

High Bandwidth Memory - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The High Bandwidth Memory Market size is estimated at USD 2.52 billion in 2024, and is expected to reach USD 7.95 billion by 2029, growing at a CAGR of 25.86% during the forecast period (2024-2029).

Major factors driving the growth of the high bandwidth memory (HBM) market include the growing need for high-bandwidth, low power consumption, and highly scalable memories, increasing adoption of artificial intelligence, and a rising trend of miniaturization of electronic devices.

Key Highlights

- High Bandwidth Memory (HBM) is a high-speed computer memory interface for 3D-stacked SDRAM, usually used with high-performance graphics accelerators, network devices, and supercomputers.
- By stacking up to 8 DRAM dies on the circuit and interconnecting them by TSVs, HBM offers a substantially higher bandwidth while using less power in a relatively more minor form factor. Also, with 128-bit channels and a total of 8 channels, the HBM offers a 1024-bit interface; a GPU with four HBM stacks would therefore provide a memory bus with 4096 bits.
- With the growing graphics application, the appetite for fast information delivery (bandwidth) has also increased. Therefore HBM memory performs better than a GDDR5, which was used earlier in terms of performance and power efficiency, resulting in growth opportunities for the high bandwidth memory market.
- Moreover, the major semiconductor vendors are working with reduced capacity owing to the spread of COVID-19 worldwide. Additionally, due to the shortage of laborers, many packages and testing plants in China reduced or even stopped operations. This created a bottleneck for chip companies that rely on such back-end packages and testing capacity.
- However, some factors driving the market's growth include the increasing adoption of artificial intelligence, increasing demand for low power consumption, high bandwidth, highly scalable memories, and a rising trend of miniaturization of electronic devices.

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High Bandwidth Memory (HBM) Market Trends

Automotive and Other Applications Segment is Expected to Grow Significantly

- The applications of high bandwidth memory are spanning in the automotive sector due to the rise of self-driving cars and ADAS integration, among others. The advancement in the automotive industry has driven the adoption of high-performance memory, which supports the growth of high-bandwidth memory.
- HBM has evolved by improving upon conventional DRAM using 2.5D technology, bringing it closer to the CPU while requiring less power to drive a signal and minimizing RC latency. The autonomous driving market is expanding, extensively using data sets to interpret and analyze the environment. To prevent mishaps and impending catastrophes, data processing is carried out at a very rapid pace. The demand for quick and potent GPUs has increased the demand for high-bandwidth memory to be included in the systems.
- Advanced driver-assistance technologies have become quite popular in the car industry alongside autonomous driving. Earlier ADAS designs use memory chips like DDR4 and LPDDR4 since they were readily available at the time. However, the automobile industry's transition from cost-effectiveness to better performance parameters pushes ADAS makers to incorporate HBM technology into their design architecture.
- The rapid advancement of technology in automobiles and increasing usage of edge technologies in cars will boost the sales of High Bandwidth Memory and DDRAM in the sector.

North America to Hold the Largest Share in the Market

- The high adoption of HBM memories in North America is primarily due to the growth in high-performance computing (HPC) applications that require high-bandwidth memory solutions for fast data processing. HPC demand in North America is growing due to the increasing market for AI, machine learning, and cloud computing.
- The rapidly changing technologies and high data generation across industries create a need for more efficient processing systems. These are also some of the factors driving the demand for the high bandwidth memory market in the region.
- Additionally, the US government has started the Data Center Optimization Initiative (DCOI) to deliver better services to the public while increasing return on investment to taxpayers by consolidating many data centers in the country. The consolidation process includes the process of building hyper-scale data centers and shut-off the underperforming ones. According to Cloudscene, the country has around 2,701 data centers in the United States as of January 2022.
- Moreover, memory manufacturing companies in North America seek production expansions opportunities. For instance, Intel announced the launch of the next generation Sapphire Rapids (SPR) Xeon Scalable processor with high-bandwidth memory (HBM). DDR5, supported by Sapphire Rapids, is expected to replace DDR4, the current trend in server memory, with high-bandwidth memory (HBM) support that significantly expands the memory bandwidth available to the CPU.

High Bandwidth Memory (HBM) Industry Overview

The high bandwidth memory market is highly fragmented as the market is highly competitive and consists of several major players. This industry's competitive rivalry primarily depends on sustainable competitive advantage through innovation, market penetration, and competitive strategy power. Since the market is capital-intensive, the barriers to exit are also high. Some of the key players in the market are Intel Corporation, Toshiba Corporation, Fujitsu Ltd, etc. Some of the key recent developments in the

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market are -

- February 2022 - Advanced Micro Devices Inc. announced the acquisition of Xilinx. The company expects the purchase to boost non-GAAP margins, non-GAAP EPS, and free cash flow generation in the first year. Furthermore, AMD claims that the Xilinx acquisition brings together a highly complementary collection of products, customers, and markets, as well as differentiated IP and world-class personnel, to build the industry's high-performance and adaptive computing organization.
- November 2022 - Two cutting-edge solutions for high-performance computing (HPC) and artificial intelligence (AI) have been released by Intel Corporation as part of the Intel Max Series product family: the Intel Xeon CPU Max Series (code-named Sapphire Rapids HBM) and the Intel Data Centre GPU Max Series (code-named Ponte Vecchio). The new items will power the forthcoming Aurora supercomputer at Argonne National Laboratory.

Additional Benefits:

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

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