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OVERVIEW OF THE GLOBAL SEMICONDUCTOR INDUSTRY

Key Growth Drivers of the Semiconductor Market in the AI Era

Leveraging advanced algorithms and training on big data, AI enables machine systems to simulate, extend, and expand human cognitive and decision-making abilities across multiple dimensions. From a data perspective, the total amount of data generated globally in 2025 has approached 200ZB. This massive volume of data directly drives the semiconductor market, including memory products, towards rapid growth.

Storage power, computing power, and interconnect power are the core infrastructure of AI, and the three are interdependent. Storage power is the foundation, undertaking the storage, management, and scheduling of the massive data required for AI training, directly determining the efficiency and reliability of data supply. The exertion of computing power relies on storage power; insufficient storage power or inefficient scheduling can lead to idle computing power, failing to fully unleash computational potential. Interconnect power ensures efficient data transfer between storage and computing power. The synergy of these three is essential to support AI operations. As the core infrastructure for AI data storage and supply, the performance of storage power directly constrains AI training efficiency and implementation effectiveness. Currently, the massive data demand brought by AI has directly driven the rapid growth of the memory product market.

Edge AI:

Edge AI refers to running AI functions locally on end devices (such as smartphones, PCs and vehicles) using on device computing capabilities, rather than relying primarily on remote cloud servers.

Consumer-Grade — Consumer-grade AI products have expanded the scope of AI applications, enabling traditional terminal devices to move towards intelligence transformation. It is a key direction for the implementation of AI technology. With the popularization of consumer-grade products such as AI phones and AI PCs, requirements for memory product capacity, read/write speeds, etc., are increasing, promoting their iteration.

Automotive-Grade — The vehicles are accelerating their evolution towards electrification, intelligence, and connectivity. With the deep integration of features such as intelligent driving and intelligent cockpits, the complexity of electronic systems in smart vehicles has significantly increased compared to that of traditional vehicles. The advancement of vehicle "electrification, intelligence, and connectivity" features makes application scenarios in the automotive field more complex. The increase

in functional modules leads to a surge in data volume, driving the expansion of memory product capacity and performance enhancement, leading to overall growth in memory product demand in the automotive-grade application scenarios.

Cloud AI:

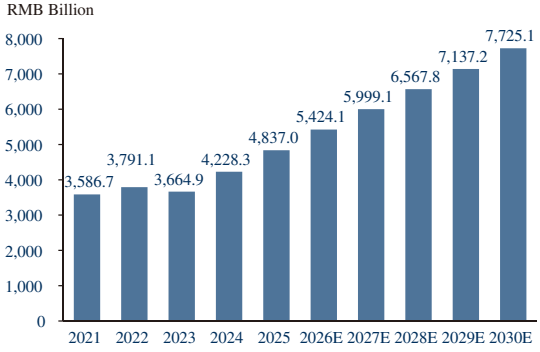
Enterprise-Grade — Targeting the enterprise-grade application scenarios, it is necessary to rely on large-scale data centers and cloud servers to provide stable and efficient infrastructure support for enterprise digitalization needs, AI business deployment, and massive data processing. With the increase in AI model parameters and training data volume, memory products requiring ultra-large capacity, high read/write speeds, strong stability, and error correction mechanisms, along with optimized power consumption, are needed. Their development multi-dimensionally drives memory product upgrades, aiding the advancement of the AI industry.

Overview of The Global Semiconductor Market Size

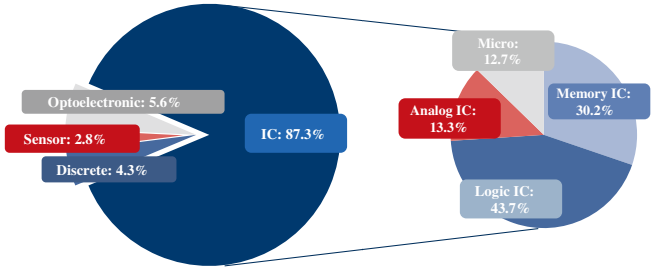
Driven by the rapid development of key fields such as consumer electronics, automotive electronics, and corporate digitalization, the global semiconductor market achieved significant growth during the period from 2021 to 2025. The market size increased from RMB3.5 trillion in 2021 to RMB4.8 trillion in 2025, with a compound annual growth rate (CAGR) of 7.8%. From 2026 to 2030, the CAGR is expected to reach 9.2%, with the market size reaching RMB7.7 trillion in 2030.

Semiconductor products include integrated circuit products which account for 87.3%, of which memory chips account for 30.2%. This indicates that memory chips occupy an important position in the global semiconductor market, and are the core infrastructure for various electronic devices to achieve data preservation and retrieval, playing a crucial role in the stable operation of electronic systems.

Global Semiconductor Market Size, by Revenue, 2021–2030



Global Semiconductor Market Structure, Breakdown by Product Type, 2025



Source: Frost & Sullivan

Core Value of Memory Products

Within the semiconductor industry chain, memory products occupy a core position, serving as the key carrier for data storage and processing and playing a vital role. They can store various types of data such as text, images, video, and audio in binary form. When data is called upon, they enable fast and accurate reading and transmission, laying a solid foundation for the stable operation of the digital world.

Memory products demonstrate key value in multiple downstream fields. In the consumer-grade application scenarios, embedded storage products such as eMMC and UFS ensure fast device loading by providing sufficient data storage space, and they enhance the user experience. Furthermore, highly

integrated memory products like ePOP are important prerequisites for meeting the storage needs of space-constrained devices such as smart watches and AI glasses. In the automotive-grade application scenarios, automotive-grade embedded storage products, with high reliability and stability, ensure data security in harsh environments, safeguarding driving safety, while effectively supporting data storage and fast retrieval for in-vehicle entertainment and intelligent driving systems. For the enterprise-grade application scenarios, memory products, relying on characteristics of high capacity, high bandwidth, and low latency, meet enterprises' needs for large-scale data storage and fast access, playing a key supporting role in the operation of businesses such as cloud computing and big data analytics.

The rapid development of AI technology imposes higher requirements on the capacity, performance, and reliability of memory products. This makes memory products not only key basic components supporting downstream technology iteration but also one of the core forces driving growth in the semiconductor market.

Analysis of the Core Value of the Controller Chips in Memory Products under the AI Process

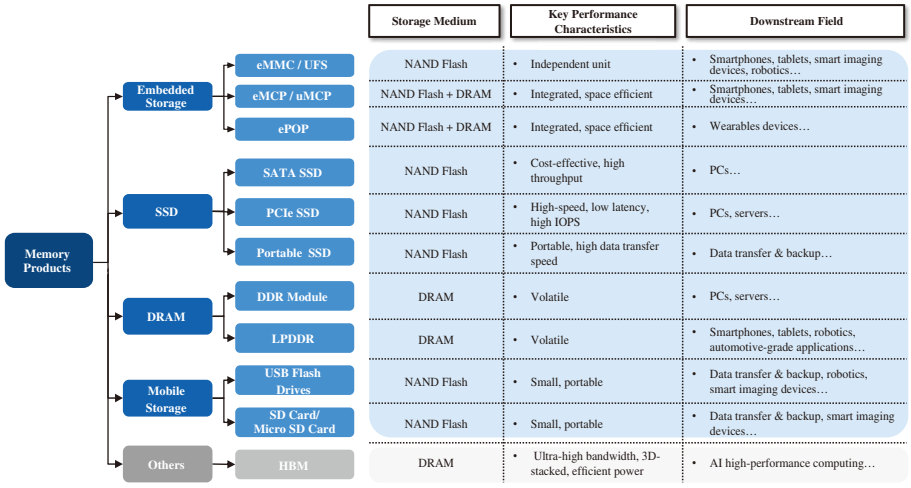
In AI scenarios, memory products need to meet clear performance requirements such as high throughput and low latency. The controller chip, as the core control unit, is the key supporting carrier to achieve these requirements. By continuously optimizing internal algorithms, the controller chip can more intelligently schedule data read/write operations within the memory product, enabling data transmission along the optimal path, avoiding congestion and delays, thereby improving overall throughput. It can be said that the controller chip acts like the control center of the memory product. Through its own optimization and upgrades, it helps memory products better meet high-demand data storage and fast response requirements in AI scenarios, becoming a key link in ensuring the smooth operation of AI applications.

INDUSTRY ANALYSIS OF MEMORY PRODUCTS

Definition and Classification of Memory Products

Memory products are hardware components used to achieve data storage for temporary or permanent access. They can be systematically classified based on the types of wafers, performance characteristics, and application scenarios, covering various forms such as embedded storage, SSDs, DRAM, mobile storage.

Definition and Classification of Memory Products



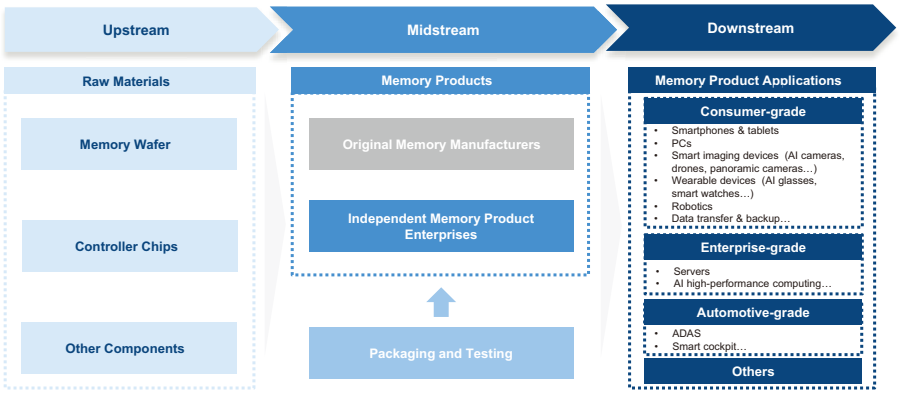
Storage Medium	Key Performance Characteristics	Downstream Field
NAND Flash	• Independent unit	• Smartphones, tablets, smart imaging devices, robotics…
NAND Flash + DRAM	• Integrated, space efficient	• Smartphones, tablets, smart imaging devices…
NAND Flash + DRAM	• Integrated, space efficient	• Wearables devices…
NAND Flash	• Cost-effective, high throughput	• PCs…
NAND Flash	• High-speed, low latency, high IOPS	• PCs, servers…
NAND Flash	• Portable, high data transfer speed	• Data transfer & backup…
DRAM	• Volatile	• PCs, servers…
DRAM	• Volatile	• Smartphones, tablets, robotics, automotive-grade applications…
NAND Flash	• Small, portable	• Data transfer & backup, robotics, smart imaging devices…
NAND Flash	• Small, portable	• Data transfer & backup, smart imaging devices…
DRAM	• Ultra-high bandwidth, 3D-stacked, efficient power	• AI high-performance computing…

Source: Frost & Sullivan, compiled from publicly available information

Memory Product Industry Chain Analysis

The memory product industry chain can be divided into three main segments: upstream wafer and controller chip design and manufacturing, midstream memory product enterprises, and downstream terminal applications. Among these, the midstream segment plays a key value-creating role as the core hub of the industrial chain, connecting upstream and downstream.

Industrial Chain of Memory Product



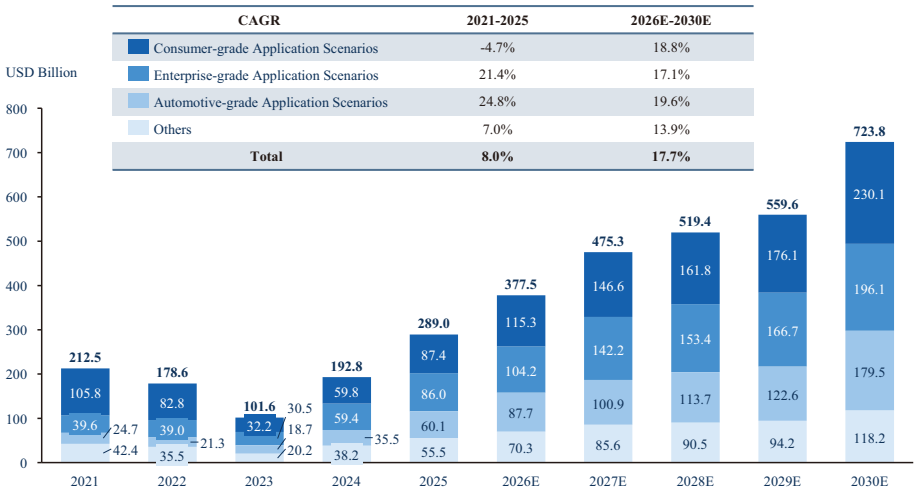
Source: Frost & Sullivan

Market Size of Memory Products

The global memory product market has shown a long-term growth trend, underpinned by a solid demand foundation. In 2021, the global market size of memory products was USD212.5 billion. Benefiting from the extensive demand for memory products across various sectors within the digital economy, the market size continued to expand, despite fluctuations and a pullback in individual years, and reached USD289.0 billion in 2025, with a CAGR of 8.0% during the period, demonstrating the resilient development of the memory product market.

Looking ahead, the semiconductor industry is entering a strong upward cycle driven by both AI-driven demand changes and supply structure optimization. This trend is not a short-term fluctuation but a long-term resonance formed by technological iteration, application upgrades, and industry chain restructuring. As a core segment of the semiconductor industry, the global memory chip industry gradually evolved into an potential AI-driven super cycle in 2025. This strong upward trend is clear and is expected to break the traditional 3-4 year cycle pattern. In the second half of 2025, pricing performance was robust, with both DRAM and NAND Flash showing an upward trend, and monthly increases exceeding 30% for certain DRAM products. Overall industry profit expectations continued to improve. On the demand side, AI-driven demand for high-performance memory products was particularly strong. On the supply side, structural tightness continued to intensify. Leading industry players were concentrating resources on high-value products and compressing traditional capacity products, leading to a shortage of traditional capacity products. Meanwhile, the expansion of advanced capacity lagged far behind demand growth, with overall capacity utilization rates expected to approach full capacity. Benefiting from the upward momentum of the semiconductor industry upward trend, the global memory product industry's market size is expected to increase continuously from USD377.5 billion in 2026 to USD723.8 billion in 2030, with an expected CAGR of 17.7% during the period.

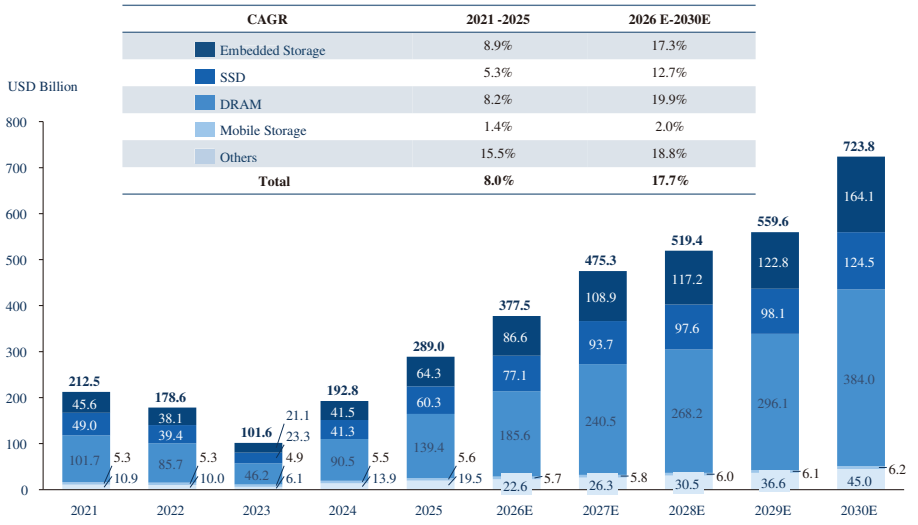
Market Size of Memory Product Market (by Application Scenarios), Global, 2021–2030E



Source: Frost & Sullivan

Analyzed by downstream application, consumer-grade application scenarios account for the largest share of the global memory product market. With the expected recovery of consumer electronics demand and the continued development of edge AI applications, consumer-grade application scenarios are expected to maintain strong growth momentum and remain the largest downstream application segment. In addition, automotive-grade and enterprise-grade application scenarios are also expected to grow rapidly, supported by increasing demand from vehicle intelligence, data centres and AI computing.

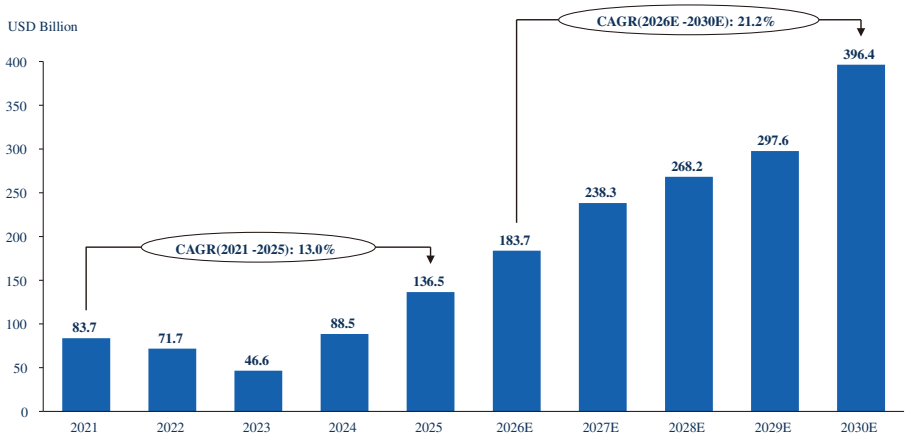
Market Size of Memory Product Market (by Product Types), Global, 2021–2030E



Source: Frost & Sullivan

Analyzed by product type, different memory products show differentiated growth trends, collectively propelling the expansion of the global memory product market. Among them, embedded storage recorded a CAGR of 8.9% from 2021 to 2025; while its market size experienced temporary fluctuations over the period, it achieved net expansion from 2021 to 2025. With the release of demand for highly integrated storage from intelligent vehicles and industrial IoT terminals, its CAGR is expected to increase to 17.3% from 2026 to 2030.

Market Size of Memory Product Market, China, 2021-2030E



Source : Frost & Sullivan

Chinese Mainland has emerged as a pivotal market for global memory products, driven by robust demand from downstream sectors and accelerated digital transformation. From 2021 to 2025, the market size witnessed resilient growth with a CAGR of 13.0%, expanding from USD83.7 billion in 2021 to USD136.5 billion in 2025. Looking ahead, the market is poised for accelerated expansion, with an expected CAGR of 21.2% from 2026 to 2030.

Analysis of Downstream Applications of Memory Products

Overview of Global Shipments of Downstream Products for Memory Products

Overview of Global Shipments of Downstream Products for Memory Products

		Unit	2021	2025	2026E	2030E	CAGR(26E-30E)
Consumer-grade Application Scenarios	Smartphone	Million	1,388.4	1,263.7	1,292.1	1,508.7	4.0%
	AI phone	Million	18.0	266.5	354.2	1,181.2	35.1%
	PC	Million	345.5	283.0	302.4	371.7	5.3%
	AI PC	Million	4.1	93.4	140.9	280.3	18.8%
	Smart camera	Million	143.2	223.1	240.7	302.1	5.8%
	AI camera	Million	20.7	65.0	78.5	155.3	18.6%
	Consumer drone	Million	6.1	9.9	11.3	17.2	10.9%
	Wearable device	Million	465.0	560.3	577.7	648.9	2.9%
	AI glasses	Million	0.1	5.7	11.4	68.8	56.7%
	smartwatch	Million	58.8	186.8	231.1	538.2	23.5%
Enterprise-grade Application Scenarios	Server	Million	15.0	16.3	16.8	19.5	3.8%
	AI server	Million	0.7	2.5	3.1	6.5	20.9%
Automotive-grade Application Scenarios	vehicle	Million	81.4	90.9	92.3	97.0	1.3%
	Smart vehicle(L2 and above)	Million	2.6	13.9	18.1	41.6	23.1%

Driving Factors and Development Trends of the Memory Product Market

- *Accelerated Digital Transformation and Explosive Data Growth Driving Storage Demand*

Deepening digital transformation across industries, coupled with widespread adoption of cloud computing, big data and IoT, has led to explosive global data growth. Data from consumer and enterprise scenarios drives strong demand for higher storage capacity, performance and reliability, forming the fundamental driver of the memory market growth.

- *Expansion of Emerging Application Scenarios to Generate Diversified Storage Demand*

Emerging scenarios including AI, intelligent driving and the metaverse have created segmented storage demands. AI requires high-bandwidth, low-latency memory for massive data access; intelligent driving relies on automotive-grade storage for reliability and real-time performance; the metaverse needs large-capacity, high-speed random-access memory. These trends drive customized product development and expand the growth boundary of the memory market.

- *Technological Innovation and Iteration Breaking Performance and Capacity Bottlenecks*

Storage technology innovation fuels market growth. 3D NAND stacking boosts storage density, controller algorithm and architecture upgrades improve read-write efficiency, and high-speed interfaces such as PCIe and UFS reduce latency. These breakthroughs meet high-performance demands, lower costs via mature processes, and unlock broader market potential.

- *Policy-Driven Market Upgrade via Data Security and Green Development*

Global policies on data security and low-carbon development are upgrading the memory market. On the data security front, encryption, secure firmware and trusted execution environments are adopted to protect data in finance, government and other high-security fields. On the green side, low-power chips and energy-saving architectures are gaining traction under carbon neutrality goals, becoming a key evolution direction for memory products.

Analysis of the Controller Chip Sector in the Memory Product Industry

Definition and classification of controller chips in the memory product industry

The controller chip is the core logic unit of a memory product, and is regarded as the brain of the entire system. It is primarily responsible for coordinating data interaction between the host and the storage medium, realizing read/write scheduling, storage unit management and protocol conversion, and enabling the storage medium to be utilized by operating systems and applications in a standardized form. Within memory products, the controller chip is typically paired with NAND Flash. Controller chip has compensated for the physical constraints (such as requiring erasure before programming, limited lifetime and an increasing error rate) of NAND Flash through mechanisms such as logical mapping, wear leveling and error management, enabling it to stably support diverse application scenarios. From the perspective of product forms and application scenarios, the controller chip mainly includes three categories: Embedded Storage Controller Chips (such as eMMC/UFS), SSD Controller Chips (such as SATA/PCIe), and Mobile Storage Controller Chips (such as USB flash drives/SD Cards).

Technological evolution of controller chips in the memory product industry and adaptive upgrade of memory products

- **Regarding interface upgrades:** controller chips enhance data transfer bandwidth to support AI and high-performance computing, as reflected in the shift from eMMC to UFS for embedded storage and from SATA SSDs to high-speed PCIe SSDs, with PCIe iterations raising stricter requirements for controller design.

- **At the level of algorithm and architecture optimization:** the reliability and operational efficiency of controller chips in data processing have also been improved significantly. To address the inherent physical bottlenecks of the storage medium, such as endurance and error rates, controller chips commonly incorporate a DSP (Digital Signal Processor) and adopt advanced error correction algorithms such as LDPC (Low-Density Parity-Check) code, compensating for the physical limitations of the storage medium through a combination of hardware and firmware.

- **At the level of process and density breakthroughs:** process optimization is the core path for controller chips to achieve a balance of performance, power consumption, area and cost. The industry exhibits an evolution trend from intensive refinement of mature processes to active adoption of advanced processes, with process nodes continuously advancing toward refinement. Advanced process evolution improves performance, integration and cost efficiency, while density upgrades unlock storage medium potential to meet the needs of large-scale, low-cost and high-reliability data storage.

COMPETITIVE ANALYSIS OF THE GLOBAL MEMORY PRODUCT MARKET

Overview of the Global Memory Product Market Competitive Landscape

Currently, the global memory product industry landscape exhibits distinct characteristics. Original Memory Manufacturers dominate the mainstream market, accounting for over 95% of the market share, and forming a strong dominant position. Meanwhile, domestic independent memory product enterprises are accelerating their breakthroughs. Although their current share base remains small, their growth momentum is robust, and their market share is rapidly increasing, as the market share of domestic independent memory product enterprises increased from less than 1.5% in 2021 to over 3% in 2025. From the perspective of the market competitive landscape, it presents a stratified state. Original Memory Manufacturers continue to account for a relatively large share of the global market, while independent memory product enterprises are gradually expanding their market presence. Within the entire global memory product market, the Company holds a market share of approximately 0.6% in 2025. Following the path of differentiated innovation, domestic enterprises are intensifying breakthroughs in consumer-grade storage and industry customization fields, focusing on narrowing the gap in storage architecture and cost-control technologies, while leveraging unique advantages of the domestic industrial chain to meticulously develop solutions tailored to domestic demands. For example, the top two domestic independent memory product enterprises recorded aggregate revenue from overall consumer-grade storage increased from US$1.8 billion in 2023 to US$3.6 billion in 2025, representing a growth rate exceeding 100%. Their future market development space is considerable.

Independent memory product enterprises, while holding a relatively small share, engage in both competition and cooperation with original manufacturers: From the competitive dimension, the two parties compete in downstream segmented markets, where independent memory product enterprises compete by virtue of faster response to customized demands and more flexible cost structures, while original manufacturers leverage their vertical integration capabilities (encompassing wafer fabrication, advanced process R&D, and full-industry-chain production) and economies of scale to dominate high-end and large-volume market segments. From the cooperative dimension, Original Memory Manufacturers leverage independent enterprises' expertise in module integration, packaging testing and other scenario-specific adaptation to expand coverage of cost-sensitive, customized markets. Independent enterprises excel at flexibly integrating memory wafers into modules of diversified specifications and capacities, providing efficient and tailored packaging and testing solutions for small-batch and customized orders, and precisely optimizing products to meet differentiated technical requirements of downstream terminals.

Global Memory Product Market Ranking

In the global memory product market for 2025, independent memory product enterprises competed around technological innovation and market share. From a revenue dimension, the Company ranked fifth globally with a revenue of US$1.6 billion, also being the largest unlisted independent memory product enterprise in China. The Company also ranked twelfth globally in the entire memory product market, with leading players primarily comprising Original Memory Manufacturers.

Global Independent Memory Product Enterprise Ranking for Memory Products (by Revenue), 2025

Ranking	Company	Revenue in 2025
		(USD Billion)
1	Company A	10.6
2	Company B	3.2
3	Company C	1.9
4	Company D	1.7
5	The Company	1.6

1) Company A was founded in the United States in 1987, and is an unlisted company. Company A is an independent memory product enterprise focusing on the R&D, manufacturing and supply chain management service of memory solutions. Its product portfolio covers DRAM modules, SSDs, USB flash drives, memory cards and customized memory solutions, serving global customers across consumer electronics, enterprise data centers, industrial control and automotive-grade application scenarios.

2) Company B was founded in Shenzhen, Guangdong in 1999, and is a listed company on the Shenzhen Stock Exchange. Company B is an enterprise specializing in the design and R&D in relation to semiconductor memory products, providing packaging & testing, sales and multi-scenario memory application solutions. It focuses on embedded storage (eMMC/UFS), SSDs, mobile storage and industrial-grade memory products, with solutions covering consumer electronics, smart vehicles, IoT and enterprise storage. It recorded total revenue of USD3.2 billion in 2025.

3) Company C was founded in Taiwan, China in 2000, and is a listed company on the Taipei Exchange. Company C is a provider of NAND Flash control chips and memory solutions, with products covering consumer, automotive and other application scenarios. Its core businesses include NAND Flash controller chips, SSDs, embedded storage and industrial storage solutions, with deep technical accumulation in controller chip design and firmware development. It generated total revenue of USD2.3 billion in 2025, including revenue from controller chips, integrated circuits and other products in addition to memory products.

4) Company D was founded in Taiwan, China in 2001, and is a listed company on the Taipei Exchange. Company D is a full-memory solution supplier focused on the R&D and sales of memory, SSDs and other products. It offers a comprehensive product line including DRAM modules, consumer/enterprise-grade SSDs, mobile storage and external storage devices, catering to consumer, gaming, enterprise and data center markets. It achieved total revenue of USD1.7 billion in 2025.

Cyclical Nature of the Memory Product Industry

The memory product industry exhibits distinct cyclicality tightly tethered to the broader global semiconductor cycle. This alignment stems from the foundational role of core wafers: core wafer pricing — and thus the memory product market's dynamics — are fundamentally driven by three interconnected factors: supply-demand fundamentals, production capacity dynamics, and technology iteration. These elements shape core wafer availability and costs, which directly influence memory product production, pricing, and demand, binding the memory sector's trajectory to the semiconductor industry's broader fluctuations. In addition, public health-related issues may further amplify such cyclical fluctuations by temporarily affecting upstream production, logistics and capacity utilization, while also reshaping downstream demand patterns across consumer electronics, smartphones, data centres and other end markets.

During 2020-2022, the memory product market entered an upcycle mainly driven by strong demand and constrained supply amid public health issues. Robust global semiconductor demand, supported by increased demand for remote working, online learning, cloud services and digital infrastructure, together with constrained production capacity caused by disruptions to upstream production, logistics and capacity utilization, lifted core wafer prices and memory product prices, prompting industry-wide capacity expansion.

During 2022-2023, the market entered a cyclical downturn as demand moderated and previously added capacity was gradually released. As public health-related conditions normalized, demand in certain end markets that had benefited from the previous upcycle began to moderate. In particular, demand in key downstream segments, notably consumer electronics and smartphones, weakened due to

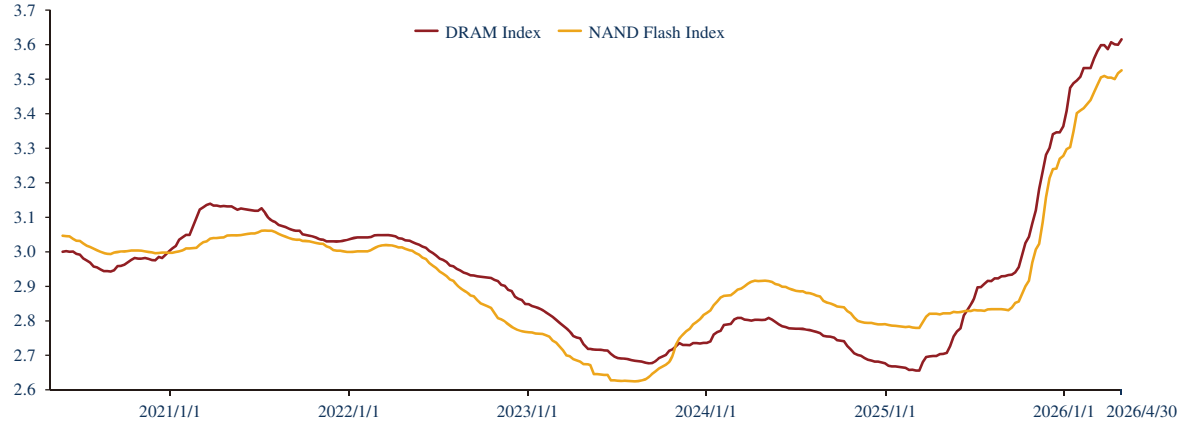
slower replacement cycles, softer end-consumer demand and inventory digestion by downstream customers. Meanwhile, the production capacity added during the previous upcycle was gradually released, resulting in underutilized capacity and a looser supply-demand balance. This imbalance depressed core wafer prices and, in turn, weighed on memory product pricing, while downstream customers became more cautious in procurement and continued to reduce inventories.

Entering 2024 and 2025, the memory product market shifted from an inventory-driven recovery to a technology-driven structural upcycle. On the demand side, the rapid development of AI servers, AI PCs, AI phones, smart vehicles and other intelligent terminals increased the memory content per device and raised requirements for capacity, bandwidth, latency, power consumption and reliability. On the technology side, iterations such as HBM, DDR5, LPDDR, PCIe SSDs and UFS redirected market demand toward high-performance and higher-value memory products. On the supply side, leading Original Memory Manufacturers allocated more wafer and packaging resources to HBM, DDR5 and other high-end products, while reducing or delaying capacity allocation for certain mature DRAM and NAND Flash products. Such reallocation of production capacity, together with the recovery of traditional end-market demand, tightened supply-demand fundamentals and supported the strong upward trend.

Analysis of DRAM and NAND Flash Price Indexes in the Memory Product Market

In 2021, driven by global supply chain constraints and robust demand from the remote work sector, the price indexes for DRAM and NAND Flash exhibited an overall upward trend and fluctuated at elevated levels. In 2022, impacted by weakening demand in terminal consumer electronics and the industry's entry into an inventory destocking cycle, the prices of the two core wafers shifted into a sharp downward trajectory with significant annual declines. Since 2023, the price indexes of DRAM and NAND Flash in the memory product market have exhibited distinct phased fluctuation characteristics. From 2023 to mid-2025, both indexes fluctuated within a relatively low range for an extended period. This was due to the earlier capacity expansion by memory product enterprises combined with high inventory levels in consumer-grade products, resulting in loose supply and demand within the industry, and a lack of demand growth momentum. In 2023, the overall trend was first fall and then rise. In the first three quarters, it continued to bottom out due to the imbalance between supply and demand, and bottomed out and stabilized at the end of the third quarter; Entering the fourth quarter, the prices of the two started to rebound strongly, with NAND Flash rising ahead of DRAM, and the market heating up rapidly. Entering the mid-to-late period of 2025, however, the price indexes for both types of memory products experienced a significant surge. The core driver was the large-scale deployment of AI applications, which spurred demand for "computing-with-storage". The memory requirement per AI server is several times that of a regular server. This drove leading Original Memory Manufacturers to shift their production capacity toward high-margin, high-end products like HBM and DDR5, leading to a rapid contraction in the capacity dedicated to traditional memory products. Meanwhile, existing servers and consumer electronics still rely on mature products like DDR4. This supply-demand mismatch directly pushed up prices. Among them, the DRAM index rose more significantly. This is because demand for high-bandwidth DRAM (such as HBM) in AI scenarios is more inelastic, and its production capacity was locked in early. Among them, the DRAM index increased more significantly, mainly driven by robust AI-related demand for high-bandwidth DRAM, such as HBM and high-end DDR5, as well as the continued allocation of production capacity toward AI/server-oriented products, which further tightened the supply of conventional DRAM. Meanwhile, the NAND Flash index also rose rapidly, supported by demand from AI servers, enterprise SSDs and storage applications. However, as the recovery of consumer electronics demand was relatively moderate and the overall supply-demand tightness was less pronounced than that of DRAM, NAND Flash recorded a slightly smaller increase.

DRAM and NAND Flash Price Indexes



Source: CFM, Frost & Sullivan

Analysis of Entry Barriers in the Memory Product Market

- ***Technological Barriers***

The memory market features high barriers in core R&D and system integration. As the core component, controller chips demand complex algorithm integration and deep product adaptation, while manufacturing relies on precise process control for varied scenario performance. Hardware-software co-design and architecture optimization require long-term know-how accumulation, making it hard for new entrants to build sufficient technology reserves quickly.

- ***Supply Chain Barriers***

The industry supply chain is highly concentrated and complex to coordinate. Upstream memory wafers are controlled by a handful of original manufacturers, leaving new entrants struggling for stable supply. Midstream development needs close coordination of controllers, firmware and particles, while downstream assembly/testing depends on specialized equipment and quality systems. Building a complete supply chain requires long-term resource and partnership accumulation.

- ***Customer Retention Barriers***

High switching costs deter customers from changing suppliers, as new products demand full testing, delay launches and carry quality risks. Customers prefer long-term stable cooperation, and mature suppliers' brand trust and reliable supply further strengthen customer stickiness amid market volatility.

- ***Policy and Regulatory Barriers***

Multilateral compliance requirements form policy barriers, including mandatory certifications for information security and local adaptation in major markets. International tech export controls also restrict access to advanced equipment and technologies. New entrants face complex policy constraints and compliance cost pressures.

FROST & SULLIVAN REPORT

We engaged Frost & Sullivan to conduct market research on the semiconductor industry and to prepare the Frost & Sullivan Report. Frost & Sullivan is an independent global consultancy established in New York in 1961, providing industry research and market strategy services. We have contracted to

pay Frost & Sullivan RMB550,000 for the preparation of the Frost & Sullivan Report. In preparing the Frost & Sullivan Report, Frost & Sullivan conducted detailed primary research, including discussions with several leading industry participants and interviews with relevant parties. Frost & Sullivan also conducted secondary research, which included reviewing company reports, independent research reports, and data from its own research database. Frost & Sullivan compared historical data analysis with macroeconomic data and, considering the primary drivers of the aforementioned industry, derived figures estimating the total market size. Its market engineering forecasting approach combines various forecasting techniques with a system based on market engineering metrics, relying on the expertise of the analyst team to integrate key market elements investigated during the project research phase. These elements mainly include expert opinion forecasting methods, integration of market drivers and constraints, integration of market challenges, integration of market engineering metric trends, and consolidation of economic variables.

The Frost & Sullivan Report was prepared based on the following assumptions: (i) the social, economic, and political environments globally and in China are likely to remain stable during the forecast period; and (ii) the primary drivers of the relevant industry may propel the market during the forecast period.