

Global Emerging Non-Volatile Memory Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The emerging non-volatile memory market is expected to register a CAGR of approximately 22.8% during the forecast period (2023 - 2028). The emerging non-volatile memory market is anticipated to witness significant growth owing to the acceptance of memory devices across a wide range of end-user industries, including consumer electronics, enterprise, industrial, and others.

Key Highlights

The rising demand for fast access and low power consuming memory devices, as well as increasing demand for non-volatile memory in connected and wearable devices, are some of the major factors propelling the market growth. However, high complexity in designing and manufacturing emerging non-volatile memory devices is anticipated to hamper the market growth during the forecast period.

After several years of development, embedded emerging non-volatile memory technologies have gained substantial maturity. Several embedded MRAM-based devices entered volume production in 2021, among which are GreenWave's AI processors with GlobalFoundries' eMRAM (22nm FDSOI) and edge-AI accelerators designed and developed by Numen and Gyr Falcon (22nm ULL at TSMC).

The increasing research activities in this space are driving the market's growth. For instance, in 2021, Samsung announced the improvement of the MTJ function of its MRAM along with advancing its 14 nm process to support its flash-type embedded MRAM designed to increase the write speed and density. In addition, the company targets the IC's emerging non-volatile memory application in wearables, microcontrollers, and IoT devices.

COVID-19 pandemic and its global lockdowns combined impacted the memory market. Laptops and Datacentres demand grew, whereas smartphones and automotive faced a slowdown. The net result has been a comparatively balanced memory demand. As the emerging non-volatile memory business is expanding mostly on the datacentre market with storage class memory (SCM) applications facilitated by 3D XPoint, there has not been a negative impact on the overall emerging non-volatile memory market.

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evolution. Though the pandemic created supply-chain disruptions in the first half of 2020, these were mostly cleared by the beginning of the second half of 2020.

Emerging Non-Volatile Memory Market Trends

Growing Demand for Data Centers

The increasing demand for memory devices, buoyed by the requirement of data centers for memory, is expected to drive the demand for emerging non-volatile memories.

This demand for data centers is driven by the increasing demand for high-performance computing, edge computing, big data, and cloud applications. The rising adoption of machine learning and artificial intelligence bolsters the vendors to opt for faster and higher data capacities. The rapid adoption of remote work, online educational classes, and online medical assistance during the pandemic further complemented the growth.

Furthermore, in response to the new data center construction projects by Google, Amazon Web Service, Facebook, and Microsoft Azure, Intel and AMD introduced new server processors in the last few years. Similar trends are expected to drive the market. The Asia-Pacific data center market is buoyed by the developing economies of China and India. The growth in the Chinese data center market is expected to be bolstered by supportive government initiatives and international investments. The government push for AI in security and intelligence use further strengthens the demand for emerging non-volatile memories.

According to NASSCOM, India is currently supporting 80 third-party data centers. It is witnessing investment from local and international players expected to touch USD 4.6 billion per annum by 2025.

Asia-Pacific to Register a Significant Market Share During the Forecast Period

Asia-Pacific is one of the largest markets for emerging non-volatile memories globally. The region has high demand from almost all end-user applications, primarily led by demand for smartphones in multiple developing countries, such as China, India, Indonesia, etc.

India has a large consumer base for mobile phones; hence the production of mobile handsets is further slated to increase in value from USD 30 million in FY 21 to USD 126 million in FY 26, as stated by Invest in India, the National Investment Promotion and Facilitation Agency of the Government of India.

Further, the development of new infrastructure, including data centers, has been growing in China, driven by an increase in demand for online entertainment, telecommuting, and video and voice call services. With the fast development of the digital economy, building large, big data centers in the country is becoming more notable. This has led to the growth of emerging non-volatile memory usage in such data centers, which helps reduce downtime caused by a power failure or system crash event, thereby providing significant financial value.

The semiconductor fabrication facilities in countries like China, Korea, and Singapore, are highly active. Several multinational memory manufacturers direct an immense amount of capital into the Chinese market, especially boosted by the country's government initiatives, such as Made in China 2025. The country's ambitious goal is to reach a value of USD 305 billion in semiconductor output by the year 2030 and meet about 80% of the domestic demand for semiconductors. This factor is expected to draw more investments into the country over the forecast period.

Moreover, leading regional research institutes and universities are developing various technologies related to emerging non-volatile memory. For instance, in January 2022, an international research team led by Associate Professor Pham Nam Hai of the Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, along with other researchers from the University of California, created spin-orbit torque magnetoresistive RAM (SOT-MRAM) devices that integrate magnetic tunneling

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junctions (MTJs) and topological insulators. A readout through a relatively high tunneling magnetoresistance effect and writing utilizing low current density by a topological insulator was demonstrated.

Thus, owing to the aforementioned factors, the revenue share from Asia-Pacific is anticipated to grow faster than the other geographical regions during the forecast period.

Emerging Non-Volatile Memory Market Competitor Analysis

The Global Emerging Non-Volatile Memory Market is moderately competitive and consists of several major players such as TSMC, Texas Instruments Inc., Intel Corporation, Microchip Technology Inc., Infineon Technologies AG, Fujitsu Ltd., GlobalFoundries Inc., CrossBar Inc., etc. In terms of market share, few major players currently dominate the market. However, with innovations and technological advancements, many companies are increasing their market presence through organic and inorganic growth strategies and tapping new markets. Some of the recent developments in the market are:

March 2022 - Fujitsu Ltd. launched a 12Mbit ReRAM (Resistive Random Access Memory), MB85AS12MT, which is the largest density in Fujitsu's ReRAM product family. This novel product is a non-volatile memory having a large memory density of 12Mbit in a very tiny package size of around 2mm x 3mm. Additionally, it is suitable for wearable devices such as smartwatches and hearing aids.

October 2021 - CrossBar Inc. announced new applications of its Resistive RAM (ReRAM) technology for usage in one-time-programmable (OTP) and few-time programmable (FTP) non-volatile memory (NVM) applications.

Additional Benefits:

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

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