

The key players are constantly investing in strategic initiatives, such as new product launches, introducing their products to emerging markets and more, to maintain a competitive edge in this market. For instance, in May 2023, Samsung Electronics announced that it had begun mass production of its new 3-nanometer (nm) DRAM chips. These chips are the first in the world to be manufactured using the 3nm process, and they offer significant performance and power efficiency improvements over previous generations. In April 2023, SK Hynix also announced that it had begun mass production of its new 16-gigabit (Gb) LPDDR5 DRAM chips.

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