KGI

INDUSTRY REPORT

Taiwan

Memory sector

Ignore market noise & focus on supply-demand fundamentals

Key message

1. Adoption of 8Hi in Rubin Ultra is driven by tight supply of HBM rather than cost cuts.
2. We have highlighted our base case scenario for HBM supply and key variables, and note that uncertainty remains in supply capacity allocation.
3. Capacity cannibalization by HBM to worsen, and there is no risk of DRAM and NAND oversupply in 2028F.

Event

We have analyzed recent market concerns about potential HBM spec downgrades.

Impact

Adoption of 8Hi in Rubin Ultra is driven by tight supply of HBM rather than cost cuts. According to our supply chain checks, the Rubin Ultra platform, which is expected to enter mass production in 2027, will initially adopt HBM4e/HBM4 8Hi configurations. Based on our semiconductor research team estimates for 2027-28 GPU and ASIC shipments, we predict respective HBM demand of approximately 196mn and 238mn units (Figure 2). On the supply side, assuming all HBM4e/HBM4 products adopt 12Hi configurations, we forecast total HBM output of only 152mn and 218mn units in 2027-28, respectively (Figure 3), which would be insufficient to support projected logic chip shipments. As a result, we believe the adoption of 8Hi configurations for certain products is reasonable in the face of HBM supply constraints. Conversely, if HBM supply tightness eases, products could gradually migrate from 8Hi to 12Hi configurations. We believe the 4Hi option is more likely a negotiating tool rather than an actual production specification. While adopting a 4Hi configuration in Rubin Ultra could improve HBM bandwidth, memory capacity would be substantially reduced compared to the standard Rubin platform, which in turn would diminish client incentives to upgrade from Rubin to Rubin Ultra. Therefore, such a configuration does not seem feasible from the perspective of product iteration.

Our base-case scenario & key variables for HBM supply; uncertainty remains in supply capacity allocation. Our base-case assumptions for 2026-28 HBM supply and pricing are as follows: (1) industry wafer starts of 414k, 579k, and 745kwpm; (2) bit shipments of 37.5bn, 52.5bn, and 86.0bn Gb; and (3) average pricing for HBM3e/HBM4 to rise significantly from US$1.5 and US$2.2 per Gb in 2026F to US$3.00 and US$4.16 per Gb in 2027F. In addition, HBM4e is expected to command a 20% premium over HBM4 (Figure 8), while HBM pricing for ASIC clients is expected to remain above that for Nvidia (US). Key variables that could lead us to revise these base-case assumptions include a substantial downward revision in GPU and ASIC shipment forecasts, stronger-than-expected growth in agentic AI demand, which could drive higher CPU demand and further exacerbate DDR5 shortages, prompting memory makers to allocate more capacity to DDR5 at the expense of HBM supply, and shortages of other critical components, such as substrates and CPUs, which could result in a component mismatch and constrain actual AI server shipments.

Capacity cannibalization by HBM to worsen; no risk of DRAM & NAND oversupply in 2028F. Based on the aforementioned assumptions, we estimate the weighting of HBM in total DRAM wafer starts will rise from 19% in 2026 to a respective 24% and 28% in 2027-28, implying continued cannibalization of conventional DRAM capacity by HBM moving forward. Although most greenfield capacity additions are expected to come on line in 2028, conventional DRAM wafer starts, excluding HBM, are only projected to grow by mid-single digits. Given limited supply expansion, we do not expect any risk of DRAM oversupply or price declines in 2028. For NAND flash, DRAM generates substantially higher value than NAND on a per-wafer basis. In addition, a portion of South Korean memory makers' capacity can be flexibly allocated between DRAM and NAND production. As a result, we believe NAND is also unlikely to suffer from oversupply in 2028.

Stocks for Action

Current HBM pricing negotiations are still underway, while Apple (US) is also in active discussions with memory makers regarding supply agreements and pricing. As a result, market noise is likely to increase in the near term. However, when viewed through the lens of supply-demand fundamentals, we do not see any signs of a reversal in industry trends and therefore remain positive about the sustainability of earnings growth for memory makers. Our top picks within the sector is Nanya Tech (2408 TT, NT$517, OP), but we also like Winbond (2344 TT, NT$180, OP) and Macronix (2337 TT, NT$124.5, OP).

Risk

Slowdown in AI-related capex; mismatch of critical components like substrates and PCBs.

Figure 1: Valuation overview

Company	Ticker	Revenue contribution of related products (%)	Market cap (NT$bn)	Price (NT$)	Rating	Target price (NT$)	EPS (NT$) 2023	2024	2025F	2026F	2027F
Nanya Technology	2408 TT	DRAM(100)	1,784	517.0	OP	720	(2.40)	(1.64)	2.13	75.16	130.67
Winbond	2344 TT	DRAM(53), Flash(33), Logic IC(13)	810	180.0	OP	200	(0.29)	0.14	0.87	29.03	69.97
Macronix	2337 TT	eMMC(25), NOR Flash(48), SLC NAND(18), ROM(6)	247	124.5	OP	218	(0.92)	(1.73)	(1.77)	21.84	67.00
Phison	8299 TT	Embedded ODM(32), Controller(6), Consumer(6), Industrial(16), Enterprise(39), Gaming(1)	463	2,095.0	OP	2,750	18.48	38.95	41.98	388.99	298.61

Source: TEJ; KGI Research

Figure 2: Shipments of logic IC carrying HBM in 2027-28F

k units	Shipments 2027F	2028F	Number of carried HBM 2027F	2028F
NVIDIA GPU	8,626	9,500	69,008	76,000
Google TPU	9,154	11,000	65,832	84,000
AMD GPU	1,680	1,900	13,440	15,200
AWS Trainium	3,460	3,500	20,760	30,000
MSFT MAIA	480	900	3,840	7,200
META MTIA	936	550	7,488	4,400
Others	2,000	2,750	16,000	22,000
Total	**26,336**	**30,100**	**196,368**	**238,800**

Source: KGI estimates

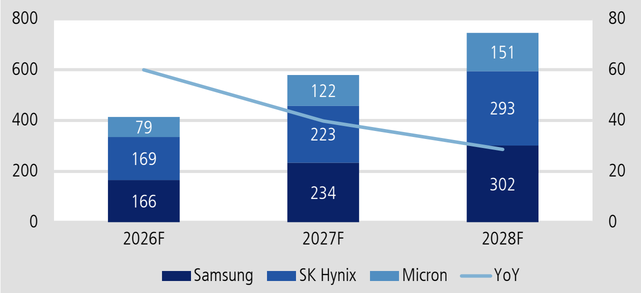
Figure 3: HBM output of individual producers in 2027-28F

k units	HBM total output (all 12Hi) 2027F	2028F	HBM total output (our estimate) 2027F	2028F
Samsung	64,410	87,455	68,807	102,529
SK Hynix	56,337	73,422	62,887	92,269
Micron	31,583	57,945	34,377	73,887
Total	**152,329**	**218,821**	**166,072**	**268,686**

Source: KGI estimates

Figure 4: Wafer input for HBM in 2026-28F

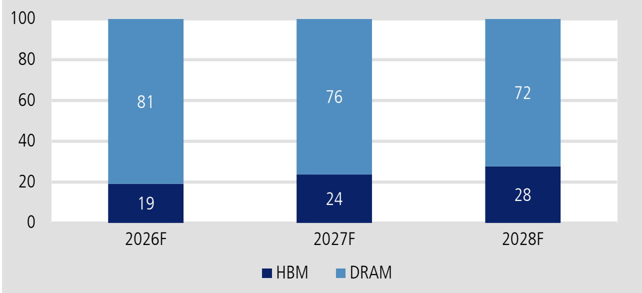
Wafer starts, kwpm (LHS); YoY, percent (RHS)



Source: KGI estimates

Figure 5: Capacity cannibalization by HBM to deteriorate

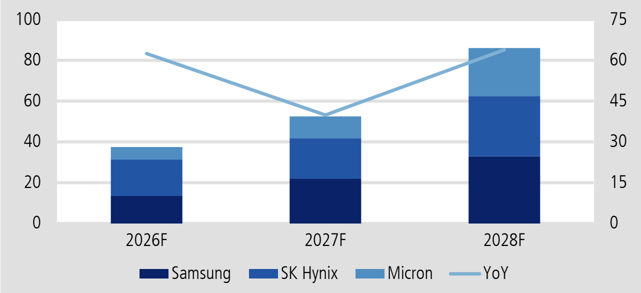
Wafer input weighting, percent



Source: KGI estimates

Figure 6: HBM bit shipments by producer in 2026-28F

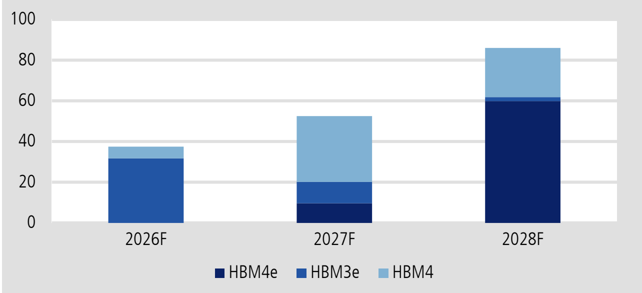
Bit shipment, bn Gb (LHS); YoY, percent (RHS)



Source: KGI estimates

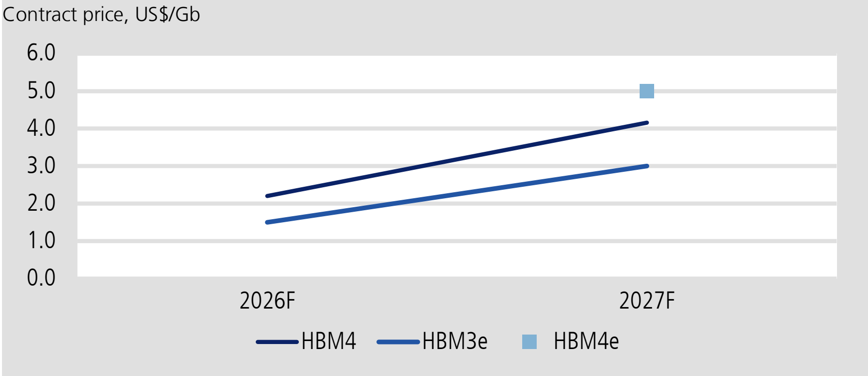
Figure 7: HBM bit shipments by product type in 2026-28F

Bit shipment, bn Gb (LHS); YoY, percent (RHS)



Source: KGI estimates

Figure 8: 2026-27F HBM contract price



Source: KGI estimates

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	Neutral (N)	We take a neutral view on the stock. The stock is expected to perform in line with the expected total return* of the KGI coverage universe in the related market over a 12-month investment horizon.
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	Restricted (R)	KGI policy and/or applicable law regulations preclude certain types of communications, including an investment recommendation, during the course of KGI's engagement in an investment banking transaction and in certain other circumstances.
		Total return = (12M target price - current price) / current price