

Next Generation Non-Volatile Memory Market Assessment, By Type [Magneto Resistive Random-Access Memory, Ferroelectric Random-Access Memory, Resistive Random-Access Memory, Nano Random-Access Memory, Others], By Wafer Size [200 mm, 300 mm, Others], By Organization Size [Large Enterprises, Small & Medium Enterprises], By End-user [IT & Telecom, Media & Entertainment, Healthcare, Automotive & Transportation, Aerospace & Defense, BFSI, Others], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global next generation non-volatile memory market has experienced significant growth in recent years and is expected to maintain a strong pace of expansion in the coming years. With projected revenue of approximately USD 2.82 billion in 2022, the market is forecasted to reach a value of USD 7.8 billion by 2030, displaying a robust CAGR of 13.6% from 2023 to 2030.

The next generation non-volatile memory market is a highly dynamic and progressive sector that is pivotal in enhancing high-quality graphics and visual computing across diverse industries. There is a notable increase in the global adoption of universal memory. The trend is coupled with the booming electronics sector, as a significant driving force behind the market's expansion.

Additionally, the rising sales of smartphones, tablets, universal serial bus (USB) drives,

solid-state drives (SSD), fueling the demand for NAND flash memory, and a non-volatile storage technology that retains data without requiring energy. Furthermore, high-bandwidth memory (HBM), an advanced memory technology for graphics, is swiftly finding applications in cutting-edge graphics, networking, high-performance computing (HPC), and artificial intelligence (AI) systems. HBM is being utilized in decoders, fully autonomous vehicles, neural network designs, and other sophisticated applications that demand low power consumption and extensive bandwidth. Further, the increasing use of wearable devices, the growing prevalence of connected cars, and substantial expansion in the IT sector are anticipated to contribute positively to the market's outlook in the coming years.

Growing Trend of Cloud Computing and Data Centers Remain Influential

Cloud computing and data centers are pivotal in shaping the non-volatile memory market. In cloud computing, rapid data access and processing are essential. Non-volatile memory technologies, like NAND flash, offer high-speed read/write capabilities, significantly enhancing data retrieval efficiency. Data centers, which store and manage massive datasets, require scalable, energy-efficient, and reliable storage solutions. Non-volatile memory chips, such as SSDs, meet these criteria, ensuring faster data access, reducing latency, and minimizing power consumption.

As cloud services expand, the demand for these memory solutions intensify. Cloud-based platforms utilize non-volatile memory to support real-time applications, big data analytics, and artificial intelligence. Features like reliability and low-latency of non-volatile memory technologies are vital for these advanced computing tasks. Data centers benefit from the flexibility of non-volatile memory, allowing seamless adaptation to changing workloads and dynamic resource allocation. Continuous innovation driven by cloud computing and data centers fuels research and development in non-volatile memory technologies, ensuring that these solutions meet the evolving demands of the digital landscape, making them indispensable components in the cloud and data center infrastructure.

For example, Cloudscene reported that in 2022 there will be 2,701 data centers in the United States. Vantage Data Centers revealed plans for a substantial investment of CAD 900 million (equivalent to USD 721.1 million) to expand its operations in Canada which further influenced the installation of non-volatile memory like SSD, FERAM, MRAM.

Proliferation of Smartphones and IoT Devices

With the increasing adoption of smartphones globally, the demand for high-capacity and energy-efficient storage solutions rises significantly. Non-volatile memory technologies, particularly NAND flash, are essential smartphone components, providing quick access to apps, photos, and videos while consuming minimal power. Additionally, the IoT ecosystem, comprising various connected devices like smart home appliances, wearables, and industrial sensors, heavily relies on non-volatile memory for data storage and retrieval. These devices often operate on low power and require reliable memory solutions to store data persistently. As the number of smartphones and IoT devices continue to soar, the non-volatile memory industry experiences sustained growth, driven by the need for efficient, compact, and dependable storage solutions to support the expanding digital landscape.

For example, in November 2021, Macronix International Co., Ltd. became the first Serial NOR Flash memory manufacturer to commence mass production of 1.2V devices. The company introduced ultra-low power (ULP), high-speed 120MHz MX25S Serial NOR Flash memories, marking a significant advancement in the non-volatile memory market. The cutting-edge devices are designed for new products aimed at applications such as Internet of Things (IoT), wireless communications technologies, WiFi, Narrowband IoT systems, handheld, Bluetooth devices, and consumer applications. The development represents a noteworthy leap in the industry's technology landscape, catering to the demands of emerging technologies and fostering innovation in multiple sectors.

High Designing Cost Due to Lack of Seamless Production and Operation Hinder the Industry

The non-volatile chip memory industry faces a significant challenge in the form of high design costs. These elevated expenses act as a deterrent to the growth and development of the sector. Designing intricate and technologically advanced non-volatile memory chips demands substantial financial resources, which often hampers the industry's progress. Companies invest significant amounts in research, development, and testing to create innovative and efficient memory solutions. These high costs affect the overall affordability and accessibility of non-volatile memory products.

To address the challenge, the industry players aim to streamline the design process, reduce complexities, and optimize production efficiency. Collaborative efforts between manufacturers, researchers, and policymakers can potentially lead to more cost-effective design methods, fostering innovation and sustainability in the non-volatile chip

memory industry.

North America Holds the Largest Share

North America has quickly embraced cutting-edge technologies and infrastructure, with the IT industry playing a pivotal role in the United States. The rapid evolution of technologies and the substantial increase in data across various sectors necessitate more efficient processing systems, fueling the demand for next-generation memory solutions in the region.

North America is transitioning from individual devices and system storage to central cloud and network edge solutions. According to a survey conducted by Intel Security, companies' adoption of hybrid cloud services has tripled compared to previous levels. Cloud providers are enhancing the security of cloud services, providing organizations with more dependable and robust systems, which has been proven highly beneficial.

Government Initiatives to Influence the Market

The Data Center Optimization Initiative (DCOI) launched by the United States government aims to enhance public services and improve taxpayer investment returns. The initiative involves consolidating numerous data centers nationwide, building large-scale facilities, and shutting down underperforming ones. The consolidation efforts are anticipated to open new avenues for the non-volatile memory market, leading to growth.

Impact of COVID-19

The COVID-19 pandemic significantly impacted the global next-generation non-volatile memory market. Initially, there were disruptions in the supply chain due to factory closures and transportation restrictions leading to delays in production and delivery of memory components. Also, the global economic uncertainty caused a slowdown in investments and spending across several industries, affecting the demand for non-volatile memory solutions.

However, as the pandemic accelerated the digital transformation of businesses, and increased the reliance on remote work, online services, and data storage, there was a growing need for high-performance and reliable memory solutions. The shift in demand positively influenced the market. Additionally, the healthcare sector, which faced unprecedented challenges during the pandemic, increased investments in technologies such as AI-driven diagnostics and genomic research, driving the demand for advanced

non-volatile memory in these applications.

Key Players Landscape and Outlook

Global next generation non-volatile memory market is witnessing a swift growth trajectory due to the increasing emphasis placed by companies worldwide on establishing advanced digital infrastructure. Furthermore, the market expansion is greatly facilitated by increasing users in gaming industry, along with significant investments made by companies to enhance research and development resources, engage in collaboration projects, bolster marketing efforts, and expand distribution networks. These factors collectively contribute to the rapid expansion of the market.

In August 2022, Samsung unveiled the commencement of mass production for its 8th generation vertical NAND (V-NAND) chips, designed to enhance storage capacity in upcoming server systems. These chips boast the industry's highest bit density and storage capacity, enabling organizations to significantly increase storage capabilities in the next generation of enterprise servers. These advanced chips are also anticipated to extend their utility in the automotive market.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

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