

Next-generation memory: Global markets to 2026

By BCC Publishing Staff

The global next-generation memory market was valued at \$4.5 billion in 2020 and is estimated to grow at a compound annual growth rate (CAGR) of 22.5% to reach \$14.8 billion in 2026.

The nonvolatile memory segment holds the largest market share and is expected to grow at a CAGR of 22.7% to reach \$9.6 billion by 2026. The nonvolatile memory segment includes

- **Magneto-resistive random access memory (MRAM)** uses magnetic charges instead of electric charges to store data. The two types of MRAM are toggle MRAM, which uses a transistor and a magnetic tunnel junction cell to provide simple high-density memory, and spin-transfer torque MRAM, which offers a significant reduction in switching power compared to toggle MRAM.

- **Ferroelectric random access memory (FRAM)** uses ferroelectric film to store data. FRAMs are broadly classified into two types: the first works by detecting a change in the amount of charge stored in a ferroelectric capacitor; the second works by detecting a change in the resistance of a semiconductor due to spontaneous polarization of ferroelectric material.

- **Resistive random access memory (RRAM)** is based on the reversible formation and disruption of a conductive filament in a resistive layer that provides low- and high-resistance states. The physical mechanism by which RRAM devices operate can be divided into two categories: oxide resistive random access memory (OxRRAM) and conductive-bridging random access memory (CBRAM).

- **3D Xpoint** is a resistance-based technology that consists of a simple, stackable, transistor less design in which memory cells meet at the intersection

Table 1. Global markets for next-generation memory, by application, through 2026 (\$ millions)

Application	2020	2021	2022	2024	2026	CAGR % (2021–2026)
Enterprise storage	1,274.7	1,530.1	1,850.3	2,765.6	4,259.3	22.7
Consumer electronics	1,079.9	1,300.7	1,577.6	2,371.5	3,671.5	23.1
Industrial	712.8	855.2	1,033.3	1,542.1	2,371.4	22.6
Automotive and transportation	424.1	508	612.8	911.5	1,397.1	22.4
Telecommunications	308.9	369.1	444.2	657.6	1,003.1	22.1
Military and aerospace	218.7	260.5	312.6	459.9	697.4	21.8
Healthcare	167.1	198.7	238	348.8	526.8	21.5
Others	296.9	349.3	415.2	599.9	892.9	20.06
Total	4,481.8	5,371.5	6,483.9	9,656.8	14,819.5	22.5

of word lines and bit lines, allowing the cells to be addressed individually. Intel and Micron jointly developed this technology and have not disclosed the internal read/write voltages.

- **Nano random access memory**, which is designed and owned by Nantero, blends tiny carbon nanotubes with conventional semiconductors.

The volatile memory segment is anticipated to grow at a CAGR of 22.2% to reach \$5.2 billion by 2026. The need for high bandwidth, low power consumption, and highly scalable memories is increasing the demand for volatile memories such as high-bandwidth memory and hybrid memory cube.

- **High-bandwidth memory (HBM)**, which was jointly developed by AMD and Hynix, is a 3D architecture-based solution to the memory bandwidth problem. HBM technology uses vertically stacked memory chips connected by microscopic cables called through-silicon vias and silicon interposer technology to interconnect stacked dynamic RAM dies.

- **Hybrid memory cube (HMC)** is a high-performance RAM interface for through-silicon vias-based dynamic RAM memories. Co-developed by Samsung Electronics and Micron Technology, HMC consists of a 3D configuration composed of stacked dynamic RAM layers and a single logical control layer to handle all read-write traffic.

The wafer sizes for next-generation memory technologies are segmented into 200 mm, 300 mm, and 450 mm. Currently, 300 mm in diameter is the largest wafer size in full production. A larger wafer diameter allows more amortization of fixed costs, resulting in a lower cost per chip.

North America is estimated to account for the highest share of the global next-generation memory market throughout the forecast period, growing at a CAGR of 22.7% to reach \$5.9 billion by 2026. However, the Asia-Pacific region is expected to be the fastest-growing regional market with a CAGR of 23.1%, with China accounting for most of the demand.

About the author

BCC Publishing Staff provides comprehensive analyses of global market sizing, forecasting, and industry intelligence, covering markets where advances in science and technology are improving the quality, standard, and sustainability of businesses, economies, and lives. Contact the staff at Helia.Jalili@bccresearch.com.

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