

Global Memory Tech

Weekly theme: Memory industry forecasts, NAND spot rally, Samsung's dividends

Price Objective Change

Update memory forecasts as we resume Hynix coverage

We updated our global memory forecasts following the resumption of coverage on SK Hynix ([see link](#)). Our industry model now reflects: (1) Hynix's lower 2Q DRAM ASP, up only 30% QoQ vs 45-70% among peers, but a rapid 3Q ASP recovery of 25% and more meaningful HBM4 shipments; (2) Kioxia's bullish guidance for a 35% QoQ 3Q revenue increase, implying a near-20% NAND ASP hike, above the industry average of low- to mid-teens; and (3) last-minute memory price hikes in 4Q, with industry-average DRAM up 8% QoQ and NAND up 3%, ahead of stable pricing or mild corrections through 1Q-4Q27. That said, 2027 year-average ASP should still be higher than in 2026, given the relatively low base in 1H26. ASP declines should eventually emerge in 2028 (DRAM -8% and NAND -14% assumed but no hard-landing, just a healthy correction warranting a high-margin profile). See Exhibit 10 for our global memory forecasts summary (e.g., global DRAM industry sales: US\$134bn/\$573bn/\$847bn/\$917bn in 2025/26/27/28).

NAND spot rally stands out; DRAM also rises

We were surprised by the strong NAND spot-price rally this week (512Gb-1Tb up 5-6% and even legacy 256Gb up 10%+). The move appears to be related to rush orders from Tier 2 or white-box OEMs preparing new model launches for the Sep/4Q peak season. DRAM spot prices also rebounded further this week, up 1-2% and implying a 20-40% QoQ increase. Overall, we view recent spot-price strength as better than seasonal, with tight supply in conventional DRAM and NAND. Nanya Tech's July sales were NT\$44bn, up 49% MoM and 720% YoY, while Korea's semis exports were US\$42bn, down 9% MoM but still up a strong 179% YoY. Our memory indicator also remained robust at 183, vs. mid/up-cycle levels of 100/130 (June results), incl. monthly global sales and ASP (Exhibit 9).

Samsung ready to announce buyback and special dividend

Samsung Electronics (SEC) is expected to announce more details on its buyback and cash dividends, using 50% of 2024-26 FCF after deducting the W10tn dividends paid annually, as the CFO stated on the recent earnings call on 30 July. Our analysis indicates three execution plans: (1) special dividend payments of W30tn+ in 3Q or 4Q; (2) share buybacks of W40tn+ in 1H27; and (3) year-end dividends of W30tn, to be paid in April 2027. Separately, SEC needs W30tn+ worth of treasury shares for employee special bonuses. We also expect SK Hynix to return 50% of FCF, with a greater emphasis on buybacks vs cash dividends, such as W40tn+ vs W20tn+.

Korea CVD equipment / OLED materials: diverging trends

We see diverging trends between Wonik IPS, where 2Q CVD sales were weaker because of US/Japan competitors, and Duksan Neolux, where solid OLED materials and turbomachinery were supported by upbeat 2Q results. We cut our PO for Wonik from W95k to W85k (22x 2027E P/E [was 23x] to 2027E EPS, which we cut by 10% on lower top-line growth. Our PO for Duksan remains unchanged at W70,000 (21x 2027E P/E). We reiterate U/P on Wonik (earnings miss) and Buy on Duksan (growth theme).

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Refer to important disclosures on page 34 to 37. Analyst Certification on page 31. Price Objective Basis/Risk on page 31.

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Exhibit 1: Global memory outlook - supercycle likely to continue through 2027 despite 2026 quadrupling

BofA global memory forecasts

YoY	24	25	26E	27E
DRAM sales	86%	52%	328%	48%
NAND sales	84%	4%	341%	31%
DRAM ASP	62%	29%	242%	24%
NAND ASP	65%	-8%	267%	10%
DRAM bit	15%	18%	25%	19%
NAND bit	11%	13%	20%	19%
DRAM capex	51%	31%	68%	28%
NAND capex	5%	-7%	57%	22%
DRAM capa	8%	8%	12%	11%
NAND capa	-3%	-8%	5%	7%

Source: BofA Global Research estimates

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Exhibit 2: NAND price recovery stronger in early Aug vs DRAM

Spot-market prices among DRAM and NAND

US\$	Current	WoW	QoQ	YoY
DRAM spot				
16Gb DDR5	51.3	1%	29%	733%
16Gb DDR4	86.7	2%	48%	911%
8Gb DDR4	42.1	0%	31%	744%
NAND spot				
1Tb wafer	28.0	6%	11%	447%
512Gb wafer	20.1	5%	-2%	641%
256Gb wafer	12.5	16%	20%	728%

Source: DRAMeXchange

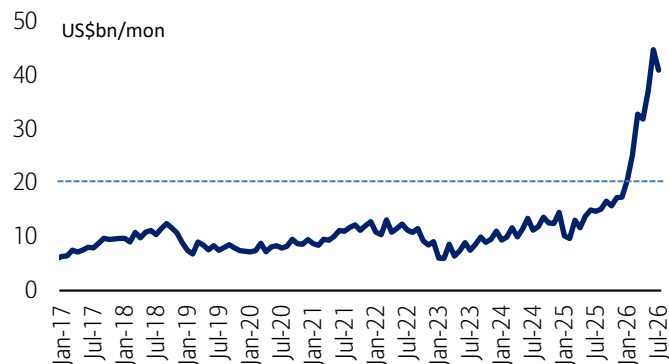
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See glossary at the end of this report

Korea exports, memory YoY change, Nanya sales

Exhibit 3: Still near record-high in July (US\$41bn; -9% MoM); around 2x higher than Jan-26 (US\$21bn)

Korea semis exports – US\$bn/month



Source: MoTIR

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Exhibit 4: Robust YoY growth continued in July (+179%); triple-digit% rebound sustained for seven consecutive months

Korea semis exports – YoY change in monthly US\$bn/month

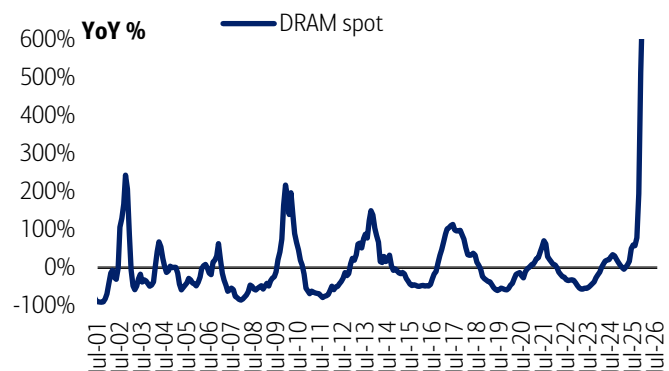


Source: MoTIR

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Exhibit 5: Continues to remain at record-high levels in 2026

DRAM spot price change – YoY trend

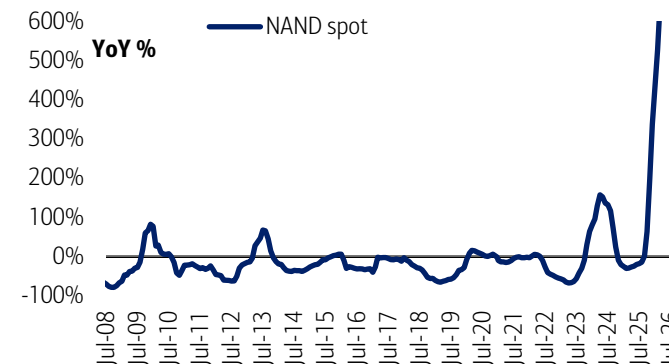


Source: DRAMeXchange

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Exhibit 6: Also at all-time high levels through 2026

NAND spot price change – YoY trend

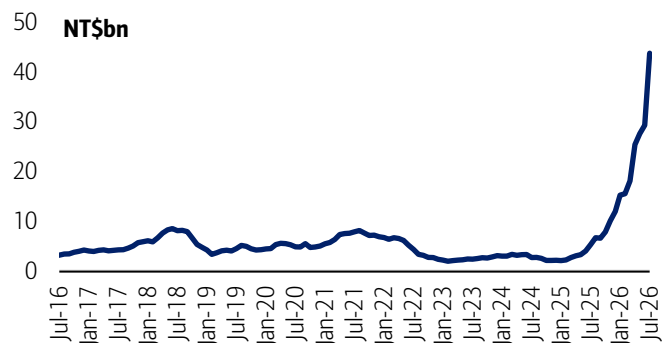


Source: DRAMeXchange

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Exhibit 7: Significant increase in July (NT\$43.9bn; +49% MoM); around 3x higher than Jan-26 (NT\$15.3bn)

Nanya Tech – Monthly sales

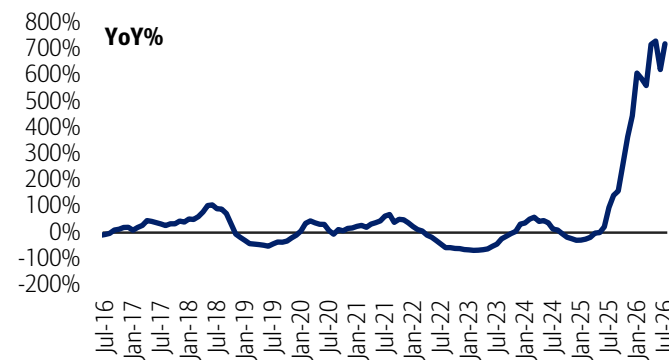


Source: Company

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Exhibit 8: YoY rebound still exceptionally high at 720% in July; triple-digit growth continued for 12 consecutive months

Nanya Tech – YoY monthly sales



Source: Company

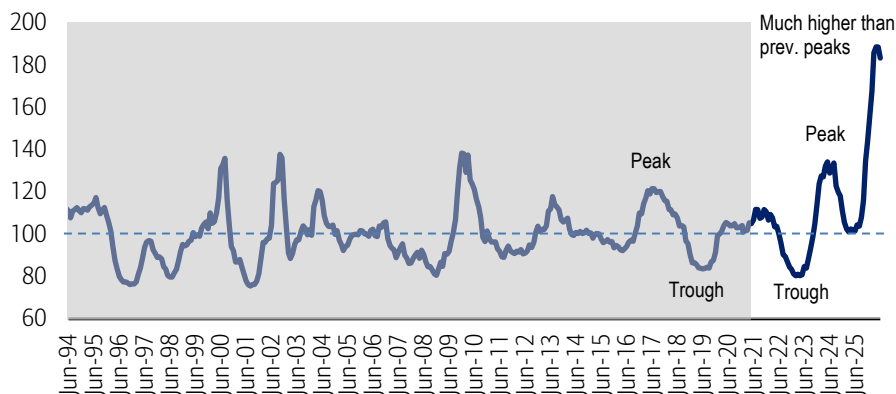
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BofA Memory Indicator

Exhibit 9: Our memory indicator still near all-time high level in Jun (183) vs 189/186 in Apr/May-26, driven by exceptionally strong DRAM/NAND spot pricing, rising ASPs and billings, along with Korea's 150%+ export growth.

BofA Memory Indicator – back to upturn level since Oct-2025 and hit highest peak in Mar/Apr-26 (back-tested)



Note: Our indicator had previously been capped at ~140, but the recent unprecedented surge—driven by memory spot prices, ASPs, and billings—has led us to raise the ceiling (up to 240 levels) to reflect a more accurate relative comparison. This exceptional strength is further validated by strong earnings from memory chipmakers.

Source: DRAMeXchange, WSTS, MoTIR Korea, BofA Global Research

*The shaded area represents back-tested results from January 1991 to March 2021. The unshaded area represents actual performance since April 2021. This performance is back-tested up to March-2021, and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein.

Disclaimer: The BofA Memory Indicator is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark. For methodology, see the [5 Aug 2024 Global Memory Tech](#) report.

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Global memory forecasts

Exhibit 10: We expect global DRAM revenue to nearly quadruple (+328% YoY) in 2026E, building on the strong growth trajectory of 86%/52% in 2024/25, primarily driven by a sharp ~3x rebound in ASPs (+242% YoY). NAND revenue is similarly forecast to increase nearly fourfold (+341% YoY) in 2026E, following modest low-single-digit growth in 2025, supported by a robust ~3.6x expansion in ASPs (+267% YoY).

Global memory forecast summary – top-down approach

	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2021	2022	2023	2024	2025	2026E	2027E	2028E
Revenue US\$bn																
DRAM	83.4	130.6	171.0	188.0	196.9	205.6	219.2	224.7	92.1	77.7	47.3	87.9	133.8	572.9	846.5	917.2
NAND	48.4	85.7	106.9	116.5	114.4	114.3	118.3	120.5	73.3	67.3	42.4	78.1	81.0	357.5	467.5	476.5
DRAM+NAND total	131.8	216.3	277.8	304.5	311.3	319.9	337.5	345.2	165.4	144.9	89.7	166.0	214.8	930.4	1,314.0	1,393.7
% QoQ																
DRAM	77%	56%	31%	10%	5%	4%	7%	3%								
NAND	82%	77%	25%	9%	-2%	0%	4%	2%								
DRAM/NAND total	79%	64%	28%	10%	2%	3%	6%	2%								
% YoY																
DRAM	256%	363%	388%	299%	136%	57%	28%	20%	41%	-16%	-39%	86%	52%	328%	48%	8%
NAND	216%	370%	410%	340%	137%	33%	11%	3%	25%	-8%	-37%	84%	4%	341%	31%	2%
DRAM/NAND total	241%	366%	396%	313%	136%	48%	21%	13%	34%	-12%	-38%	85%	29%	333%	41%	6%
Blended ASP US\$/unit																
DRAM 8Gb equiv	8.1	11.8	14.6	15.7	16.0	16.0	15.8	15.3	3.8	3.2	1.8	2.9	3.7	12.7	15.8	14.5
NAND 256Gb equiv	5.4	8.9	10.3	10.6	10.4	10.1	9.6	9.3	3.4	3.0	1.6	2.6	2.4	8.9	9.8	8.5
% QoQ																
DRAM ASP	73%	46%	23%	8%	2%	0%	-2%	-3%								
NAND ASP	87%	67%	15%	3%	-2%	-3%	-5%	-3%								
% YoY																
DRAM ASP	155%	267%	307%	236%	98%	35%	8%	-2%	14%	-16%	-45%	62%	29%	242%	24%	-8%
NAND ASP	130%	310%	345%	269%	94%	13%	-7%	-12%	-9%	-13%	-46%	65%	-8%	267%	10%	-14%
Shipments bn units																
DRAM 8Gb equiv	10.3	11.0	11.7	12.0	12.3	12.8	13.9	14.6	24.1	24.2	26.7	30.6	36.0	45.1	53.7	63.3
NAND 256Gb equiv	9.0	9.6	10.4	11.0	11.0	11.4	12.4	13.0	21.3	22.6	26.6	29.5	33.2	40.0	47.7	56.3
% QoQ																
DRAM bit growth	2%	7%	6%	2%	3%	4%	8%	5%								
NAND bit growth	-2%	6%	8%	6%	0%	3%	9%	5%								
% YoY																
DRAM bit growth	40%	26%	20%	19%	19%	16%	18%	22%	23%	0%	10%	15%	18%	25%	19%	18%
NAND bit growth	38%	14%	15%	19%	22%	18%	19%	18%	38%	6%	18%	11%	13%	20%	19%	18%
Capacity 300mm k wpm																
DRAM wafer capacity	2,028	2,071	2,141	2,200	2,222	2,284	2,374	2,499	1,475	1,554	1,615	1,747	1,887	2,110	2,345	2,684
NAND wafer capacity	1,685	1,712	1,726	1,755	1,787	1,824	1,851	1,894	1,654	1,764	1,835	1,775	1,638	1,720	1,839	1,963
DRAM+NAND total	3,713	3,783	3,867	3,955	4,009	4,108	4,225	4,393	3,129	3,319	3,450	3,522	3,525	3,830	4,184	4,646
% QoQ																
DRAM capacity total	3%	2%	3%	3%	1%	3%	4%	5%								
NAND capacity total	2%	2%	1%	2%	2%	2%	1%	2%								
DRAM/NAND total	2%	2%	2%	2%	1%	2%	3%	4%								
% YoY																
DRAM capacity	11%	12%	13%	11%	10%	10%	11%	14%	7%	5%	4%	8%	8%	12%	11%	14%
NAND capacity	2%	6%	6%	6%	6%	7%	7%	8%	0%	7%	4%	-3%	-8%	5%	7%	7%
DRAM+NAND total	7%	9%	10%	9%	8%	9%	9%	11%	3%	6%	4%	2%	0%	9%	9%	11%
Capex spending																
DRAM	25.0	24.1	23.1	24.1	28.4	29.6	32.1	33.3	28.6	34.6	28.8	43.6	57.3	96.3	123.3	128.3
NAND	6.9	7.2	7.5	8.4	9.5	9.2	8.8	9.2	27.9	29.4	19.6	20.5	19.1	30.1	36.7	39.5
Total (DRAM+NAND)	32.0	31.3	30.6	32.5	37.9	38.8	40.9	42.5	56.5	63.9	48.4	64.1	76.5	126.4	160.0	167.8
QoQ/YoY in capex																
DRAM	62%	-4%	-4%	4%	18%	4%	8%	4%	31%	21%	-17%	51%	31%	68%	28%	4%
NAND	29%	4%	4%	12%	13%	-4%	-4%	4%	24%	5%	-33%	5%	-7%	57%	22%	8%
Total (DRAM+NAND)	53%	-2%	-2%	6%	17%	2%	5%	4%	27%	13%	-24%	33%	19%	65%	27%	5%

Source: Companies' reports, BofA Global Research estimates

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Exhibit 11: We slightly raise our 2027–28 DRAM revenue forecasts by around 2%, primarily reflecting higher ASP assumptions (at ~\$16/\$15 per 8Gb equivalent in 2026/27/28). NAND revenue estimates increased by 10-15% for 2026–28, driven by stronger ASP expectations (~\$9–10 per 256Gb equivalent) amid the recent pricing upcycle.

Global memory forecast revisions – top-down analysis

	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2021	2022	2023	2024	2025	2026E	2027E	2028E
DRAM (8Gb equiv)																
Sales (US\$bn)																
New	83.4	130.6	171.0	188.0	196.9	205.6	219.2	224.7	92.1	77.7	47.3	87.9	133.8	572.9	846.5	917.2
Old	83.9	134.6	167.7	182.6	191.8	200.1	213.3	221.2	92.1	77.7	47.3	87.9	133.8	568.8	826.4	900.7
Diff	nm	-3.0%	2.0%	3.0%	2.7%	2.8%	2.8%	1.6%	nm	nm	nm	nm	nm	0.7%	2.4%	1.8%
Shipments (bn units)																
New	10.3	11.0	11.7	12.0	12.3	12.8	13.9	14.6	24.1	24.2	26.7	30.6	36.0	45.1	53.7	63.3
Old	10.4	10.9	11.2	11.4	11.8	12.2	13.3	14.0	24.1	24.2	26.7	30.6	36.0	43.9	51.2	60.5
Diff	nm	1.4%	4.7%	5.0%	4.7%	4.8%	4.8%	4.8%	nm	nm	nm	nm	nm	2.7%	4.8%	4.6%
Bit growth - sequential																
New	2.2%	7.0%	6.4%	2.1%	2.7%	4.2%	8.3%	5.3%	23.3%	0.3%	10.3%	14.8%	17.6%	25.2%	19.1%	17.8%
Old	2.8%	5.0%	3.0%	1.8%	3.0%	4.1%	8.3%	5.3%	23.3%	0.3%	10.3%	14.8%	17.6%	21.9%	16.7%	18.1%
Diff	nm	2.0%	3.4%	0.3%	-0.3%	0.1%	0.0%	0.0%	nm	nm	nm	nm	nm	3.3%	2.4%	-0.3%
ASP chg - sequential																
New	73.2%	46.3%	23.1%	7.7%	2.0%	0.2%	-1.6%	-2.7%	14.2%	-16.0%	-44.8%	61.8%	29.4%	241.9%	24.1%	-8.0%
Old	73.2%	52.9%	20.9%	7.0%	2.0%	0.2%	-1.6%	-1.5%	14.2%	-16.0%	-44.8%	61.8%	29.4%	248.7%	24.5%	-7.7%
Diff	nm	-6.6%	2.1%	0.7%	0.0%	0.0%	0.0%	-1.1%	nm	nm	nm	nm	nm	-6.7%	-0.4%	-0.3%
Blended ASP (US\$)																
New	8.1	11.8	14.6	15.7	16.0	16.0	15.8	15.3	3.8	3.2	1.8	2.9	3.7	12.7	15.8	14.5
Old	8.1	12.4	14.9	16.0	16.3	16.3	16.1	15.8	3.8	3.2	1.8	2.9	3.7	13.0	16.1	14.9
Diff	nm	-4.3%	-2.6%	-2.0%	-2.0%	-2.0%	-2.0%	-3.1%	nm	nm	nm	nm	nm	-1.9%	-2.3%	-2.6%
NAND (256Gb equiv)																
Sales (US\$bn)																
New	48.4	85.7	106.9	116.5	114.4	114.3	118.3	120.5	73.3	67.3	42.4	78.1	81.0	357.5	467.5	476.5
Old	45.3	78.9	96.4	102.4	101.7	103.1	106.8	108.8	73.3	67.3	42.4	78.1	81.0	323.1	420.4	421.5
Diff	nm	8.6%	10.9%	13.7%	12.5%	10.8%	10.8%	10.8%	nm	nm	nm	nm	nm	10.7%	11.2%	13.1%
Shipments (bn units)																
New	9.0	9.6	10.4	11.0	11.0	11.4	12.4	13.0	21.3	22.6	26.6	29.5	33.2	40.0	47.7	56.3
Old	9.0	9.5	10.1	10.6	10.7	11.2	12.2	12.8	21.3	22.6	26.6	29.5	33.2	39.3	47.0	54.3
Diff	nm	0.9%	2.9%	3.5%	2.7%	1.2%	1.2%	1.2%	nm	nm	nm	nm	nm	1.9%	1.5%	3.6%
Bit growth - sequential																
New	-2.2%	6.3%	8.4%	5.8%	0.1%	3.1%	9.0%	5.0%	37.8%	6.1%	17.6%	11.2%	12.5%	20.4%	19.3%	18.0%
Old	-2.2%	5.4%	6.2%	5.2%	0.9%	4.6%	9.0%	5.0%	37.8%	6.1%	17.6%	11.2%	12.5%	18.2%	19.7%	15.6%
Diff	nm	0.9%	2.2%	0.6%	-0.8%	-1.5%	0.0%	0.0%	nm	nm	nm	nm	nm	2.3%	-0.4%	2.3%
ASP chg - sequential																
New	86.6%	66.8%	15.0%	3.0%	-1.9%	-3.1%	-5.0%	-3.0%	-9.1%	-13.5%	-46.4%	65.5%	-7.8%	266.5%	9.6%	-13.6%
Old	74.7%	65.4%	15.0%	1.0%	-1.6%	-3.1%	-5.0%	-3.0%	-9.1%	-13.5%	-46.4%	65.5%	-7.8%	237.6%	8.7%	-13.3%
Diff	nm	1.4%	0.0%	2.0%	-0.3%	0.0%	0.0%	0.0%	nm	nm	nm	nm	nm	28.9%	1.0%	-0.3%
Blended ASP (US\$)																
New	5.4	8.9	10.3	10.6	10.4	10.1	9.6	9.3	3.4	3.0	1.6	2.6	2.4	8.9	9.8	8.5
Old	5.0	8.3	9.5	9.6	9.5	9.2	8.7	8.5	3.4	3.0	1.6	2.6	2.4	8.2	8.9	7.8
Diff	nm	7.7%	7.7%	9.8%	9.5%	9.5%	9.5%	9.5%	nm	nm	nm	nm	nm	8.6%	9.5%	9.1%

Source: BofA Global Research estimates, industry data. Chg = change. Equiv = equivalent

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Exhibit 12: Servers—especially AI systems using HBM—now make up over half of total DRAM demand, mainly due to higher memory per system

Global DRAM demand mix by application

(8Gb equiv, mn units)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2022	2023	2024	2025E	2026E	2027E	2028E
Supply-to-demand															
Sufficiency (supply-to-demand)	64.1%	75.0%	87.0%	96.0%	101.0%	100.0%	101.0%	101.8%	108.5%	100.6%	94.3%	92.1%	79.4%	101.0%	101.8%
Supply	10,320	11,042	11,749	11,995	12,319	12,837	13,902	14,640	24,171	26,670	30,628	36,023	45,106	53,699	63,273
Demand	16,110	14,723	13,504	12,495	12,197	12,837	13,765	14,389	22,270	26,514	32,491	39,106	56,832	53,187	62,167
Wafer capacity (12" equiv k wpm)	2,028	2,071	2,141	2,200	2,222	2,284	2,374	2,499	1,554	1,615	1,747	1,887	2,110	2,345	2,684
Revenue (US\$bn)	83.4	130.6	171.0	188.0	196.9	205.6	219.2	224.7	77.7	47.3	87.9	133.8	572.9	846.5	917.2
ASP (US\$)	8.1	11.8	14.6	15.7	16.0	16.0	15.8	15.3	3.2	1.8	2.9	3.7	12.7	15.8	14.5
Demand by application (mn units)															
Server	5,468	5,583	6,094	6,585	6,452	6,646	7,599	7,596	9,731	9,022	13,217	18,459	23,730	28,293	34,504
PC	1,068	1,032	933	834	761	809	870	949	3,574	3,418	3,922	4,758	3,867	3,389	3,838
Smartphone	3,007	2,791	2,626	2,730	2,427	2,500	2,704	2,952	7,388	8,045	10,255	12,285	11,155	10,583	11,849
Tablet	233	187	179	192	176	176	179	212	846	786	929	1,052	790	743	864
TV - DRAM embedded	221	206	238	297	251	237	273	341	586	635	728	839	962	1,102	1,262
Game - DRAM embedded	125	114	136	206	135	124	156	221	454	459	499	535	581	636	680
Auto - DRAM embedded	105	113	125	132	135	145	161	170	168	219	288	370	475	611	785
Total demand	16,110	14,723	13,504	12,495	12,197	12,837	13,765	14,389	22,270	26,514	32,491	39,106	56,832	53,187	62,167
Demand mix (% to total bits)															
Server	34%	38%	45%	53%	53%	52%	55%	53%	44%	34%	41%	47%	42%	53%	56%
PC	7%	7%	7%	7%	6%	6%	6%	7%	16%	13%	12%	12%	7%	6%	6%
Smartphone	19%	19%	19%	22%	20%	19%	20%	21%	33%	30%	32%	31%	20%	20%	19%
Tablet	1%	1%	1%	2%	1%	1%	1%	1%	4%	3%	3%	3%	1%	1%	1%
TV - DRAM embedded	1%	1%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%
Game - DRAM embedded	1%	1%	1%	2%	1%	1%	1%	2%	2%	2%	2%	1%	1%	1%	1%
Auto - DRAM embedded	0.7%	0.8%	0.9%	1.1%	1.1%	1.1%	1.2%	1.2%	0.8%	0.8%	0.9%	0.9%	0.8%	1.1%	1.3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DRAM content per product (GB)															
Server	1,148	1,159	1,182	1,194	1,206	1,230	1,267	1,293	655	736	914	1,066	1,172	1,251	1,383
PC	16.9	15.7	15.4	14.2	14.3	14.6	14.9	15.1	12.2	13.5	15.3	17.1	15.6	14.7	16.2
Smartphone	10.4	10.2	9.8	9.7	9.8	10.0	10.3	10.8	6.2	7.0	8.4	9.8	10.0	10.3	11.3
Tablet	6.8	6.4	6.2	6.3	6.4	6.4	6.6	7.0	5.2	5.7	6.3	7.0	6.5	6.6	7.3
TV - DRAM embedded	4.5	4.6	4.7	4.8	5.1	5.2	5.3	5.4	2.9	3.2	3.6	4.1	4.7	5.3	5.9
Game - DRAM embedded	13.1	13.3	13.5	13.6	13.9	14.2	14.3	14.4	10.6	11.2	11.9	12.6	13.4	14.2	15.1
Auto - DRAM embedded	5.2	5.5	5.8	5.9	6.3	6.7	6.9	7.1	2.4	3.0	3.9	4.7	5.6	6.8	8.1
DRAM-based products (mn units)															
Server	5	5	5	6	5	5	6	6	15	12	14	17	20	23	25
PC	63	66	60	59	53	55	58	63	294	253	256	278	248	230	237
Smartphone	290	275	267	280	246	249	261	274	1,198	1,152	1,218	1,250	1,112	1,031	1,052
Tablet	34	29	29	30	28	27	27	31	163	138	147	151	122	112	118
TV - DRAM embedded	49	45	50	61	50	46	51	63	203	199	201	203	206	209	213
Game - DRAM embedded	10	9	10	15	10	9	11	15	43	41	42	42	43	45	45
Auto - DRAM embedded	20	20	22	22	21	22	23	24	69	72	75	79	85	90	96
%QoQ in DRAM-based products															
Server	0%	1%	7%	7%	-3%	1%	11%	-2%	10%	-17%	18%	20%	17%	12%	10%
PC	-16%	4%	-8%	-3%	-10%	4%	5%	8%	-16%	-14%	1%	9%	-11%	-7%	3%
Smartphone	-14%	-5%	-3%	5%	-12%	1%	5%	5%	-12%	-4%	6%	3%	-11%	-7%	2%
Tablet	-20%	-14%	-2%	6%	-9%	-1%	-1%	13%	-12%	-16%	7%	3%	-19%	-8%	5%
TV - DRAM embedded	-19%	-9%	12%	22%	-19%	-8%	12%	22%	-5%	-2%	1%	1%	1%	2%	2%
Game - DRAM embedded	-35%	-11%	19%	50%	-36%	-10%	25%	40%	-10%	-5%	3%	1%	2%	3%	1%
Auto - DRAM embedded	-4%	2%	7%	3%	-4%	2%	7%	3%	0%	5%	3%	6%	7%	7%	7%

Source: BofA Global Research estimates, industry data. Chg = change. Equiv = equivalent

BofA GLOBAL RESEARCH



Exhibit 13: SSD—especially in data center and AI applications—now accounts for over half of total NAND demand, driven by higher storage capacity per system; SSD including enterprise solutions already account for 50%+ of total NAND sales (price premium seen vs IT applications)

Global NAND demand mix by application

(256Gb equiv, mn units)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2022	2023	2024	2025E	2026E	2027E	2028E
Supply-to-demand															
Sufficiency (supply-to-demand)	65.1%	69.2%	91.7%	99.4%	101.0%	103.0%	104.0%	102.7%	108.0%	101.8%	94.9%	97.7%	79.8%	102.7%	102.2%
Supply	9,022	9,591	10,396	10,999	11,010	11,352	12,373	12,992	22,576	26,558	29,528	33,222	40,009	47,728	56,310
Demand	13,853	13,860	11,338	11,066	10,901	11,021	11,898	12,648	20,910	26,097	31,128	34,004	50,116	46,468	55,078
Wafer capacity (12" equiv k wpm)	1,685	1,712	1,726	1,755	1,787	1,824	1,851	1,894	1,764	1,835	1,775	1,638	1,720	1,839	1,963
Revenue (US\$bn)	48.4	85.7	106.9	116.5	114.4	114.3	118.3	120.5	67.3	42.4	78.1	81.0	357.5	467.5	476.5
ASP (US\$)	5.4	8.9	10.3	10.6	10.4	10.1	9.6	9.3	3.0	1.6	2.6	2.4	8.9	9.8	8.5
Demand by application (mn units)															
Smartphones	2,969	2,785	2,647	2,835	2,545	2,622	2,835	3,066	6,821	7,724	9,792	12,099	11,236	11,068	12,750
SSDs	3,998	4,317	4,642	4,997	4,504	4,781	5,448	5,936	9,520	9,715	12,587	15,803	17,955	20,669	24,173
Notebook	1,231	1,333	1,232	1,182	1,110	1,204	1,289	1,436	3,172	3,275	3,991	4,987	4,978	5,038	5,783
Desktop	395	401	442	460	408	417	460	480	990	1,031	1,271	1,720	1,699	1,765	1,838
Server	1,929	2,105	2,428	2,749	2,467	2,617	3,085	3,333	4,256	4,432	6,057	7,335	9,211	11,502	13,866
Spot & inventories	443	477	540	606	519	542	614	689	1,101	978	1,268	1,760	2,066	2,363	2,686
Tablets	393	322	305	328	297	300	302	355	1,134	1,155	1,483	1,812	1,348	1,254	1,435
Game - NAND embedded	216	196	235	357	235	216	273	386	736	760	843	913	1,004	1,111	1,202
Autos - NAND embedded	55	58	66	72	72	77	87	94	80	107	147	191	251	330	434
Others & spot adj	6,222	6,181	3,441	2,478	3,248	3,025	2,953	2,810	2,620	6,636	6,277	3,186	18,323	12,036	15,083
NAND demand total	13,853	13,860	11,338	11,066	10,901	11,021	11,898	12,648	20,910	26,097	31,128	34,004	50,116	46,468	55,078
Demand mix (% to total bits)															
Smartphones	21%	20%	23%	26%	23%	24%	24%	24%	33%	30%	31%	36%	22%	24%	23%
SSDs	29%	31%	41%	45%	41%	43%	46%	47%	46%	37%	40%	46%	36%	44%	44%
Notebook	9%	10%	11%	11%	10%	11%	11%	11%	15%	13%	13%	15%	10%	11%	11%
Desktop	3%	3%	4%	4%	4%	4%	4%	4%	5%	4%	4%	5%	3%	4%	3%
Server	14%	15%	21%	25%	23%	24%	26%	26%	20%	17%	19%	22%	18%	25%	25%
Spot & inventories	3%	3%	5%	5%	5%	5%	5%	5%	5%	4%	4%	5%	4%	5%	5%
Tablets	3%	2%	3%	3%	3%	3%	3%	3%	5%	4%	5%	5%	3%	3%	3%
Game - NAND embedded	2%	1%	2%	3%	2%	2%	2%	3%	4%	3%	3%	3%	2%	2%	2%
Autos - NAND embedded	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NAND content per product (GB)															
Smartphones	327	324	318	324	330	337	347	357	182	215	257	310	323	343	388
SSDs	1,281	1,319	1,424	1,489	1,531	1,564	1,637	1,646	763	885	1,065	1,183	1,380	1,598	1,779
Notebook	846	867	910	919	938	956	975	985	525	600	700	801	884	965	1,035
Desktop	892	914	960	970	989	1,009	1,029	1,039	555	632	739	845	935	1,017	1,091
Server	3,822	3,899	3,996	4,076	4,158	4,241	4,347	4,434	2,348	2,676	3,215	3,640	3,959	4,305	4,683
Spot & inventories	617	632	645	658	691	708	722	736	388	438	505	572	639	716	801
Tablets	370	351	341	344	344	351	358	373	223	269	324	383	352	357	390
Game - NAND embedded	941	960	970	979	1,009	1,029	1,039	1,049	719	779	841	900	965	1,034	1,108
Autos - NAND embedded	91	95	101	107	112	118	125	133	38	48	65	80	99	122	152
NAND-based products (mn units)															
Smartphones	290	275	267	280	246	249	261	274	1,198	1,152	1,218	1,250	1,112	1,031	1,052
SSDs	100	105	104	107	94	98	107	115	399	351	378	427	416	414	435
Notebook	47	49	43	41	38	40	42	47	193	175	182	199	180	167	179
Desktop	14	14	15	15	13	13	14	15	57	52	55	65	58	56	54
Server	16	17	19	22	19	20	23	24	58	53	60	64	74	86	95
Spot & inventories	23	24	27	29	24	25	27	30	91	71	80	98	103	106	107
Tablets	34	29	29	30	28	27	27	31	163	138	147	151	122	112	118
Game - NAND embedded	7	7	8	12	7	7	8	12	33	31	32	32	33	34	35
Auto	19	20	21	21	21	21	22	23	68	71	73	77	81	86	92
%QoQ / YoY in NAND-based products															
Smartphones	-14%	-5%	-3%	5%	-12%	1%	5%	5%	-12%	-4%	6%	3%	-11%	-7%	2%
SSDs	-18%	5%	0%	3%	-12%	4%	9%	8%	-7%	-12%	8%	13%	-3%	-1%	5%
Notebook	-14%	6%	-12%	-5%	-8%	6%	5%	10%	-12%	-10%	4%	9%	-10%	-7%	7%
Desktop	-22%	-1%	5%	3%	-13%	0%	8%	3%	10%	-9%	5%	18%	-11%	-5%	-3%
Server	-14%	7%	13%	11%	-12%	4%	15%	6%	8%	-9%	14%	7%	15%	15%	11%
Spot & inventories	-25%	5%	11%	10%	-19%	2%	11%	10%	-15%	-22%	13%	23%	5%	2%	2%
Tablets	-20%	-14%	-2%	6%	-9%	-1%	-1%	13%	-12%	-16%	7%	3%	-19%	-8%	5%
Game - NAND embedded	-35%	-11%	19%	50%	-36%	-10%	25%	40%	-10%	-5%	3%	1%	3%	3%	1%
Auto	-4%	1%	6%	2%	-4%	1%	6%	2%	0%	4%	3%	5%	6%	6%	6%

Source: BofA Global Research estimates, industry data. Chg = change. Equiv = equivalent

Exhibit 14: Company-specific DRAM sales/ASP/shipment/margin comparison – high margin due to HBM

Bottom-up approach analysis based on top-4 DRAM companies' quarterly earnings results

(8Gb equiv)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2021	2022	2023	2024	2025	2026E	2027E	2028E
Units (bn)																
Samsung	4.3	4.8	5.1	5.1	5.3	5.4	5.9	6.1	10.9	10.8	11.8	13.4	15.0	19.3	22.7	26.7
SK Hynix	3.1	3.3	3.6	3.7	3.8	3.9	4.2	4.6	6.8	6.8	7.6	9.0	11.0	13.7	16.4	19.4
Micron	2.5	2.6	2.7	2.9	3.0	3.2	3.4	3.5	5.2	5.2	5.8	7.2	8.6	10.7	13.1	15.4
Nanya	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.6	0.4	0.4	0.4	0.7	0.9	1.0	1.2
Top 4 total	10.1	10.9	11.7	11.9	12.3	12.7	13.7	14.6	23.5	23.3	25.7	30.1	35.3	44.6	53.2	62.7
ASP (US\$)																
Samsung	9.0	13.1	16.2	17.5	17.8	17.8	17.7	17.1	3.9	3.3	1.8	2.9	3.5	14.1	17.6	15.9
SK Hynix	9.4	12.2	15.3	16.7	17.2	17.2	17.1	16.7	4.1	3.3	2.1	3.6	4.8	13.6	17.0	15.7
Micron	7.5	12.2	14.2	14.6	14.6	14.6	14.2	13.7	4.1	3.8	2.0	2.9	3.9	12.2	14.3	13.0
Nanya	7.9	12.7	15.6	16.9	17.2	17.2	16.9	16.4	5.0	4.5	2.5	2.9	3.5	13.3	16.9	14.5
Top 4 total	8.7	12.6	15.4	16.5	16.8	16.8	16.6	16.2	4.0	3.4	2.0	3.1	4.0	13.5	16.6	15.1
OP margin (%)																
Samsung	79%	80%	81%	81%	80%	80%	79%	77%	50%	41%	-4%	30%	40%	80%	79%	73%
SK Hynix	77%	81%	84%	85%	85%	85%	84%	84%	39%	31%	0%	47%	61%	83%	85%	80%
Micron	70%	81%	83%	83%	82%	82%	81%	80%	39%	35%	-31%	19%	40%	81%	81%	76%
Nanya	61%	74%	77%	76%	75%	74%	72%	70%	32%	20%	-48%	-31%	7%	74%	73%	60%
Top 4 total	76%	81%	82%	83%	82%	82%	81%	80%	44%	36%	-10%	32%	47%	81%	81%	76%
Sales (US\$bn)																
Samsung	39.2	63.2	81.7	89.2	93.9	96.7	103.5	105.4	42.0	35.3	21.8	39.2	53.2	273.4	399.5	423.4
SK Hynix	28.7	40.2	55.4	62.2	64.8	66.4	71.7	77.2	27.7	22.8	15.7	32.6	52.4	186.5	280.1	305.2
Micron	18.8	31.3	38.9	41.6	43.7	46.3	47.9	48.5	21.6	19.6	11.6	20.6	33.0	130.6	186.5	200.7
Nanya	1.7	2.8	3.5	3.8	4.0	4.2	4.4	4.3	3.1	2.0	1.1	1.3	2.5	11.9	16.9	16.7
Top 4 total	88.4	137.6	179.5	196.9	206.4	213.6	227.4	235.5	94.3	79.7	50.2	93.6	141.1	602.4	882.9	946.1
Bit mkt shr																
Samsung	43%	44%	43%	43%	43%	43%	43%	42%	46%	46%	46%	45%	43%	43%	43%	43%
SK Hynix	30%	30%	31%	31%	31%	30%	31%	32%	29%	29%	30%	30%	31%	31%	31%	31%
Micron	25%	24%	24%	24%	24%	25%	25%	24%	22%	22%	23%	24%	24%	24%	25%	25%
Nanya	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	1%	2%	2%	2%	2%
Top 4 total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sales mkt shr																
Samsung	44%	46%	46%	45%	45%	45%	45%	45%	45%	44%	43%	42%	38%	45%	45%	45%
SK Hynix	32%	29%	31%	32%	31%	31%	32%	33%	29%	29%	31%	35%	37%	31%	32%	32%
Micron	21%	23%	22%	21%	21%	22%	21%	21%	23%	25%	23%	22%	23%	22%	21%	21%
Nanya	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	2%	1%	2%	2%	2%	2%
Top 4 total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Bit growth QoQ/YoY																
Samsung	3%	11%	5%	1%	3%	3%	8%	5%	27%	-1%	9%	14%	12%	29%	17%	18%
SK Hynix	0%	8%	10%	3%	1%	2%	9%	10%	19%	0%	12%	17%	23%	24%	20%	18%
Micron	5%	3%	6%	4%	5%	6%	6%	5%	22%	0%	11%	25%	19%	25%	22%	18%
Nanya	-5%	0%	2%	1%	3%	4%	8%	1%	0%	-27%	-4%	5%	57%	26%	13%	15%
Top 4 total	2%	8%	7%	2%	3%	4%	8%	6%	23%	-1%	10%	17%	17%	26%	19%	18%
ASP chg QoQ/YoY																
Samsung	91%	45%	23%	8%	2%	0%	-1%	-3%	13%	-15%	-43%	58%	21%	299%	24%	-10%
SK Hynix	65%	30%	25%	9%	3%	0%	-1%	-2%	15%	-18%	-38%	76%	31%	186%	25%	-8%
Micron	65%	62%	17%	3%	0%	0%	-3%	-4%	17%	-9%	-47%	43%	35%	217%	17%	-9%
Nanya	71%	61%	23%	8%	2%	0%	-2%	-3%	47%	-10%	-44%	13%	24%	276%	27%	-14%
Top 4 total	76%	44%	22%	7%	2%	0%	-1%	-3%	15%	-15%	-43%	59%	28%	238%	23%	-9%

*Upbeat YTD data points not yet fully reflected in 2026 ASP; thus earnings upside seen

Source: Companies, BofA Global Research estimates, industry data. Chg = change. Equiv = equivalent



Exhibit 15: Company-specific NAND sales/ASP/shipment/margin comparison – high margin due to eSSD and 3D NAND

Bottom-up approach analysis based on top-4 NAND companies' quarterly earnings results

(256Gb equiv)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2022	2023	2024	2025	2026E	2027E	2028E
Sales (US\$bn)															
Samsung	15.4	26.5	32.6	36.2	35.5	35.5	36.7	38.5	22.2	14.2	26.1	25.2	110.6	146.1	151.0
Kioxia ex-foundry	5.8	10.2	13.8	15.8	15.0	14.8	15.7	15.6	9.4	5.6	9.5	9.2	45.6	61.2	62.2
Micron	5.0	9.9	11.4	12.5	12.9	12.7	12.2	12.4	7.0	4.3	8.2	9.0	38.9	50.2	50.3
SK Hynix	9.7	17.4	20.9	22.6	22.3	22.3	23.8	23.5	12.4	8.4	16.0	16.9	70.6	91.9	93.7
Global total	48.4	85.7	106.9	116.5	114.4	114.3	118.3	120.5	67.3	42.4	78.1	81.0	357.5	467.5	476.5
OP margin (%)															
Samsung	60%	70%	70%	68%	65%	62%	59%	57%	13%	-68%	13%	4%	68%	61%	51%
Kioxia ex-foundry	60%	72%	76%	75%	74%	73%	71%	70%	15%	-46%	27%	19%	73%	72%	66%
Micron	58%	78%	78%	79%	78%	77%	75%	74%	0%	-71%	8%	5%	76%	76%	71%
SK Hynix	54%	65%	66%	66%	63%	60%	57%	56%	-12%	-76%	14%	8%	64%	59%	52%
ASP (US\$)															
Samsung	5.5	9.2	10.6	10.9	10.7	10.4	9.8	9.5	2.9	1.6	2.6	2.5	9.2	10.1	8.9
Kioxia ex-foundry	5.2	8.9	10.6	11.0	10.8	10.5	10.0	9.7	3.4	1.8	2.6	2.2	9.1	10.2	8.9
SK Hynix	5.5	8.5	10.1	10.4	10.2	9.9	9.4	9.1	2.4	1.4	2.6	2.5	8.8	9.6	8.4
Global total	5.4	8.9	10.3	10.6	10.4	10.1	9.6	9.3	3.0	1.6	2.6	2.4	8.9	9.8	8.5
Units (bn)															
Samsung	2.8	2.9	3.1	3.3	3.3	3.4	3.7	4.0	7.7	8.9	9.9	10.2	12.1	14.5	17.0
Kioxia ex-foundry	1.1	1.1	1.3	1.4	1.4	1.4	1.6	1.6	2.7	3.0	3.6	4.1	5.0	6.0	7.0
SK Hynix	1.8	2.0	2.1	2.2	2.2	2.3	2.5	2.6	5.1	6.1	6.0	6.7	8.1	9.6	11.2
Global total	9.0	9.6	10.4	11.0	11.0	11.4	12.4	13.0	22.6	26.6	29.5	33.2	40.0	47.7	56.3
Bit growth QoQ/YoY															
Samsung	7%	3%	7%	8%	0%	3%	9%	8%	3%	16%	11%	3%	18%	20%	17%
Kioxia ex-foundry	-10%	2%	14%	10%	-3%	2%	11%	3%	-1%	10%	19%	15%	21%	20%	17%
Micron	2%	6%	9%	5%	4%	2%	4%	5%	0%	27%	18%	26%	22%	20%	19%
SK Hynix	-10%	15%	2%	5%	1%	3%	12%	2%	42%	21%	-2%	12%	20%	19%	17%
Global total	-2%	6%	8%	6%	0%	3%	9%	5%	6%	18%	11%	13%	20%	19%	18%
ASP chg QoQ/YoY															
Samsung	88%	67%	15%	3%	-2%	-3%	-5%	-3%	-15%	-45%	66%	-7%	272%	10%	-12%
Kioxia ex-foundry	105%	70%	19%	4%	-2%	-3%	-5%	-3%	-15%	-46%	43%	-15%	310%	12%	-13%
Micron	79%	87%	6%	4%	-2%	-3%	-8%	-4%	-3%	-52%	61%	-13%	254%	7%	-16%
SK Hynix	75%	55%	18%	3%	-2%	-3%	-5%	-3%	-18%	-44%	93%	-5%	249%	9%	-13%
Global total	87%	67%	15%	3%	-2%	-3%	-5%	-3%	-13%	-46%	65%	-8%	267%	10%	-14%
Sales mkt shr															
Samsung	32%	31%	30%	31%	31%	31%	31%	32%	33%	34%	33%	31%	31%	31%	32%
Kioxia ex-foundry	12%	12%	13%	14%	13%	13%	13%	13%	14%	13%	12%	11%	13%	13%	13%
Micron	10%	12%	11%	11%	11%	11%	10%	10%	10%	10%	11%	11%	11%	11%	11%
SK Hynix	20%	20%	20%	19%	19%	20%	20%	19%	18%	20%	20%	21%	20%	20%	20%
Global total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Bit mkt shr															
Samsung	31%	30%	30%	30%	30%	30%	30%	31%	34%	34%	34%	31%	30%	30%	30%
Kioxia ex-foundry	12%	12%	13%	13%	13%	12%	13%	12%	12%	11%	12%	12%	12%	13%	12%
SK Hynix	20%	21%	20%	20%	20%	20%	20%	20%	23%	23%	20%	20%	20%	20%	20%
Global total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Upbeat YTD data points not yet fully reflected in 2026 ASP; thus earnings upside seen

***Kioxia data mostly based on JV fab NAND production/sales; thus it can be different vs the company's GAAP basis accounting results

Source: Companies, BofA Global Research estimates, industry data. Chg = change. Equiv = equivalent

Exhibit 16: Smartphone and PC production cut assumed for 2026-27 due to memory chip shortage and very expensive BOM – a mild recovery assumed for 2028 once memory supply shortage somewhat relieved; separately server shipment growth can be stronger due to AI boom

Product unit assumptions – our underlying assumptions for tech product shipments

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E	CAGR 2025-28E
Units (mn)														
5G smartphone				19	269	614	678	730	847	888	822	780	849	-1.5%
Non-5G smartphone	1,488	1,508	1,432	1,394	1,031	744	520	421	371	349	290	251	203	-17.6%
Smartphones	1,488	1,508	1,432	1,413	1,300	1,358	1,198	1,152	1,218	1,237	1,112	1,031	1,052	-5.6%
Apple iPhone)	215	216	205	192	195	238	233	225	222	243	223	258	269	3.4%
Samsung	311	315	290	295	254	271	258	225	224	240	237	240	251	1.5%
Other OEMs	962	977	936	926	851	849	707	702	772	754	652	533	531	-11.5%
Tablet	204	185	173	160	188	184	163	138	147	151	122	112	118	-8.0%
SSD	130	167	201	248	340	431	399	351	378	425	416	414	435	0.6%
PC	256	255	255	261	297	351	294	253	256	275	248	230	237	-5.1%
Server	10	10	12	12	13	14	15	12	14	17	20	23	25	12.9%
Auto - DRAM embedded	57	61	65	67	63	69	69	72	75	79	85	90	96	6.7%
TV (LCD, OLED)	222	215	221	223	225	214	203	199	201	203	206	209	213	1.6%
Game - DRAM embedded	44	50	52	51	42	48	43	41	42	42	43	45	45	2.1%
Growth YoY														
5G smartphone						128.1%	10.3%	7.8%	16.0%	4.9%	-7.4%	-5.1%	8.9%	
Non-5G smartphone	3.3%	1.3%	-5.1%	-2.6%	-26.1%	-27.8%	-30.1%	-19.0%	-12.0%	-6.0%	-19.8%	-13.3%	-19.4%	
Smartphones	3.3%	1.3%	-5.1%	-1.3%	-8.0%	4.5%	-11.8%	-3.9%	5.7%	1.5%	-11.0%	-7.3%	2.0%	
Apple iPhone)	-7.0%	0.2%	-4.8%	-6.5%	1.3%	22.2%	-2.1%	-3.4%	-1.3%	9.5%	-8.2%	15.7%	4.3%	
Samsung	-3.0%	1.5%	-8.1%	1.8%	-14.0%	6.8%	-4.8%	-12.8%	-0.6%	7.3%	-1.2%	1.5%	4.5%	
Other OEMs	8.3%	1.5%	-4.1%	-1.1%	-8.0%	-0.3%	-16.8%	-0.7%	10.0%	-2.4%	-14.9%	-18.3%	-0.3%	
Tablet	-9.1%	-9.0%	-6.3%	-7.5%	17.2%	-2.0%	-11.7%	-15.5%	6.6%	3.1%	-19.0%	-8.1%	4.7%	
SSD	36.2%	28.4%	20.0%	23.7%	36.9%	26.7%	-7.3%	-12.0%	7.6%	12.4%	-2.6%	-0.6%	5.1%	
PC	-5.9%	-0.3%	-0.2%	2.6%	13.6%	4.0%	-16.2%	-13.8%	1.0%	7.6%	-10.7%	-7.3%	3.2%	
Server	-1.6%	7.2%	15.7%	-0.4%	7.3%	6.9%	9.7%	-17.5%	18.0%	19.8%	16.9%	11.7%	10.3%	
Auto - DRAM embedded	13.1%	7.1%	5.3%	3.5%	-5.2%	8.6%	0.3%	4.7%	3.4%	5.9%	6.8%	6.7%	6.7%	
TV (LCD, OLED)	-1.2%	-3.2%	2.9%	0.7%	1.0%	-5.2%	-4.8%	-2.1%	1.0%	1.1%	1.2%	1.8%	1.8%	
Game - DRAM embedded	6.9%	12.8%	3.0%	-1.3%	-16.8%	12.5%	-9.7%	-4.9%	2.5%	1.0%	2.4%	3.0%	0.8%	

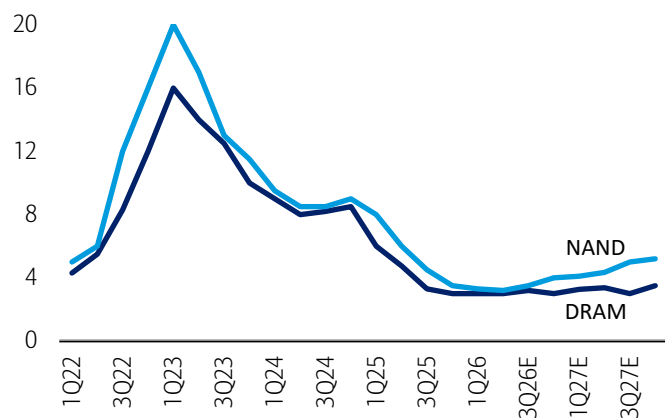
Note: Sell-in based thus actual sell-through can be higher/lower than our assumptions; we still assume minimal impact of Huawei given other OEMs' market share increase, etc; memory content increase (auto, server, SSD) likely stronger than unit growth; smartphone shipment estimate is slightly lowered due to Samsung Electronics' weak shipment for mid to low end phones vs upbeat AI smartphone GS24

Source: SA, IDC, IHS, BofA Global Research estimates

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Exhibit 17: NAND inventories likely up through 2027 but still normal level or slightly higher; DRAM continuously tight

Memory chipmakers' inventories - finished chips in weeks

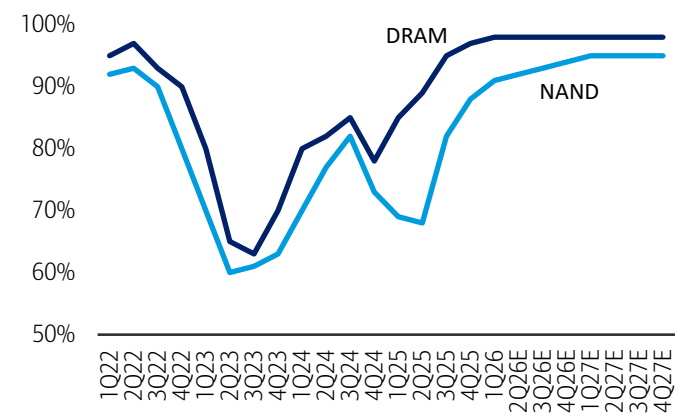


Source: BofA Global Research estimates

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Exhibit 18: DRAM mostly full utilization; NAND also more than 90% - different vs 2H24-1H25 production cut

Memory chipmakers' fab utilization



Source: BofA Global Research estimates

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Exhibit 19: Mostly server (including HBM) and smartphone-driven sales seen

Implied DRAM sales mix based on bit shipments x ASP by application

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
DRAM sales mix													
Servers	25%	26%	35%	24%	30%	31%	41%	33%	48%	55%	58%	61%	65%
PCs	10%	14%	14%	13%	14%	15%	14%	11%	11%	12%	7%	5%	5%
Smartphones	26%	31%	29%	45%	38%	36%	34%	33%	34%	30%	22%	18%	17%
Spot, others, adjustments*	39%	29%	22%	18%	18%	18%	12%	22%	7%	2%	13%	16%	13%
Demand mix total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DRAM sales, US\$bn													
Servers	10.2	18.9	34.4	14.9	19.4	28.5	31.6	15.8	42.3	73.4	331.6	512.9	600.2
PCs	4.1	10.0	13.9	8.4	8.9	14.2	10.6	5.3	9.6	16.6	39.3	43.3	41.7
Smartphones	10.6	22.9	29.0	27.9	25.0	32.9	26.1	15.7	29.6	40.6	127.5	153.6	154.6
Spot, others, adjustments*	16.3	21.0	22.0	11.3	12.0	16.6	9.4	10.5	6.5	3.2	74.6	136.7	120.7
Total sales US\$bn	41.2	72.8	99.3	62.5	65.4	92.1	77.7	47.3	87.9	133.8	572.9	846.5	917.2
DRAM ASP, US\$/8Gb													
Servers	5.9	7.7	9.9	3.3	3.1	3.6	3.2	1.8	3.2	4.0	14.0	18.1	17.4
PCs	2.6	5.8	7.2	3.7	3.0	3.6	3.0	1.5	2.4	3.5	10.2	12.8	10.9
Smartphones	4.1	6.6	6.9	5.1	4.1	4.4	3.5	2.0	2.9	3.3	11.4	14.5	13.0
Spot, others, adjustments*	4.5	5.7	6.6	3.0	2.9	3.4	2.7	1.7	2.0	4.6	11.7	12.0	9.2
DRAM ind avg price	4.3	6.4	7.7	3.9	3.3	3.8	3.2	1.8	2.9	3.7	12.7	15.8	14.5
ASP change YoY													
Servers	-20%	31%	29%	-66%	-7%	17%	-11%	-46%	82%	24%	252%	30%	-4%
PCs	-48%	122%	26%	-49%	-18%	21%	-19%	-48%	58%	45%	188%	26%	-15%
Smartphones	-42%	60%	5%	-26%	-20%	8%	-20%	-45%	48%	16%	242%	27%	-10%
Spot, others, adjustments*	-35%	25%	17%	-54%	-6%	19%	-21%	-37%	18%	128%	137%	2%	-23%
DRAM ind avg price	-34%	48%	20%	-49%	-15%	14%	-16%	-45%	62%	29%	242%	24%	-8%

*Implied amount after server/PC/smartphone demand, thus negative figures possible due to channel inventories (not consumed)

Source: Company data, BofA Global Research estimates, industry data

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Exhibit 20: Mostly for SSD (including enterprise solutions) and smartphone applications

Implied NAND sales mix based on bit shipments x ASP by application

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
NAND sales mix													
SSD	30%	33%	34%	36%	45%	47%	48%	40%	49%	52%	60%	61%	64%
Smartphone	36%	38%	33%	34%	33%	34%	33%	31%	35%	33%	27%	23%	22%
Spot, others, adjustments*	34%	29%	33%	30%	22%	19%	18%	29%	16%	14%	13%	16%	13%
Demand mix total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NAND sales, US\$bn													
SSD	11.1	19.8	22.9	16.7	26.5	34.3	32.6	16.9	38.6	42.2	213.4	285.5	306.8
Smartphone	13.7	22.3	22.0	15.5	19.2	24.9	22.4	13.1	27.2	27.1	96.4	109.5	106.8
Spot, others, adjustments*	12.8	17.2	22.6	14.1	12.7	14.1	12.3	12.4	12.3	11.7	47.7	72.5	62.9
Total sales US\$bn	37.6	59.2	67.4	46.3	58.5	73.3	67.3	42.4	78.1	81.0	357.5	467.5	476.5
NAND ASP, US\$/8Gb													
SSD	8.5	10.6	8.8	4.5	4.4	4.0	3.4	1.7	3.1	2.7	11.9	13.8	12.7
Smartphone	8.7	10.5	8.6	4.4	4.3	4.1	3.3	1.7	2.8	2.3	8.6	9.9	8.4
Spot, others, adjustments*	7.7	9.2	6.9	3.0	2.6	2.1	2.0	1.4	1.7	2.1	4.4	4.5	3.2
NAND ind avg price	8.3	10.1	8.0	3.9	3.8	3.4	3.0	1.6	2.6	2.4	8.9	9.8	8.5
ASP change YoY													
SSD	-29%	25%	-17%	-49%	-1%	-10%	-13%	-49%	76%	-13%	343%	16%	-8%
Smartphone	-30%	21%	-18%	-48%	-2%	-4%	-21%	-48%	64%	-18%	278%	15%	-15%
Spot, others, adjustments*	-27%	19%	-24%	-57%	-14%	-17%	-8%	-31%	26%	23%	110%	3%	-29%
NAND ind avg price	-28%	22%	-21%	-52%	-2%	-9%	-13%	-46%	65%	-8%	267%	10%	-14%

*Implied amount after SSD/smartphone demand, thus negative figures possible due to channel inventories (not consumed)

Source: Company data, BofA Global Research estimates, industry data

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Record high capex includes heavy infrastructure spending

Exhibit 21: Big-3 DRAM makers' capex to grow in 2026, but it includes lots of non-WFE spending (shell fab, utilities, TCB/HB); overall capex growth rate likely to decelerate through 2027-28 vs 40%+ CAGR in 2023-25

DRAM capex trend

US\$bn	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
Samsung	12.5	8.9	8.2	11.6	12.2	13.9	17.0	19.9	30.0	39.5	44.3
SK Hynix	8.1	7.4	5.6	7.3	8.9	3.8	9.0	16.1	26.9	31.4	31.7
Micron	4.6	4.3	5.3	5.6	5.7	3.9	6.3	13.1	27.9	37.4	37.2
Nanya	0.7	0.2	0.3	0.4	0.7	0.4	0.5	0.4	1.7	2.3	2.3
CXMT		0.7	1.5	1.5	1.7	2.6	4.0	3.5	8.8	11.8	11.8
DRAM capex total	27.1	21.9	21.4	27.1	31.0	25.2	37.7	53.9	96.3	123.3	128.3
Capex change YoY	66%	-19%	-2%	27%	14%	-19%	49%	43%	68%	28%	4%
DRAM capex to sales	27%	35%	33%	29%	40%	53%	43%	40%	17%	15%	14%
DRAM capex share											
Samsung	46%	41%	38%	43%	39%	55%	45%	37%	31%	32%	35%
SK Hynix	30%	34%	26%	27%	29%	15%	24%	30%	28%	25%	25%
Micron	17%	19%	25%	21%	19%	16%	17%	24%	29%	30%	29%
Nanya	2%	1%	1%	1%	2%	2%	1%	1%	2%	2%	2%
CXMT		3%	7%	6%	5%	10%	11%	6%	9%	10%	9%
Total	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DRAM capex YoY											
Samsung	72%	-28%	-8%	42%	5%	14%	22%	17%	51%	32%	12%
SK Hynix	71%	-10%	-23%	30%	22%	-58%	138%	79%	68%	16%	1%
Micron	72%	-8%	24%	6%	3%	-32%	62%	106%	114%	34%	0%
Nanya	-30%	-74%	62%	40%	72%	-39%	27%	-17%	272%	40%	0%
CXMT		75%	114%	0%	13%	50%	57%	-13%	27%	34%	0%
Total	66%	-19%	-2%	27%	14%	-19%	49%	43%	68%	28%	4%

Source: Companies' reports, BofA Global Research estimates

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Exhibit 22: NAND capex also grows in 2026, but mainly due to low base in 2025

NAND capex trend

US\$bn	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
Samsung	7.3	4.9	9.2	10.9	10.3	10.1	8.1	4.6	8.5	11.5	12.5
Kioxia & JVs	5.0	3.8	4.5	5.7	6.5	2.7	4.5	5.2	6.2	6.5	6.8
Micron	4.7	4.4	3.4	4.6	5.2	2.7	3.1	4.6	7.4	7.7	7.9
SK Hynix	6.3	4.4	2.7	3.4	4.1	1.6	2.3	2.5	4.8	6.4	7.4
Intel China	2.0	1.6	0.8	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YMTC	0.3	0.7	1.6	1.5	2.5	2.3	2.0	2.0	2.8	4.1	4.5
NAND capex total	26.0	20.1	22.5	27.9	29.0	19.7	20.4	19.3	30.1	36.7	39.5
NAND capex chg YoY	7%	-23%	12%	24%	4%	-32%	4%	-5%	57%	22%	8%
NAND capex to sales	38%	43%	38%	38%	43%	46%	26%	24%	8%	8%	8%
NAND capex share											
Samsung	28%	25%	41%	39%	36%	51%	39%	24%	28%	31%	32%
Kioxia & JVs	19%	19%	20%	20%	22%	14%	22%	27%	21%	18%	17%
Micron	18%	22%	15%	17%	18%	14%	15%	24%	25%	21%	20%
SK Hynix	24%	22%	12%	12%	14%	8%	11%	13%	16%	18%	19%
Intel China	8%	8%	4%	5%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
YMTC	1%	3%	7%	5%	9%	11%	10%	10%	9%	11%	11%
NAND capex total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NAND capex growth (YoY)											
Samsung	-36%	-33%	87%	19%	-5%	-2%	-20%	-42%	83%	35%	9%
Kioxia & JVs	4%	-24%	18%	27%	14%	-58%	67%	16%	27%	5%	5%
Micron	100%	-6%	-22%	35%	11%	-47%	13%	49%	60%	5%	2%
SK Hynix	97%	-29%	-38%	26%	19%	-60%	42%	5%	96%	33%	14%
Intel China	0%	-23%	-48%	88%	na	na	na	na	na	na	na
YMTC	200%	133%	129%	-6%	67%	-10%	-11%	0%	33%	48%	9%
NAND capex total	7%	-23%	12%	24%	4%	-32%	4%	-5%	57%	22%	8%

**Kioxia data mostly based on JV fab NAND production/sales; thus it can be different vs the company's GAAP basis accounting results

Source: Companies' reports, BofA Global Research estimates

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Exhibit 23: Ex-conventional DRAM equipment capex spend likely up strongly due to HBM, but conventional DRAM and NAND spend broadly disciplined; non-equipment spend for buildings and utilities remain high

SPE vs non-SPE capex spend

US\$bn	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
SPE capex										
DRAM	12.1	12.7	16.2	17.3	14.1	23.8	34.8	64.7	82.8	86.8
NAND	12.1	14.3	18.2	18.7	11.9	12.9	13.5	21.5	26.6	28.6
Total	24.3	26.9	34.4	35.9	26.0	36.7	48.3	86.2	109.4	115.4
SPE capex YoY										
DRAM	-22%	4%	28%	7%	-18%	69%	46%	72%	28%	5%
NAND	-24%	17%	28%	3%	-36%	8%	5%	61%	24%	7%
Total	-23%	11%	28%	5%	-28%	41%	32%	69%	27%	5%
Non-SPE to capex										
DRAM	45%	41%	40%	44%	44%	37%	35%	33%	33%	32%
NAND	39%	37%	35%	36%	40%	37%	30%	29%	27%	28%
Total	42%	39%	38%	40%	42%	37%	34%	32%	32%	31%
Total capex, US\$bn										
DRAM	21.9	21.4	27.1	31.0	25.2	37.7	53.9	96.3	123.3	128.3
NAND	20.1	22.5	27.9	29.0	19.7	20.4	19.3	30.1	36.7	39.5
Total	42.0	43.9	55.0	60.0	45.0	58.2	73.2	126.4	160.0	167.8

Source: Company data, BofA Global Research estimates, industry data

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Exhibit 24: DRAM capex increases likely to remain strong even in 2026 driven by big-3 chipmakers; NAND capex growth also notable (due to low base)

SPE capex spend by memory chipmakers

US\$bn	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
DRAM SPE										
Samsung	5.5	4.8	6.9	7.0	7.8	9.8	12.3	18.9	25.3	28.8
SK Hynix	2.9	2.5	3.4	4.3	1.6	6.1	9.9	19.0	22.9	23.2
Micron	2.9	3.5	3.7	3.8	2.1	3.8	9.0	18.1	23.2	23.4
Nanya	0.1	0.2	0.4	0.5	0.3	0.4	0.3	1.1	1.5	1.5
CXMT	0.3	1.2	1.3	1.2	2.0	3.2	2.8	7.0	9.4	9.4
DRAM SPE total	12.1	12.7	16.2	17.3	14.1	23.8	34.8	64.7	82.8	86.8
YoY										
Samsung	-25%	-14%	44%	1%	12%	27%	25%	54%	34%	14%
SK Hynix	-21%	-14%	32%	27%	-63%	284%	63%	92%	21%	1%
Micron	-14%	24%	6%	3%	-45%	80%	137%	101%	28%	1%
DRAM SPE total	-22%	4%	28%	7%	-18%	69%	46%	72%	28%	5%
NAND SPE										
Samsung	3.4	5.7	6.7	6.6	6.2	5.2	3.2	6.4	8.6	9.4
Kioxia & JVs	2.1	2.7	3.4	4.1	1.4	2.7	3.7	4.4	4.6	4.7
Micron	3.0	2.3	3.1	3.5	1.4	1.9	3.0	5.2	5.4	5.5
SK Hynix	2.3	1.8	2.4	2.5	1.0	1.5	1.9	3.5	4.9	5.6
YMTC	0.0	1.0	1.2	1.8	1.8	1.3	1.4	1.8	2.9	3.2
NAND SPE total	12.1	14.3	18.2	18.7	11.9	12.9	13.5	21.5	26.6	28.6
YoY										
Samsung	-26%	68%	19%	-2%	-6%	-16%	-40%	102%	35%	9%
Micron	-3%	-22%	35%	11%	-59%	33%	62%	72%	5%	1%
SK Hynix	-38%	-24%	36%	2%	-61%	57%	27%	84%	40%	15%
YMTC			25%	46%	3%	-28%	8%	23%	59%	9%
NAND SPE total	-24%	17%	28%	3%	-36%	8%	5%	61%	24%	7%

**Kioxia data mostly based on JV fab NAND production/sales; thus it can be different vs the company's GAAP basis accounting results

Source: Company data, BofA Global Research estimates, industry data

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2026/27E HBM TAM expansion to US\$77bn/153bn

Exhibit 25: We maintain our bullish view on HBM. We assume strong growth in 2026 sales (US\$77bn; +124% YoY) driven by solid ASP growth (+30% YoY) and robust bit growth (+73%). Industry average OPM near 50%; no downturn in 2027 given volume growth and cost reduction fully offset price cut.

Global HBM market – record high revenue continues into 2027E (US\$135bn)

	2022	2023	2024	2025	2026E	2027E	2028E	2029E	2030E	CAGR 2025-28E
HBM earnings										
Sales, US\$bn	1.6	4.2	17.4	34.5	77.4	152.8	198.9	229.8	276.9	79%
Shipment units, GB bn	0.1	0.5	1.6	3.1	5.3	7.6	9.9	12.6	15.9	48%
ASP, US\$/GB	16.7	8.8	11.0	11.3	14.6	20.2	20.1	18.2	17.5	21%
Price premium	430%	436%	355%	274%	17%	34%	50%	25%	16%	
OP, US\$bn	0.4	1.8	8.3	14.6	37.9	85.5	113.7	129.0	157.2	98%
OP margin	25%	42%	48%	42%	49%	56%	57%	56%	57%	
% YoY										
Sales, US\$bn	55%	155%	316%	98%	124%	98%	30%	16%	20%	
Shipment units, GB bn	95%	383%	233%	94%	73%	43%	30%	27%	26%	
ASP, US\$/GB	n/a	n/a	25%	2%	30%	38%	0%	-9%	-4%	
HBM shipment mix										
HBM5+	0%	0%	0%	0%	0%	0%	41%	60%	80%	
HBM4e	0%	0%	0%	0%	0%	14%	45%	33%	18%	
HBM4	0%	0%	0%	0%	37%	67%	12%	7%	2%	
HBM3e	0%	0%	58%	83%	58%	19%	1%	1%	0%	
HBM3	10%	60%	27%	14%	3%	0%	0%	0%	0%	
HBM2e & below	90%	40%	15%	3%	1%	0%	0%	0%	0%	
HBM mix total	100%	100%	100%	100%	0%	0%	0%	0%	0%	
% to DRAM shipment	0.4%	1.8%	5.2%	8.5%	0%	0%	0%	0%	0%	
% to DRAM sales	2.1%	8.8%	19.8%	25.8%	100%	100%	100%	100%	100%	
Wafer capacity, k wpm	68	87	204	360	11.7%	14.1%	15.6%	17.6%	19.8%	
% to DRAM wafer capacity	4.4%	5.4%	11.8%	19.3%	13.5%	18.1%	21.7%	21.1%	22.3%	
Main node	1z	1z	1a, 1b	1a, 1b	476	624	741	815	897	27%
Implied demand, GB bn units	0.1	0.5	1.8	3.3	22.6%	26.6%	27.6%	28.9%	30.6%	
AI+HBM server units, mn	0.3	1.0	1.9	2.8	1b, 1c	1c	1c, 1d	1d	1d, 1e	
AI+HBM server shipment YoY	42%	289%	88%	50%	6.4	8.7	10.2	12.1	15.8	46%
GB HBM per AI+HBM server	340	530	954	1,171	4.5	5.9	6.3	6.8	7.5	32%
GB content growth QoQ/YoY	13%	56%	80%	23%	62%	30%	8%	7%	11%	
AI+HBM to total server units*	1.7%	8.1%	12.9%	16.1%	1,413	1,479	1,612	1,789	2,093	11%
Global server units, mn	14.9	12.3	14.5	17.3	21%	5%	9%	11%	17%	
Global server units YoY	10%	-17%	18%	20%	22.3%	26.0%	25.4%	25.4%	26.4%	
Excess supply, GB bn units	0.01	-0.05	-0.20	-0.20	20.2	22.6	24.9	26.7	28.6	13%
HBM sufficiency (supply to demand)	13%	-10%	-11%	-6%	17%	12%	10%	7%	7%	

Source: Companies' reports, BofA Global Research estimates

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Exhibit 26: Our bottom-up approach based on Big-3 companies' track record and long-term plans

Global HBM market share by company

	2022	2023	2024	2025	2026E	2027E	2028E	2029E	2030E	CAGR 2025-28E
HBM units, GB bn										
SK Hynix	0.06	0.27	0.87	1.78	2.41	3.31	4.31	5.51	7.16	34%
Samsung	0.03	0.20	0.61	0.66	1.82	2.80	3.61	4.51	5.50	76%
Others	0.00	0.01	0.10	0.62	1.06	1.47	1.96	2.58	3.20	46%
Global HBM total GB bn units	0.10	0.47	1.58	3.06	5.29	7.58	9.88	12.60	15.86	48%
% of global DRAM volume	0.4%	1.8%	5.2%	8.5%	11.7%	14.1%	15.6%	17.6%	19.8%	
HBM wafer capa, k wpm - yr avg										
SK Hynix	35	37	100	153	194	250	295	339	397	25%
Samsung	30	45	78	133	178	246	298	312	322	31%
Others	3	5	27	75	105	128	148	163	178	25%
Global HBM wafer capa total	68	87	204	360	476	624	741	815	897	27%
% of global DRAM capacity	4.4%	5.4%	11.8%	19.3%	22.6%	26.6%	27.6%	28.9%	30.6%	
Main node	1z	1z	1a, 1b	1a, 1b	1b, 1c	1c	1c, 1d	1d	1d, 1e	
HBM ASP, US\$/GB										
SK Hynix	16.2	8.5	11.1	11.8	14.1	20.6	20.7	18.6	17.9	21%
Samsung	17.8	9.3	11.0	9.8	15.7	19.5	19.3	17.7	16.8	25%
Global average - HBM ASP	16.7	8.8	11.0	11.3	14.6	20.2	20.1	18.2	17.5	21%
HBM price premium	430%	436%	355%	274%	17%	34%	50%	25%	16%	
HBM sales, US\$bn										
SK Hynix	1.1	2.3	9.6	20.9	34.0	68.1	89.2	102.6	128.1	62%
Samsung	0.6	1.8	6.7	6.5	28.6	54.8	69.5	80.0	92.7	121%
Others	0.0	0.1	1.1	7.1	14.7	29.9	40.1	47.3	56.1	78%
Global HBM sales total	1.6	4.2	17.4	34.5	77.4	152.8	198.9	229.8	276.9	79%
% of global DRAM sales	2.1%	8.8%	19.8%	25.8%	13.5%	18.1%	21.7%	21.1%	22.3%	
Ex-HBM global DRAM										
ex-HBM wafer capa, kwpm	1,493	1,541	1,530	1,507	1,634	1,721	1,943	2,003	2,034	8%
ex-HBM GB bn units	24.1	26.2	29.0	33.0	39.8	46.1	53.4	58.9	64.2	17%
ex-HBM ASP, US\$/GB	3.2	1.6	2.4	3.0	12.4	15.0	13.5	14.6	15.0	65%
ex-HBM sales, US\$bn	76.0	43.1	70.5	99.3	495.6	693.6	718.3	858.4	966.3	93%
HBM OPM										
SK Hynix	25%	47%	63%	64%	65%	75%	76%	75%	75%	
Samsung	27%	38%	33%	20%	55%	63%	66%	66%	66%	
					59%	68%	69%	68%	69%	
HBM bit market share										
SK Hynix	66%	57%	55%	58%	46%	44%	44%	44%	45%	
Samsung	32%	42%	39%	22%	34%	37%	37%	36%	35%	
HBM sales market share										
SK Hynix	64%	54%	55%	61%	44%	45%	45%	45%	46%	
Samsung	34%	44%	39%	19%	37%	36%	35%	35%	33%	
HBM wafer capa mkt share										
SK Hynix	51%	43%	49%	42%	41%	40%	40%	42%	44%	
Samsung	44%	52%	38%	37%	37%	39%	40%	38%	36%	
HBM wafer capa mkt share total	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Source: Companies' reports, BofA Global Research estimates

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Exhibit 27: Hynix's 12-Hi HBM ramp-up has been successful ahead of SEC in 2025 but SEC's 2026 HBM growth and margin improvement (YoY) likely stronger vs Hynix's (high base established in 2024-25)

SK Hynix – HBM earnings outlook still stronger than Samsung's

	1Q26	2Q26	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2023	2024	2025	2026E	2027E	2028E	2029E	2030E
HBM																
Sales, US\$bn	5.80	6.77	9.34	12.13	13.81	15.80	18.05	20.47	2.28	9.62	20.95	34.05	68.14	89.24	102.56	128.13
Shipment, GB bn	0.49	0.53	0.64	0.75	0.74	0.77	0.86	0.93	0.27	0.87	1.78	2.41	3.31	4.31	5.51	7.16
ASP, US\$/GB	11.8	12.7	14.6	16.2	18.6	20.5	20.9	21.9	8.5	11.1	11.8	14.1	20.6	20.7	18.6	17.9
Price premium	33%	5%	-5%	-4%	11%	25%	30%	42%	364%	291%	246%	4%	28%	45%	37%	36%
Cost, US\$/GB	4.5	4.9	5.1	5.2	5.1	5.2	5.2	5.1	4.5	4.1	4.3	5.0	5.2	5.0	4.7	4.5
OP, US\$bn	3.58	4.16	6.05	8.24	10.00	11.76	13.57	15.68	1.07	6.08	13.33	22.03	51.00	67.83	76.59	95.72
OP margin	62%	61%	65%	68%	74%	75%	77%	77%	47%	63%	64%	65%	75%	76%	75%	75%
Wafer capa, kwpm	170	180	200	225	230	245	255	270	37	100	153	194	250	295	339	397
QoQ/YoY																
Sales	-4%	17%	38%	30%	14%	14%	14%	13%		323%	118%	63%	100%	31%	15%	25%
Shipment	-5%	9%	20%	17%	-1%	4%	12%	8%		223%	105%	36%	37%	30%	28%	30%
ASP	1%	7%	15%	11%	15%	10%	2%	5%		31%	6%	20%	46%	1%	-10%	-4%
Cost	7%	8%	5%	1%	-1%	2%	-1%	-1%		-9%	5%	16%	4%	-4%	-5%	-4%
OP	-7%	16%	46%	36%	21%	18%	15%	16%		469%	119%	65%	131%	33%	13%	25%
Wafer capa	3%	6%	11%	13%	2%	7%	4%	6%		167%	53%	27%	29%	18%	15%	17%
HBM shipment mix																
HBM5 & above	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0%	0%	0%	0%	0%	44%	60%	80%
HBM4e	0.0%	0.0%	0.0%	0.1%	0.3%	3.0%	17.0%	35.0%	0%	0%	0%	0%	15%	45%	32%	18%
HBM4	2.0%	10.0%	30.0%	51.0%	69.7%	77.0%	73.0%	58.0%	0%	0%	0%	26%	69%	9%	7%	2%
HBM3e	98%	90%	70%	49%	30%	20%	10%	6%	0%	57%	95%	74%	16%	2%	1%	0%
HBM3	0%	0%	0%	0%	0%	0%	0%	0%	87%	41%	5%	0%	0%	0%	0%	0%
HBM2e & below	0%	0%	0%	0%	0%	0%	0%	0%	13%	2%	0%	0%	0%	0%	0%	0%
Mix total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hi-mix																
20-hi & above	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	44%	60%	80%
16-hi	0%	0%	0%	0.1%	0.3%	3.0%	17.0%	35.0%	0%	0%	0%	0%	15%	45%	32%	18%
12-hi	98%	99%	100%	100%	100%	97%	83%	64%	0%	5%	74%	99%	85%	11%	8%	2%
8-hi	2%	1%	0%	0%	0%	0%	0%	0%	100%	95%	26%	1%	0%	0%	0%	0%
Hi-mix total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
% HBM to DRAM																
Sales	20%	17%	17%	19%	21%	24%	25%	27%	14%	30%	40%	18%	24%	29%	31%	35%
Shipment	16%	16%	18%	20%	20%	20%	21%	20%	4%	10%	16%	18%	20%	22%	25%	29%
OP	16%	13%	13%	15%	18%	21%	22%	24%	nm	40%	42%	14%	22%	28%	29%	33%
Wafer capa	30%	31%	33%	37%	38%	39%	39%	39%	10%	24%	30%	33%	38%	41%	45%	51%

Source: Company, BofA Global Research estimates

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Exhibit 28: Samsung's upside could come from more normalized HBM price (2026-28) vs 2025 bottom, focused on NVIDIA's Tier 2 customers (ex-US data centers) and Big Tech companies (Amazon, Google, Broadcom, AMD, etc.)

SEC – HBM earnings outlook

	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26	3Q26E	4Q26E	2023	2024	2025	2026E	2027E	2028E	2029E	2030E
HBM																
Sales, US\$bn	0.91	1.20	2.13	2.22	2.82	4.45	7.62	13.70	1.84	6.75	6.46	28.59	54.77	69.53	79.95	92.67
% to DRAM sales	10.0%	11.5%	15.4%	11.2%	7.2%	7.0%	9.3%	15.4%	8.4%	17.2%	12.1%	10.5%	13.7%	16.4%	18.1%	21.2%
Shipment, GB bn	0.09	0.12	0.22	0.23	0.24	0.30	0.48	0.80	0.20	0.61	0.66	1.82	2.80	3.61	4.51	5.50
ASP, US\$/GB	9.88	10.10	9.70	9.60	11.63	14.77	15.80	17.22	9.31	11.00	9.76	15.70	19.55	19.27	17.73	16.84
Price premium	270%	276%	222%	116%	31%	14%	-2%	-2%	440%	335%	200%	12%	13%	26%	12%	15%
Cost, US\$/GB	7.4	15.2	6.0	5.9	6.7	6.5	6.9	7.3	5.8	7.4	7.8	7.0	7.2	6.5	6.1	5.7
OP, US\$bn	0.23	-0.60	0.81	0.86	1.20	2.48	4.31	7.86	0.70	2.22	1.29	15.85	34.49	45.90	52.49	61.51
OP margin	25%	-50%	38%	39%	43%	56%	57%	57%	38%	33%	20%	55%	63%	66%	66%	66%
Wafer capa, kwpm	120	125	135	150	160	170	180	200	45	78	133	178	246	298	312	322
QoQ/YoY																
Sales	-73%	33%	78%	4%	27%	57%	71%	80%		267%	-4%	342%	92%	27%	15%	16%
Shipment	-69%	30%	85%	5%	5%	24%	60%	65%		210%	8%	175%	54%	29%	25%	22%
ASP	-12%	2%	-4%	-1%	21%	27%	7%	9%		18%	-11%	61%	25%	-1%	-8%	-5%
Cost	-5%	104%	-60%	-2%	13%	-2%	5%	7%		28%	6%	-10%	4%	-10%	-7%	-7%
OP	-78%	-365%	-235%	5%	41%	106%	74%	82%		217%	-42%	1125%	118%	33%	14%	17%
Wafer capa	20%	4%	8%	11%	7%	6%	6%	11%		72%	71%	34%	39%	21%	5%	3%
HBM shipment mix																
HBM5 & above	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.6%	60.0%	80.0%
HBM4e	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.5%	45.7%	34.0%	18.0%
HBM4	0.0%	0.0%	0.0%	0.0%	1.0%	20.0%	38.0%	60.0%	0.0%	0.0%	0.0%	39.7%	64.8%	15.6%	6.0%	2.0%
HBM3e	51.0%	64.0%	81.0%	91.0%	95.0%	78.0%	61.0%	40.0%	0.0%	19.8%	77.3%	59.2%	21.7%	0.2%	0.0%	0.0%
HBM3	40.0%	30.0%	15.0%	7.0%	3.0%	2.0%	1.0%	0.0%	6.3%	58.1%	18.4%	1.0%	0.0%	0.0%	0.0%	0.0%
HBM2e & below	9.0%	6.0%	4.0%	2.0%	1.0%	0.0%	0.0%	0.0%	93.7%	22.1%	4.4%	0.1%	0.0%	0.0%	0.0%	0.0%
Mix total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hi-mix																
20-hi & above	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.6%	60.0%	80.0%
16-hi	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%	13.7%	45.7%	39.0%	20.0%
12-hi	1.0%	5.0%	17.0%	30.0%	51.0%	75.0%	90.0%	92.7%	0.0%	0.4%	17.2%	83.5%	84.6%	15.7%	1.0%	0.0%
8-hi	99.0%	95.0%	83.0%	70.0%	49.0%	25.0%	10.0%	7.0%	100.0%	99.6%	82.8%	16.4%	1.7%	0.0%	0.0%	0.0%
Hi-mix total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% HBM to DRAM																
Sales	10%	12%	15%	11%	7%	7%	9%	15%	8%	17%	12%	10%	14%	16%	18%	21%
Shipment	3%	3%	5%	5%	6%	6%	10%	16%	2%	5%	4%	9%	12%	14%	15%	17%
OP	8%	-26%	16%	8%	4%	5%	7%	11%	-72%	19%	6%	7%	11%	15%	40%	47%
Wafer capa	18%	19%	21%	23%	24%	24%	25%	27%	6%	11%	20%	25%	31%	36%	37%	38%
QoQ/YoY																
Sales	6%	13%	26%	51%	106%	62%	26%	2%		62%	44%	423%	41%	3%	12%	0%
Shipment	11%	13%	13%	3%	3%	10%	1%	-6%		10%	12%	22%	14%	16%	9%	8%
ASP	-4%	1%	12%	47%	100%	46%	24%	8%		47%	29%	329%	24%	-12%	3%	-7%
Cost	-7%	1%	4%	1%	-17%	47%	15%	-2%		-4%	4%	25%	39%	21%	-5%	-5%
OP	14%	13%	47%	132%	197%	61%	28%	4%		-664%	112%	922%	37%	-6%	15%	0%
Wafer capa	-4%	-6%	-3%	-2%	1%	3%	3%	2%		-3%	-16%	0%	2%	-3%	0%	1%

Source: Company reports, BofA Global Research estimates

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GPU spec tables

Exhibit 29: H200/B200/B300 will lead to 2025 HBM demand growth and later by Rubin/Rubin Ultra in 2026/27

NVIDIA GPUs that use HBM memory

Company	Name	Type	AI function	Launch date	DRAM spec	Remarks
Mainstream	Feynman	GPU	AI training	2028	HBM5 (likely)	Based on Next-gen HBM
	Rubin Ultra	GPU	AI training	2H27	1TB HBM4e	4 reticles leading to 16 HBM chips each with 64GB memory (based on 16-hi layer 32Gb DRAM)
	Rubin	GPU	AI training	2H26	288/384GB HBM4	HBM4 with 12-hi/16-hi layer 24Gb DRAM die; bandwidth at 13TB/s
	B300	GPU	AI training	3Q25	288GB HBM3e	Based on 8 units of 12-hi layer 24Gb DRAM die; bandwidth at 8TB/s
	B100/200	GPU	AI training	1Q25	192GB HBM3e	Nvidia confirmed production ramp-up and shipment in FY4Q25 (Oct-Jan)
	H200 SXM/NVL	GPU	AI training	2Q24	141GB HBM3e	First GPU with HBM3e (1.2TB/s) memory
	H100 NVL	GPU	AI training	Sep-22	188GB HBM3; 7.8TB/s	Powerful AI training GPU using 188GB HBM3
	H100 SXM5	GPU	AI training	Sep-22	80GB HBM3; 3.35TB/s	High-speed AI training GPU (900GB/sec) PCIe / NVL (600GB/sec)
	H100 PCIe	GPU	AI training	Sep-22	80GB HBM2e; 2TB/s	Still based on HBM2e - HBM3 not yet
	A100	GPU	AI training	Jun-20	40/80GB HBM2/2e; 2TB/s	Old gen but still actively used for AI training
Superchip	Rubin Ultra NVL576	Giant Superchip	AI training/inference	2H27	288TB HBM4e (likely) + 72TB DRAM	Combines 288x Rubin Ultra GPU via NV Link
	Vera Rubin NVL144 CPX	Giant Superchip	AI training/inference	2H26	40TB HBM4 (likely) + 36TB DRAM + 18TB GDDR7	Combines 144x Rubin GPU and 114x CPX GPU and Vera CPUs via NV Link
	Vera Rubin NVL144	Giant Superchip	AI training/inference	2H26	40TB HBM4 (likely) + 36TB DRAM	Combines 144x Rubin GPU along with Vera CPUs via NV Link
	Vera Rubin NVL72	Giant Superchip	AI training/inference	2H26	21TB HBM4 (likely) + 27/54TB DRAM	Combines 72x Rubin GPU along with 36x Vera CPUs via NV Link
	Vera Rubin	Superchip	AI training/inference	2H26	576GB HBM4 + 1.5TB LPDDR5X	Combines 2 x Rubin GPUs with a 1 x Vera CPU
	GB300 NVL72	Giant Superchip	AI training/inference	3Q25	20TB HBM3e + 18TB LPDDR5X	Combines 36x GB300 superchips via NV Link
	GB300	Superchip	AI training/inference	3Q25	576GB HBM3e + 1.2TB LPDDR5X	Combines 2 x B300 GPUs with a 1 x Grace CPU
	GB200 NVL72	Giant Superchip	AI training/inference	1H25	13.5TB HBM3e + 17TB LPDDR5X	Combines 36x GB200 superchips to form one supercomputer
	GB200	Superchip	AI training/inference	1H25	384GB HBM3e + 480GB LPDDR5X	Combines 2 x B200 GPUs with a 1 x Grace CPU
	GH200 v2	Superchip	AI training/inference	2Q24	144GB HBM3e	2nd gen of GH200 using "HBM3e (1.2TB/sec)"
China	GH200	Superchip	AI training/inference	Dec-23	96GB HBM3	Superchip based on both GPU+HBM3 and CPU+LPDDR5
	B30/B40	GPU	AI training/inference	2H25	GDDR7	Despec version of B300 for China; multiple B30 chips can be connected to form cluster
	H20	GPU	AI training	1Q24	96GB HBM3; 4TB/s	Despec version of H100 for China export;
	L2	GPU	AI training/inference	Jan-24	24GB GDDR6; 300GB/s	Despec version of L40S for China export; lower bandwidth vs L20 [
	L20	GPU	AI training/inference	Dec-23	48GB GDDR6; 864GB/s	Despec version of L40S for China export;
	L40S	GPU	AI training/inference	Oct-23	48GB GDDR6; 864GB/s	No HBM, just GDDR6 used but 1.2x/1.7x better AI inference/training vs A100

Source: Company reports, media reports, BofA Global Research

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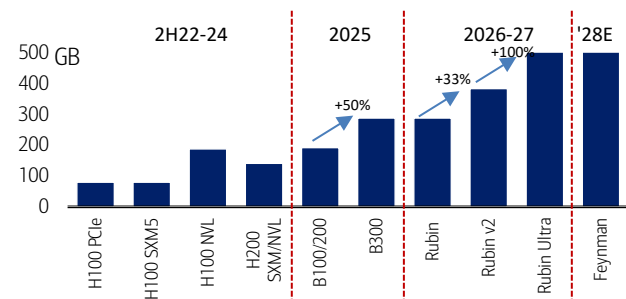
Exhibit 30: Lots of GPU line-ups for AI training/inference; LPDDR5 and GDDR6 are also used for AI inferencing but we newly see upbeat demand for 12-hi HBM3e from new ASICs (e.g., Google's TPU v7/TPU 8i/8t); AMD MI400 series; Amazon Trainium chips expected to use HBM4

AI accelerators that use HBM memory

Company	Name	Type	AI function	Launch date	DRAM spec	Remarks
AMD	MI500	APU	AI training	2027	500-600GB HBM4e (exp.)	Provides up to a 1,000x increase in performance vs MI300X
	MI450	APU	AI training	2026	432GB HBM4; 20TB/s+	Fabricated on TSMC's 2nm technology; can be scaled to a server rack combining 72x GPUs (to a total of 30TB HBM)
	MI400	APU	AI training	2026	384GB HBM4	To compete with NVIDIA's Rubin GPU using HBM4; based on 16-hi
	MI350X	APU	AI training	2H25	288GB HBM3e; 8TB/s	Announced during its Advancing AI 2024 event; MP in 2H25
	MI325X	APU	AI training	4Q24	256GB HBM3e; 6TB/s	256GB HBM3e stated during its Advancing AI 2024 event on 10 Oct
	MI300A	APU	AI training	Dec-23	128GB HBM3; 5.3TB/s	Slightly higher bandwidth vs MI300X
	MI300X	APU	AI training	Jun-23	192GB HBM3; 5.2 TB/s	More advanced version vs MI300
	MI300	APU	AI training	Jan-23	128GB HBM3; 1.2TB/s	Combination of CPU+GPU
Intel	Crescent Island	GPU	AI inference	2H26	160GB LPDDR5X	Xe3P architecture with 640-bit memory interface
	Gaudi3	GPU	AI training	3Q24	128GB HBM2e; 3.7TB/s	Target to compete with NVIDIA H100
	Gaudi2	GPU	AI training	May-22	96GB HBM2e; 2.45TB/s	Stated stronger than NVIDIA A100
	Gaudi	GPU	AI training	NA	32GB HBM2; 1TB/s	
Meta	MTIA 400	ASIC	AI inference	2027	288GB HBM; 9.2TB/s	On track to deploy chips in datacenters; 6 petaflops FP8 perf.
	MTIA 300	ASIC	AI inference	2026	216GB HBM; 6.1TB/s	Offers 1.2 petaflops of FP8 compute performance
Amazon	Trainium 4	ASIC	AI training	4Q26/1Q27	288GB HBM4	2x the HBM capacity and 4x the bandwidth (19.6 TB/s)
	Trainium3	ASIC	AI training	4Q25	144GB HBM3e	2x faster and 40% more energy-efficient vs previous gen
	Trainium2	ASIC	AI training	Dec-2024	96GB HBM3e	Apple reportedly will use these chips for training its AI Intelligence
	Inferentia2	ASIC	AI inference	2H22	32GB HBM2e	More advanced AI inference vs 2019 generation
	Trainium	ASIC	AI training	2H22	32GB HBM2e; 1.6TB/s	Used for training AI models in cloud
Google	TPU 8t	ASIC	AI training	2H26	216GB HBM3e	Can be scaled to 9,600 chips to a massive 2PB HBM memory
	TPU 8i	ASIC	AI inference	2H26	288GB HBM3e	Scalable to 1,152 chips for 331TB HBM memory
	TPU v7 (Ironwood)	ASIC	AI inference	4Q25	192GB HBM3e	Designed for inference workloads and for AI agents
	TPU v6e	ASIC	AI training	Late-2024	64GB HBM3	2x higher capacity and bandwidth vs its predecessor
	TPU v5p	ASIC	AI training	Dec-23	95GB HBM2e	2.8x faster in AI training vs its predecessor
	TPU v5e	ASIC	AI training	Aug-23	16GB HBM2	Pre-version of v5 2024; combines tens of thousands of v5e TPUs
Microsoft	Maia 200 (next-gen)	ASIC	AI training	2026	288GB HBM3e	For large-scale training and inference tasks within Microsoft cloud
	Maia 100	ASIC	AI inference	2024	64GB HBM2e	Optimized for Azure/Bing inference workloads; 1.8TB/s bandwidth
	Cobalt CPU	CPU	AI inference	TBC	DDR5	Undisclosed
Huawei	Ascend 950PR/950DT	NPU	AI Inference/training	2026	128GB HiBL/144GB HiZQ	Employs proprietary HBM (HiBL / HiZQ)
	Ascend 910C	NPU	AI Training	1H25	128GB HBM2e (likely)	ASIC for China AI training and inference
	Ascend 910B	NPU	AI Training	Oct-23	64GB HBM2e	Mostly used AI chips in China besides the US chips
Alibaba	Zhenwu M890	PPU	AI training/inference	2026	144GB HBM3	Mainly for Alibaba AI training/inference; supports cluster scaling
Biren	BR106	GPU	AI training/inference	2023	64GB HBM2e	HBM3 not yet adopted; memory content also low at 64GB
	BR104	GPU	AI training/inference	2022	32GB HBM2e	TSMC 7nm process
Enflame	L600	ASIC	AI training	2025	144GB HBM2e	Mainly for China AI training
Cambricon	MLU590	ASIC	AI inference	2024	64GB HBM2e	Mainly for AI inference;

Source: Company reports, media reports, BofA Global Research

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Exhibit 31: Substantial HBM content growth expected in 2025/2026-27, led by B300, Rubin, and Rubin Ultra
NVIDIA GPUs HBM spec evolution; Rubin Ultra HBM content also up 3x vs 2026 1st Rubin

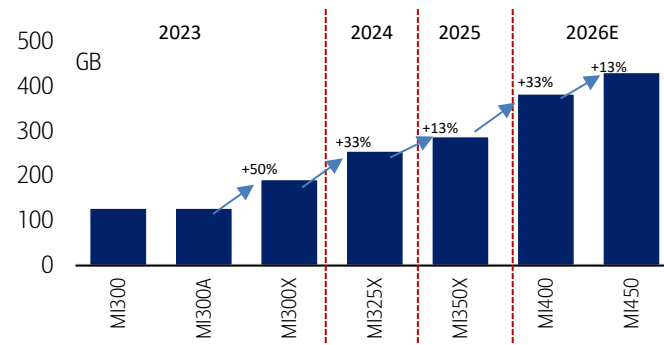
Rubin Ultra and Feynman are likely to have HBM content more than 1TB; axis scaled

Source: NVIDIA, BofA Global Research

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Exhibit 32: 10-30% HBM content growth observed in AMD GPUs as well led by MI350X in 2025 and MI400 series in 2026

AMD GPUs HBM spec evolution



Source: NVIDIA, BofA Global Research

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Exhibit 33: HBM capacity to hit 1TB with Rubin Ultra (2027) and then more than 1.5TB with Feynman Ultra (2030); bandwidth also set to increase 40-50% every year from 1.2 TB/s in 2025 to more than 8 TB/s in 2030

NVIDIA GPU HBM capacity and bandwidth progression

NVIDIA GPU HBM capacity and bandwidth progression

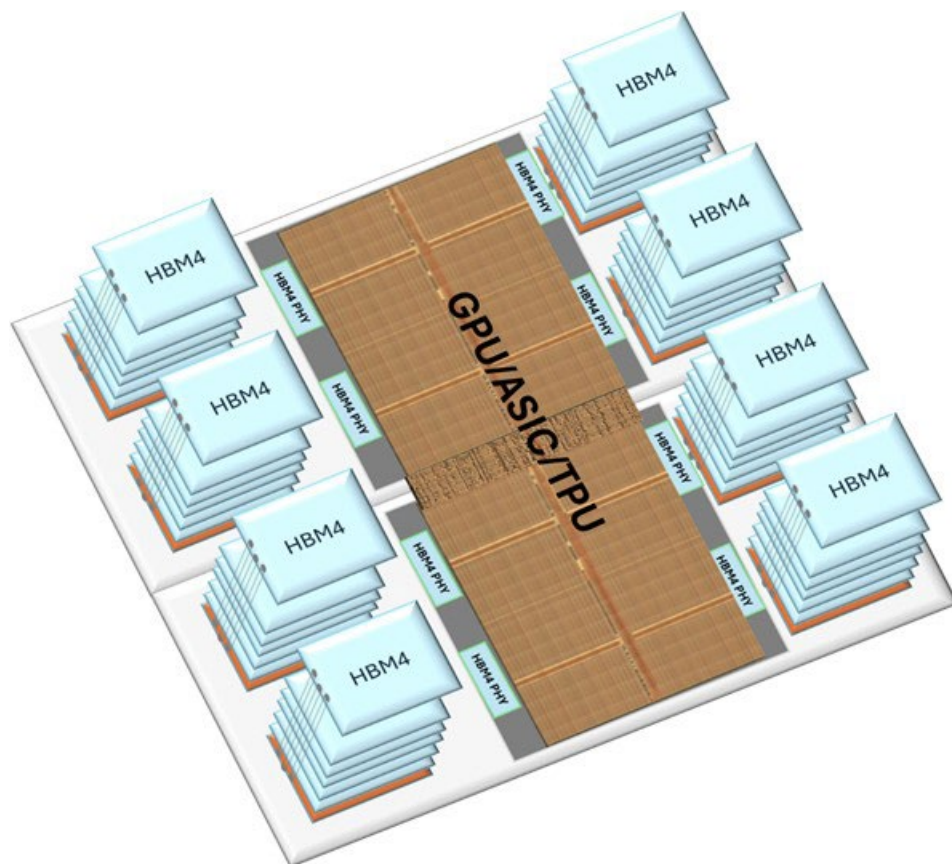
GPU	Shipment start	HBM gen	HBM units/GPU	# of DRAM die layers	DRAM die capacity	Capacity/HBM	Total HBM/GPU	Bandwidth/HBM	GPU bandwidth	Packaging	Bonding
Blackwell B200	2024	HBM3e	8	8-hi	24Gb (3GB)	24GB	192GB	1.2 TB/s	7.2 TB/s	2.5D CoWoS	MR-MUF/NCF
Blackwell Ultra B300	2025	HBM3e	8	12-hi	24Gb (3GB)	36GB	288GB	1.2 TB/s	7-8 TB/s	2.5D CoWoS	MR-MUF/NCF
Rubin Ultra	2026	HBM4	8	12-hi/16-hi	24Gb (3GB)	36-48GB	288-384GB	2.8-3.3 TB/s	22-26 TB/s	2.5D CoWoS	MR-MUF/NCF
Feynman	2027	HBM4e	16	16-hi	32Gb (4GB)	64GB	1,024GB	3.6-4.1 TB/s	58-66 TB/s	2.5D CoWoS	MR-MUF/NCF
Feynman	2028-29	HBM5	8	16-hi/20-hi	32Gb (4GB)	64-80GB	512-640GB	5-6 TB/s	40-50 TB/s	3D Stacked	Partially HB
Feynman Ultra	2030	HBM5e	16	16-hi/20-hi	40Gb (5GB)	80-100GB	1,280-1,600GB	8 TB/s+	128 TB/s+	3D Stacked	Almost Full HB
Post Feynman	2032	HBM6	16	20-hi/24-hi	48Gb (6GB)	120-144GB	1,920-2,304GB	12 TB/s+	192 TB/s+	3D Stacked	HB
Post Feynman Ultra	2035	HBM7	32	20-hi/24-hi	64Gb (8GB)	160-192GB	5,120-6,144GB	20 TB/s+	640 TB/s+	3D Stacked	HB

Source: Company, media reports, BofA Global Research

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Exhibit 34: GPU/ASIC/TPUs use 6-8 HBM chips; upcoming Rubin Ultra GPU is expected to use 16 HBM units; each HBM contains 8-12 DRAM dies (16-20 likely for HBM4e and HBM5)

HBM supply GPU or ASIC (TPU) vs conventional DRAM (LPDDR5, etc.) works with CPU

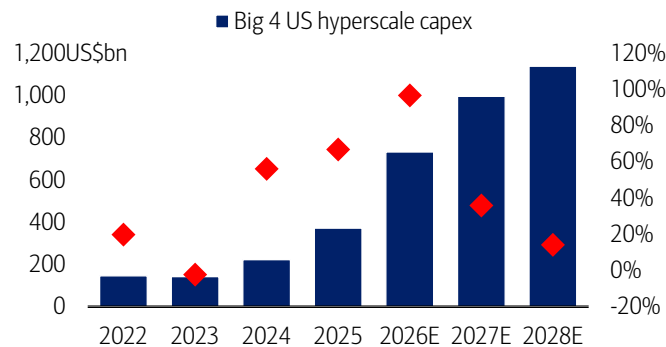


Source: BofA Global Research

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Hyperscale capex and cloud revenue margins

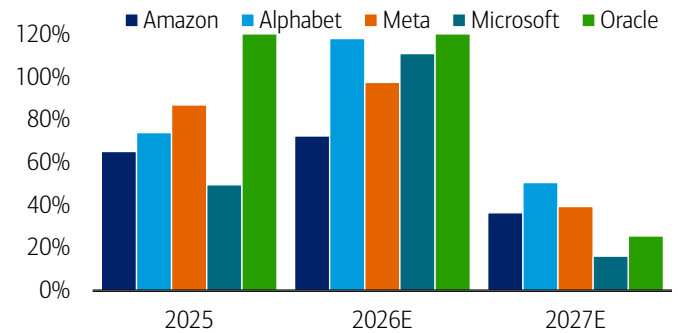
Exhibit 35: Amazon, Microsoft, Alphabet, Meta, and Oracle capex collectively to grow ~100% YoY in 2026 to \$730bn even after strong +65% YoY growth in 2025; 2027/28 capex to hit \$1tn+ pa
Combined capex of top 4 US tech companies



Source: Company reports, BofA Global Research estimates

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Exhibit 36: Record-high capex spend by all big-4 hyperscalers expected to continue in 2026-27E; robust growth since 2024
Hyperscalers' capex growth – YoY change

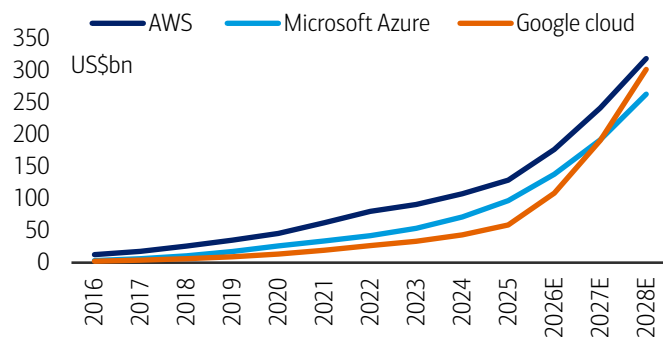


Note: Microsoft and Oracle data adjusted for CY basis **Oracle's 2025 capex up 230% YoY MSFT capex for 2026-27 is based on consensus

Source: Companies, BofA Global Research estimates

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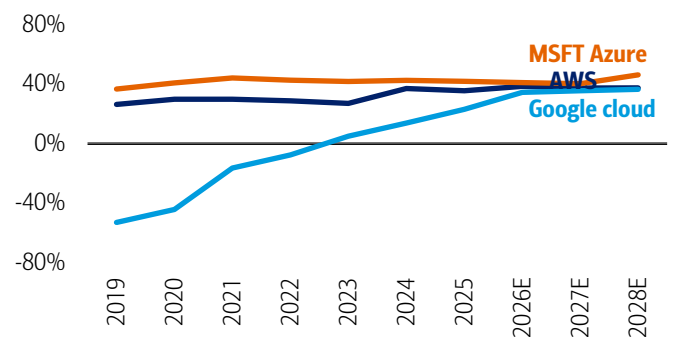
Exhibit 37: Cloud revenue growth still solid at 35-45% YoY in 2026-28
Cloud revenue of hyperscalers consistently strong



Source: Company reports, BofA Global Research estimates

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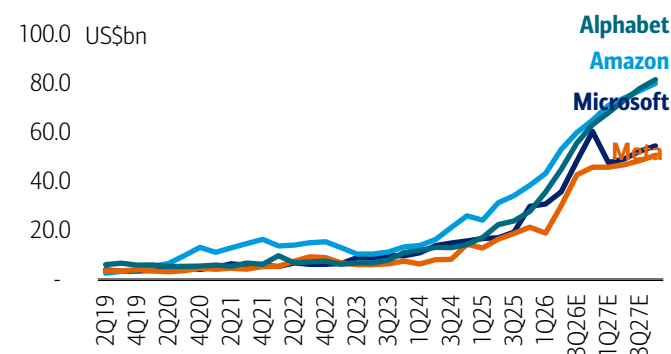
Exhibit 38: High OPM seen among AWS (35%+) and Azure (40%+); Google's margin also set to reach 35%+ in 2026-28
Cloud OPM trend also high



Source: Company reports, BofA Global Research estimates

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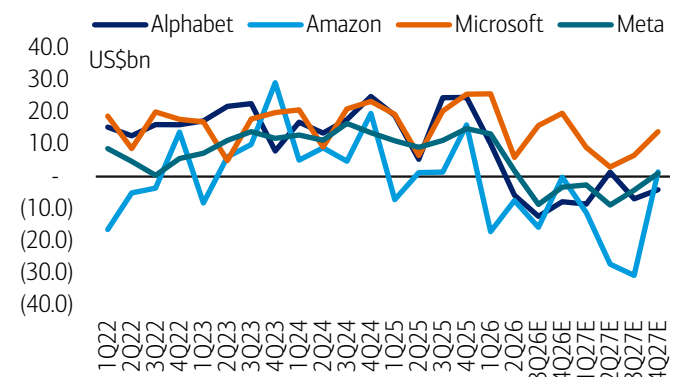
Exhibit 39: US hyperscaler capex accelerated sharply in CY2Q26, as Alphabet, MSFT, Amazon & Meta continued ramping AI infrastructure spending, driving another quarter of record investment levels.
Quarterly capex trend of top 4 US hyperscaler companies



Source: Company reports, BofA Global Research estimates

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Exhibit 40: Several hyperscalers are expected to experience negative FCF temporarily in 2026-27 as record AI infrastructure spending significantly outpaces near-term cash flow growth
Quarterly FCF trend of top 4 US hyperscaler companies



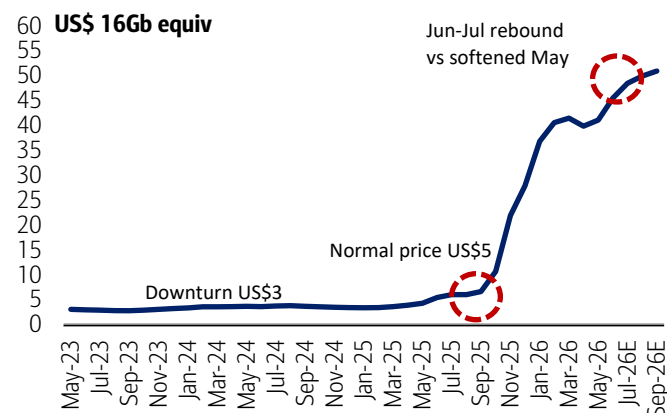
Source: Company reports, BofA Global Research estimates

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Memory price forecast and spot price short term trend

Exhibit 41: Well recovered in Jun-Jul following May corrections but still far higher than normal at US\$30-40/GB vs previous peaks of US\$10 range; thus 10%+ downside seen toward end-2026

DRAM spot price outlook - US\$/16Gb equiv

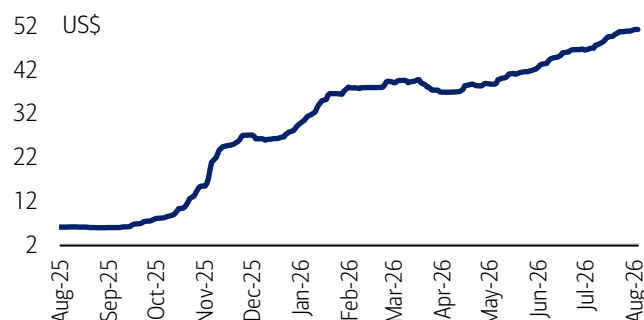


Source: DRAmExchange, BofA Global Research estimates

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Exhibit 43: DDR5 prices reached new highs (\$51) in early-August, supported by strong AI-related demand and constrained supply as DRAM makers prioritize HBM production

16Gb DDR5 spot price – daily, Aug'25 - Aug '26

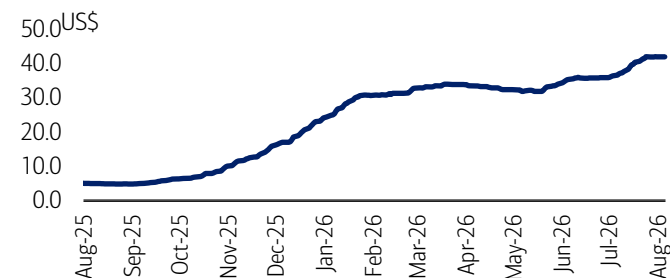


Source: DRAmExchange

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Exhibit 45: 8Gb DDR4 prices remained firm near highs, driven by production exits and inventory replenishment

8Gb DDR4 spot price trend, Aug'25 - Aug '26

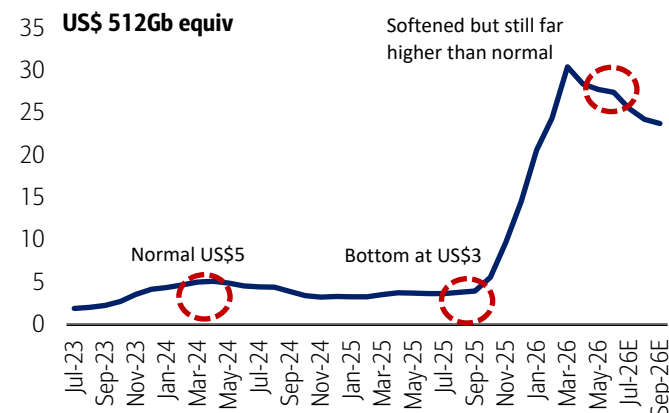


Source: DRAmExchange

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Exhibit 42: Unlike DRAM, NAND spot price has been corrected through June-July; further correction possible through summer but no hardlanding and absolute price still far higher than normal

NAND spot price outlook - US\$/512Gb equiv

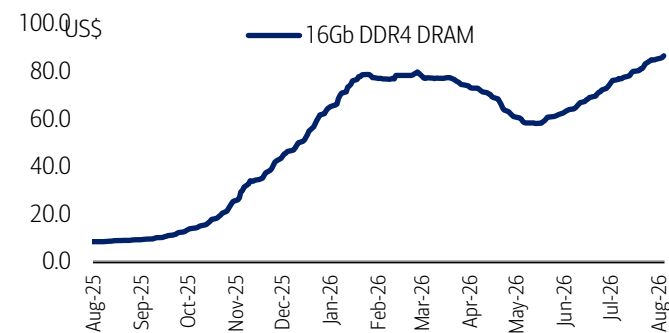


Source: DRAmExchange, BofA Global Research estimates

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Exhibit 44: DDR4 prices remained near cycle highs, supported by supply cuts and customer restocking, with a brief correction in May before recovering through June/July/early-Aug

16Gb DDR4 spot price trend, Aug'25 - Aug '26

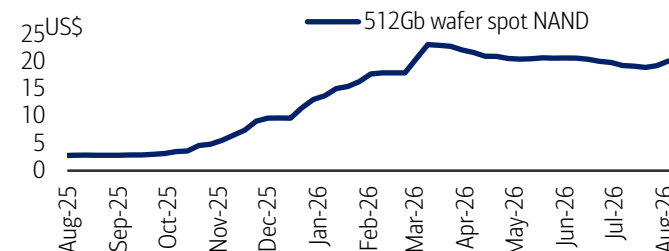


Source: DRAmExchange

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Exhibit 46: NAND wafer pricing rose to elevated levels, through 4Q25-1Q26, on tight supply and stronger SSD demand, but has flattened/slightly softened through 2Q26/Jul, recovered this week

512Gb NAND wafer spot price – weekly, Aug'25 - Aug '26



Source: DRAmExchange

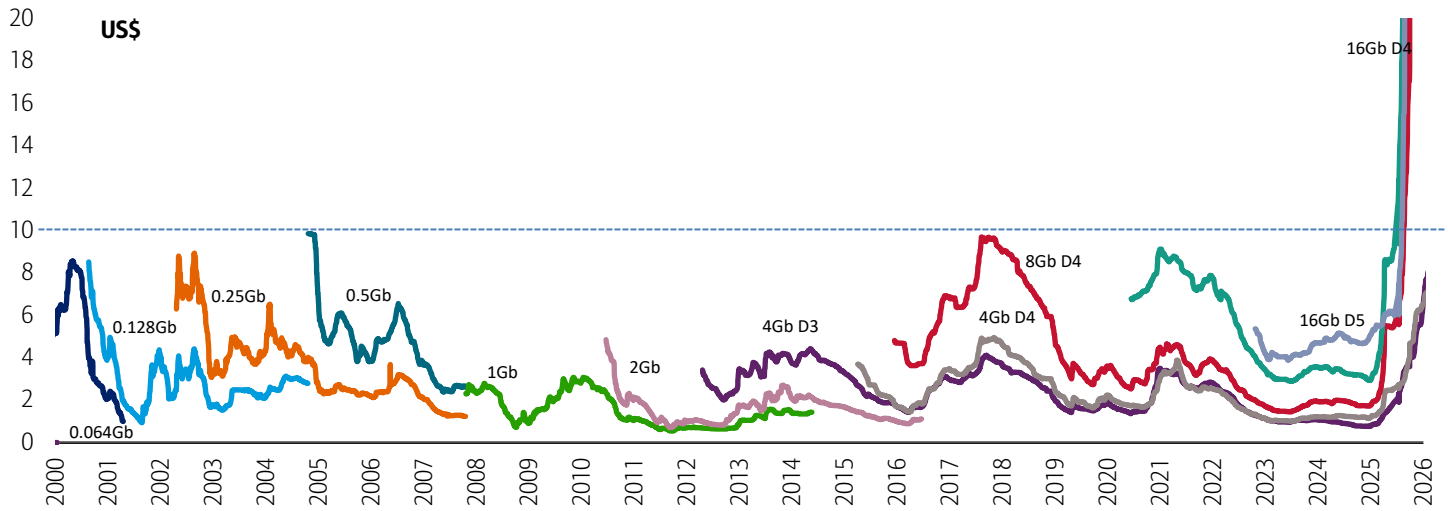
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Memory spot/contract price long term trend

Exhibit 47: DRAM spot prices rebounded through June after softening through April–May, following a strong rally from September 2025 to January 2026. Prices have reached multi-decade highs, with 16Gb DDR5 at ~\$51 and DDR4 at ~\$87, driven by supply reallocation toward HBM and server DRAM—well above the prior ~\$10 peak in October 2017.

DRAM spot price – long-term trend (2000-2025)

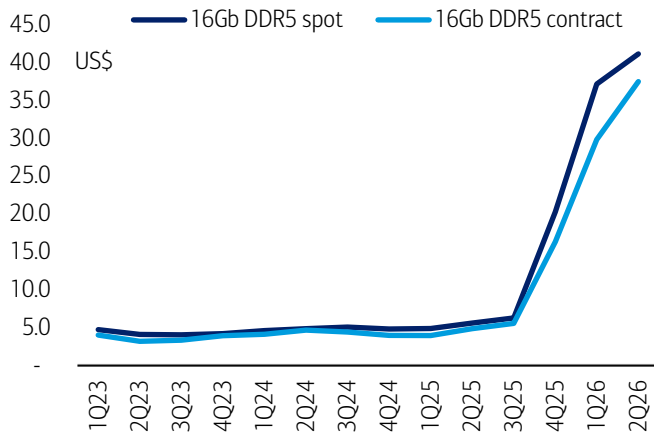


Source: DRAMeXchange

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Exhibit 48: DRAM spot and contract prices climbed to record highs of ~\$35–40, with moderate growth in 2Q26 following a strong rally in 4Q25 and 1Q26.

DRAM spot and contract price - quarterly average trend

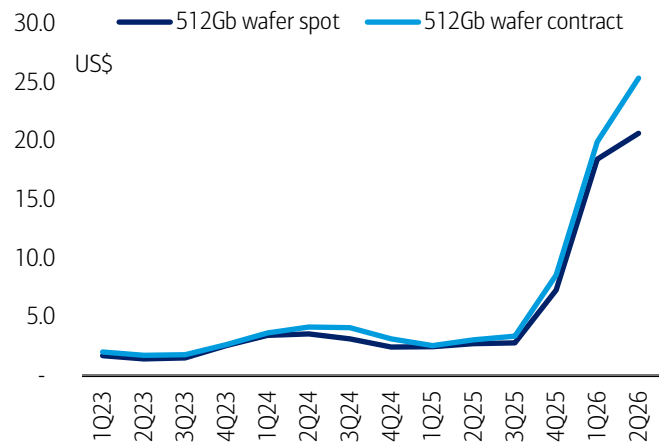


Source: DRAMeXchange, TrendForce

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Exhibit 49: NAND wafer contract prices have surged significantly ahead of spot prices, with both now at record-high levels

NAND wafer spot and contract price - quarterly average trend

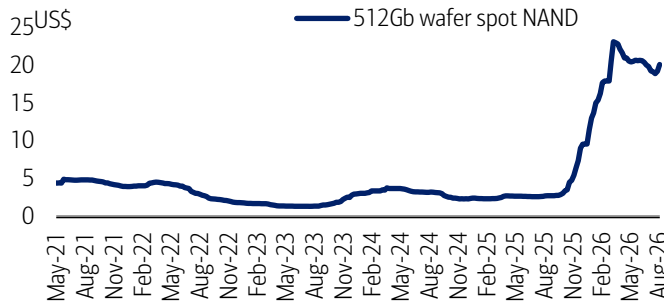


Source: DRAMeXchange, TrendForce

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Exhibit 56: NAND spot prices rebounded sharply early-Aug after remaining largely flat to slightly weaker throughout 2Q26 and most of July, prices are still up more than 50% YTD and nearly 8x above the Feb-2025 trough

512Gb NAND wafer spot price – weekly, May '21 - Aug '26

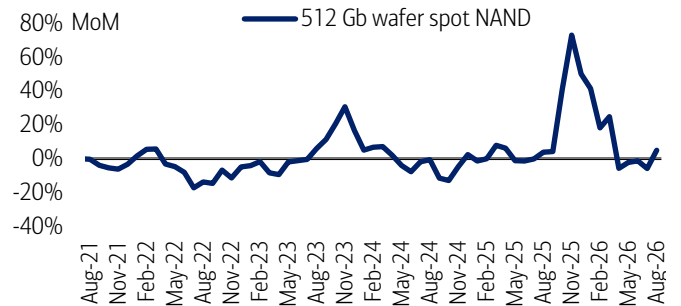


Source: DRAMeXchange

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Exhibit 57: Slight rebound observed in Aug after prices remained largely flat in June and softened in July following the Apr-May correction, compared with stronger gains of 15-20% in Feb-Mar 26 and sharp 40-70% MoM increases during Oct 25-Jan 26

512Gb NAND wafer spot average – MoM change, Aug '21 - Aug '26

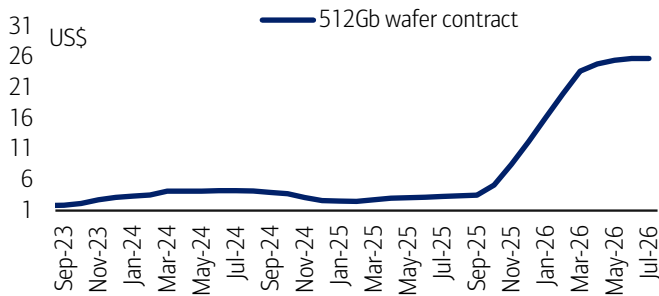


Source: DRAMeXchange

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Exhibit 58: Current contract price at ~\$26, around 10x vs Feb-25 bottom of \$2.5; prices significantly up in 4Q25/1Q26 and remained broadly stable thereafter

NAND wafer contract price trend, Sep '23-Jul '26

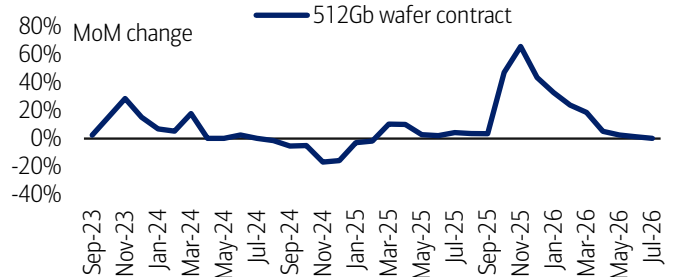


Source: TrendForce, DRAMeXchange, BofA Global Research

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Exhibit 59: Apr/May/Jun/Jul price only up +1-5% MoM each following Jan/Feb/Mar-26 rally (up 20-30% MoM) and Oct/Nov/Dec upturn (up 40-60% MoM)

MoM change of NAND contract price (512Gb wafer Sep '23-Jul '26)

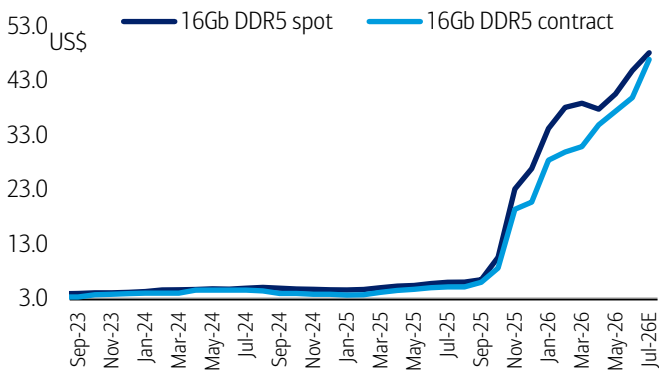


Source: DRAMeXchange, TrendForce, BofA Global Research

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Exhibit 60: 16Gb DDR5 spot and contract prices are in the range of US\$35-40 vs historical range of US\$3-5

16Gb DDR5 spot vs contract price trend (US\$), Sep '23-Jul '26

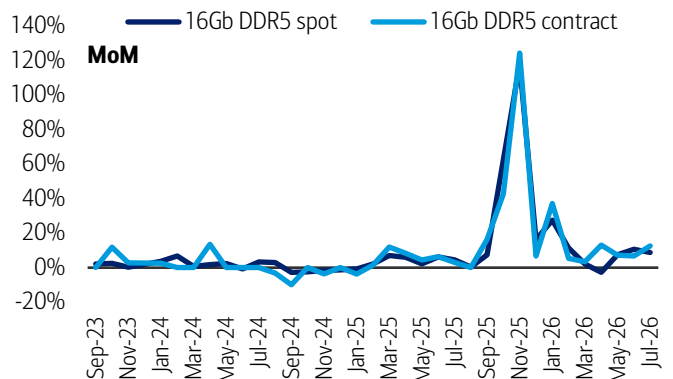


Source: DRAMeXchange, TrendForce

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Exhibit 61: Jun/Jul-26 spot and contract prices turned positive again after Feb-Mar moderation; prices had witnessed a sharp Oct-Dec'25 rally

16Gb DDR5 spot vs contract price trend – MoM change, Sep '23-Jul '26

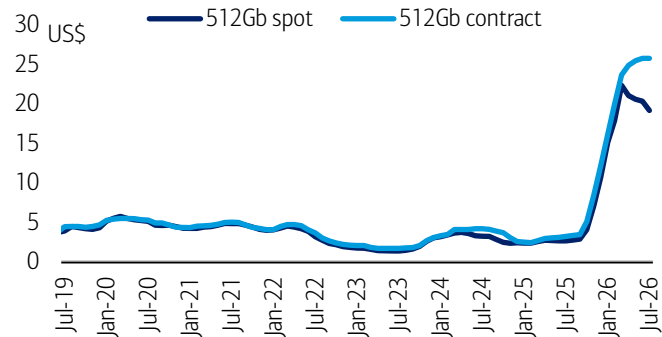


Source: DRAMeXchange, TrendForce

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Exhibit 62: Current NAND spot and contract prices are a few times higher than 2025 summer level

512Gb NAND wafer spot vs contract price trend (US\$), Jul '19 - Jul '26

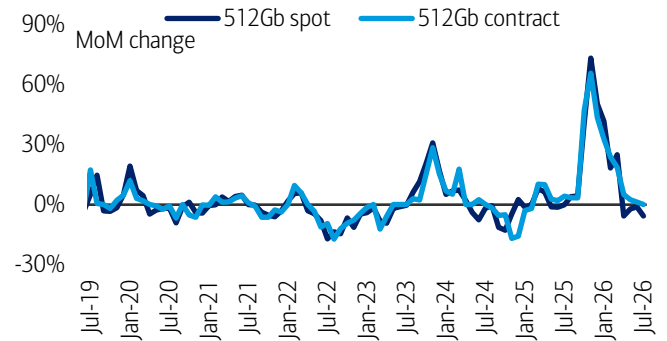


Source: DRAMeXchange, TrendForce

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Exhibit 63: NAND spot and contract prices normalized in Apr/May/Jun/Jul after strong rally during Oct-25 – Dec-25 (up 40-50% per month) and Jan-Mar-26 (20-30% per month)

512Gb NAND spot vs contract price trend – MoM change, Jul '19 - Jul '26

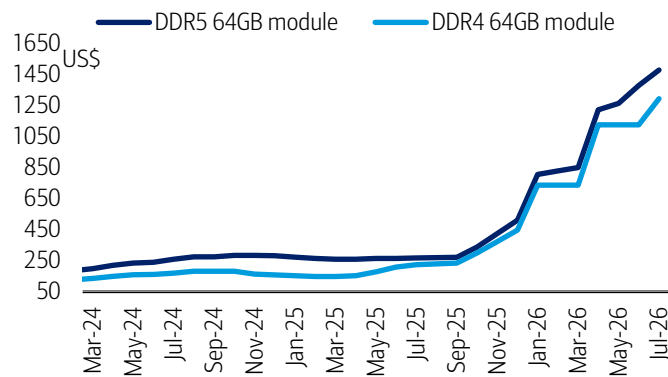


Source: DRAMeXchange, TrendForce

BofA GLOBAL RESEARCH

Exhibit 64: Current price of 64GB DDR4/DDR5 modules hit all-time high of more than \$1,000 level (DDR5: US\$1,480, DDR4: US\$1,300)

Server DRAM contract price trend – DDR5 vs DDR4 modules, Feb '24-Jun '26

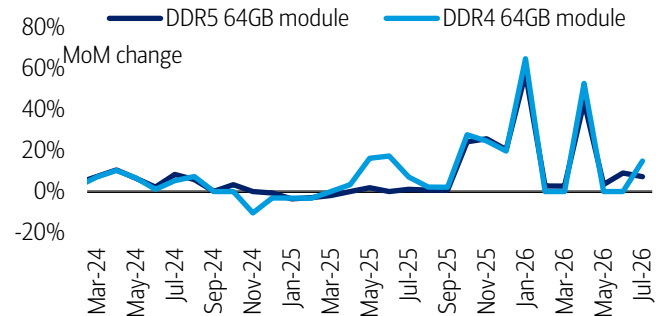


Source: TrendForce

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Exhibit 65: DDR5/DDR4 server contract prices recovered +7-15% MoM in July, following a stable May/June-26

MoM change of server DRAM contract prices, Feb '24-Jun '26

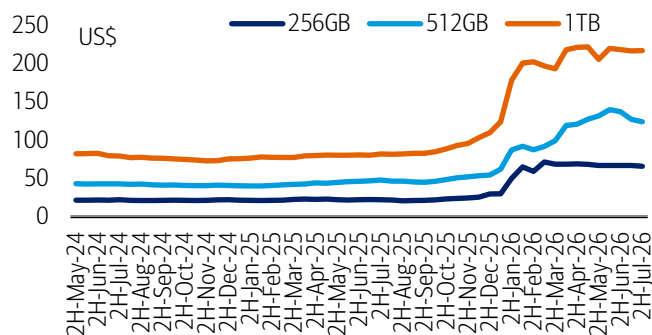


Source: TrendForce

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Exhibit 66: Jul SSD prices broadly flat; prices witnessed a sharp surge in 1Q26 and Apr/May (DRAMeXchange), following a gradual upward trend throughout 2025

Client SSD price trend – mostly for PC (not server), Apr '24 - Jun '26



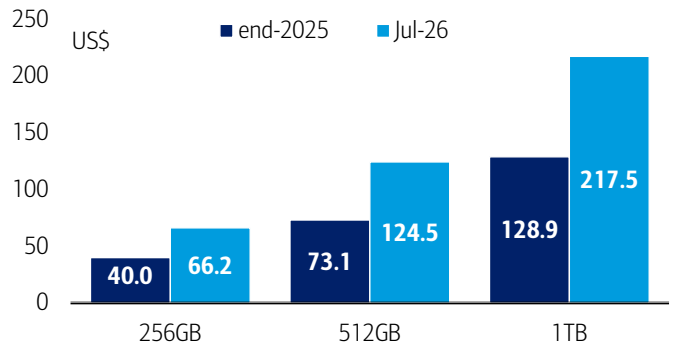
Note: SSD prices are as of 31 Jun 2026, reported by DRAMeXchange. TB = terabyte.

Source: DRAMeXchange

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Exhibit 67: Jul prices have doubled compared to end-2025 levels, while the 2025 increase was more modest at around 35-40%

Client SSD (for PC) price comparison – current vs. end-2025



Note: SSD prices are as of 31 Jun 2026, reported by DRAMeXchange

Source: DRAMeXchange

BofA GLOBAL RESEARCH



Valuation and stock performance

Exhibit 68: Memory stocks have been extremely volatile recently due to earnings miss concern vs solid fundamentals (high margin) and low P/E multiples

Valuation comparison among memory and semiconductor supply chain stocks

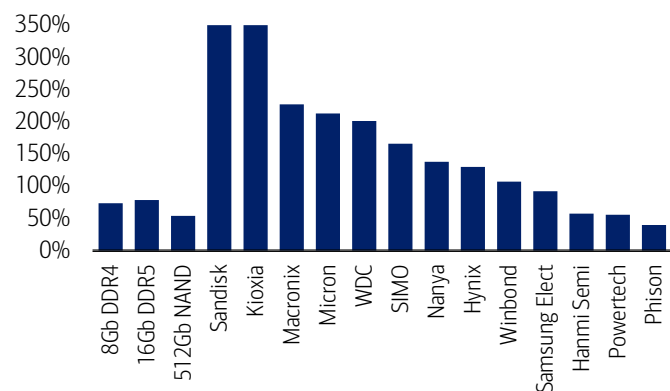
	Ticker	Rating	Price (Local)	Mcap (\$bn)	P/E			P/Book			EV/EBITDA		EV/Sales		ROE			Div. yield	
					FY25	FY26E	FY27E	FY25	FY26E	FY27E	FY26E	FY27E	FY26E	FY27E	FY25	FY26E	FY27E	FY26E	FY27E
Memory/DRAM																			
SK Hynix	HXSCF	C-1-7	1,616,000	768.8	4.4	4.1	4.1	2.9	1.8	1.4	2.5	2.5	2.1	2.0	100.1%	55.7%	38.3%	4.7%	5.9%
Samsung	SSNLF	C-1-7	242,000	950.3	5.4	4.0	4.2	2.3	1.6	1.2	2.4	2.5	1.5	1.5	53.4%	46.2%	32.0%	4.4%	4.6%
Micron	MU	C-1-7	893.19	1,008.8	12.2	6.4	6.1	7.4	3.8	2.8	5.1	5.1	4.2	4.0	87.8%	81.0%	54.8%	0.1%	0.1%
Nanya	NNYAF	B-1-7	459.00	49.0	7.3	5.4	6.7	3.5	2.3	1.9	3.3	4.0	2.5	2.5	67.9%	52.0%	31.5%	5.4%	5.4%
Memory/NAND																			
Kioxia	XIYUF	C-1-9	48,740	169.6	5.0	3.9	3.1	3.9	1.9	1.2	2.3	1.8	1.9	1.5	130.5%	67.6%	47.9%	0.0%	0.0%
Sandisk	SNDK	C-1-9	1,350.50	200.0	n/a	5.8	5.4	12.7	3.7	2.1	3.8	3.6	3.2	3.0	88.0%	103.2%	52.1%	0.0%	0.0%
Western Digital	WDC	C-1-7	519.17	190.0	n/a	27.1	16.3	21.4	12.4	7.2	18.2	12.0	10.2	6.8	54.9%	61.3%	58.5%	0.1%	0.1%
SIMO	SIMO	C-1-7	246.65	8.4	21.1	23.2	18.7	6.8	5.5	4.5	16.1	13.1	3.9	3.4	39.1%	27.2%	27.4%	1.1%	1.3%
Phison	PISNF	C-1-8	2,025.00	13.9	5.6	9.6	14.9	3.8	3.1	2.8	6.7	10.4	1.6	1.9	89.2%	36.0%	20.2%	5.6%	0.0%
US/Taiwan semis																			
NVIDIA	NVDA	C-1-7	219.22	5,305.1	24.1	16.5	12.2	18.0	11.3	7.6	14.0	10.6	9.6	7.3	95.9%	80.3%	69.3%	0.5%	0.6%
AMD	AMD	C-1-9	482.05	786.9	63.3	30.4	20.2	10.5	7.8	5.5	23.7	15.8	8.7	6.1	18.3%	30.3%	34.1%	0.0%	0.0%
Broadcom	AVGO	C-1-7	418.28	1,990.0	36.1	23.3	17.8	18.9	12.1	8.1	18.2	13.9	12.5	9.6	61.3%	65.5%	56.5%	0.7%	0.8%
Intel	INTC	C-1-9	101.06	509.7	67.8	48.4	33.6	4.7	4.3	3.8	16.8	13.1	6.6	5.7	6.5%	9.5%	12.5%	0.0%	0.0%
Arm	ARM	C-2-9	274.58	293.3	123.7	93.4	70.6	27.0	19.9	14.7	70.7	52.8	35.1	27.1	25.1%	25.0%	24.5%	0.0%	0.0%
Qualcomm	QCOM	C-3-7	157.53	165.4	15.0	14.9	12.7	5.7	5.4	4.6	12.1	10.5	4.0	3.5	44.4%	36.9%	38.0%	2.3%	2.3%
TSMC	TSMWF	B-1-7	2,365	1,898.5	21.5	15.4	13.0	7.8	5.4	4.0	10.3	8.8	7.6	6.5	43.0%	41.4%	35.3%	1.0%	1.0%
MediaTek	MDTKF	C-1-7	3,920	194.6	57.1	28.5	11.3	14.4	10.3	5.9	22.2	9.1	5.4	2.7	26.1%	41.9%	65.9%	2.8%	7.1%
Equipment																			
ASML	ASMLF	B-1-7	1,465.80	657.3	35.3	25.2	19.4	20.6	15.7	11.7	20.1	15.8	9.5	7.8	68.0%	70.3%	68.3%	1.0%	1.3%
AMAT	AMAT	B-1-7	534.24	424.2	44.0	32.9	27.4	14.5	10.2	7.5	28.1	23.6	10.2	8.9	39.0%	36.0%	31.0%	0.5%	0.5%
Lam	LRCX	C-1-7	307.42	384.5	52.8	33.3	26.1	30.8	16.8	12.3	27.1	22.4	11.2	9.1	65.7%	65.5%	54.0%	0.4%	0.5%
TEL	TOELF	C-1-7	55,330	164.4	35.4	23.4	19.2	10.3	8.1	6.6	16.5	13.7	6.0	5.0	31.5%	38.7%	37.9%	2.1%	2.6%
Hanmi Semi	HNSIF	C-1-7	205,000	13.4	60.6	33.9	19.2	20.8	13.9	8.8	25.1	14.1	13.7	8.3	39.4%	48.9%	55.7%	1.0%	1.5%
BESI	BESVF	B-1-7	215.50	20.2	46.4	29.4	19.5	21.9	17.0	12.9	23.3	15.5	11.8	8.4	61.7%	65.6%	75.9%	3.2%	4.5%
ASMPT	ASMVF	C-1-7	161.30	8.6	38.1	24.4	17.1	3.8	3.4	3.0	14.9	11.0	2.4	1.7	10.1%	14.7%	18.7%	1.7%	2.0%

Source: Company reports, BofA Global Research estimates; Mcap = market capitalization, ROE = return on equity, Div = dividend. RSTR = Restricted. Price as of latest close.

BofA GLOBAL RESEARCH

Exhibit 69: Memory stocks corrected sharply through Jul and early-Aug after a strong 1H26 rally; however, prices still remain elevated year-to-date, led by NAND and HDD with sustained strength in DRAM, underpinned by robust AI-driven demand

Memory companies – 2026 YTD stock performance comparison



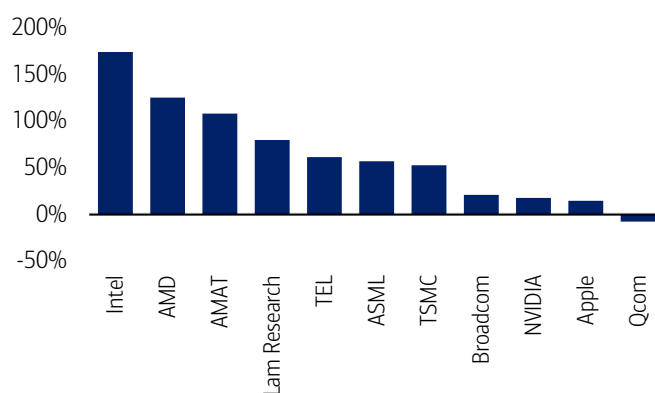
SanDisk shows above 400% YTD return

Source: Bloomberg, DRAMeXchange

BofA GLOBAL RESEARCH

Exhibit 70: CPU names such as Intel and AMD clearly outperforming other US big tech names such as NVIDIA/App/QCOM

Global major tech companies – 2026 YTD stock performance comparison



Source: Bloomberg

BofA GLOBAL RESEARCH

Wonik IPS (240810 KS; U/P; C-3-7; PO W85,000)

Wonik posted weaker-than-expected 2Q results: sales/OP W216/18bn (-11%/-50% YoY) came in below consensus sales/OP of W243/28bn. That said, we noticed upbeat NP of W90bn (+225% YoY), thanks to significantly high non-operating profit (financial income of W81bn, mostly due to gain on valuation of investment assets). Our lower 2027-28 EPS estimates (down 10%) are based on 4% lower sales and 1ppt lower OP margin assumptions. Although we expect gradual improvement in topline growth (3-yr CAGR of 16% in 2025-28E), OP margin will likely remain at 16-18% in 2026-28E (still lower than 2017 peak level of 19%).

As such, we reiterate our Underperform rating with a lower PO of W85,000 derived from 22x 2027E P/E (old PO W95,000 based on 23x 2026-27E EPS) to reflect weaker earnings momentum post-2Q miss. Our target P/E of 22x is about 35% above the long-term historical average given potential benefits from Samsung's increasing capex spend even for foundry.

Exhibit 71: Our PO W85,000 is based on 22x 2027E P/E

Wonik IPS – Valuation multiples at current price and PO

(x, %)	2024	2025	2026E	2027E	2028E
Current share price					
P/E	217.2	53.6	18.8	23.6	24.6
P/Book	5.1	4.6	3.8	3.3	2.9
EV/Sales	5.9	4.9	3.7	3.2	3.2
EV/EBITDA	33.1	60.1	22.7	17.8	18.5
FCF/EV	1%	-1%	6%	5%	5%
Dividend yield	0.1%	0.2%	0.2%	0.3%	0.3%
PO based					
P/E	199.3	49.2	17.3	21.7	22.6
P/Book	4.7	4.3	3.4	3.0	2.7
EV/Sales	5.4	4.5	3.4	3.0	2.9
EV/EBITDA	30.4	55.1	20.8	16.3	17.0
FCF/EV	1%	-1%	7%	5%	5%
Dividend yield	0.1%	0.2%	0.2%	0.4%	0.4%

Source: Company, BofA Global Research estimates

BofA GLOBAL RESEARCH

Duksan Neolux (213420 KS; Buy; C-1-9; PO W70,000)

Duksan posted in-line 2Q results (sales W95bn; +17% YoY / OP W18.5bn; +80% YoY), thanks to strong volume-driven OLED material orders (Samsung Galaxy Foldable 8 series and Apple iPhone 17) and solid turbomachinery business (sales W42bn; +27% YoY; OP W7.5bn; up nearly 10x YoY). Hence, we maintain our Buy rating with unchanged PO of W70,000 based on 21x 2027E P/E (was 23x 2026E EPS). Our target P/E (21x) is slightly lower than the historical average of 23x to be conservative on OLED material demand (negative impact of memory shortage).

Exhibit 72: Our PO W70,000 is derived from 21x 2027E P/E

Duksan Neolux – Valuation multiples at current price and PO

(x)	2024	2025	2026E	2027E	2028E
Current share price					
P/E	18.4	15.9	10.0	10.2	9.1
P/B	2.1	1.9	1.6	1.3	1.2
EV/Sales	3.9	2.4	1.8	1.6	1.4
EV/EBITDA	13.2	10.7	7.1	6.6	5.9
PO based					
P/E	38.0	32.7	20.6	21.0	18.8
P/B	4.4	3.8	3.2	2.8	2.4
EV/Sales	8.1	5.0	3.7	3.4	3.0
EV/EBITDA	27.7	22.5	14.9	13.8	12.4

Source: Company, BofA Global Research estimates

BofA GLOBAL RESEARCH



Exhibit 73: Our lower 2027-28E EPS estimates (down 10%) are based on 4% lower sales and 1ppt lower OP margin assumptions. Although we expect gradual improvement in topline growth (3-yr CAGR of 16% in 2025-28E), OP margin will likely remain at 16-18% in 2026-28E (still lower than 2017 peak level of 19%). As such, we reiterate our Underperform rating with lower PO W85,000 derived from 22x 2027E P/E to reflect weaker earnings momentum post 2Q miss

Wonik IPS – Earnings revisions (2026-28E)

	1Q26	2Q26	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2021	2022	2023	2024	2025	2026E	2027E	2028E
EPS																
New	453	1,848	1,208	1,407	931	912	1,304	771	3,007	1,852	-281	426	1,727	4,916	3,919	3,769
Old	453	754	1,407	1,407	931	912	1,655	837	3,007	1,852	-281	426	1,727	4,021	4,336	4,191
Difference	0%	145%	-14%	0%	0%	0%	-21%	-8%	n/a	n/a	n/a	n/a	n/a	22%	-10%	-10%
Dividend/share																
New	0	0	0	200	0	0	0	300	300	200	0	50	200	200	300	300
Old	0	0	0	200	0	0	0	300	300	200	0	50	200	200	300	300
Difference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0%	0%	0%
Sales																
New	165	216	369	443	306	321	386	353	1,232	1,011	690	748	910	1,193	1,366	1,406
Old	165	270	398	443	306	321	436	363	1,232	1,011	690	748	910	1,276	1,426	1,466
Difference	0%	-20%	-7%	0%	0%	0%	-11%	-3%	n/a	n/a	n/a	n/a	n/a	-6%	-4%	-4%
Gross margin																
New	51.5%	45.7%	44.0%	41.0%	45.0%	44.0%	45.0%	42.0%	38.3%	40.8%	40.0%	39.1%	42.1%	44.2%	44.0%	43.6%
Old	51.5%	46.0%	44.0%	41.0%	45.0%	44.0%	45.0%	42.0%	38.3%	40.8%	40.0%	39.1%	42.1%	44.3%	44.0%	43.6%
Difference	0.0%	-0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n/a	n/a	n/a	n/a	n/a	-0.1%	0.0%	-0.1%
OP																
New	11	18	77	90	59	58	83	49	164	98	-18	11	74	195	249	239
Old	11	48	90	90	59	58	105	53	164	98	-18	11	74	238	276	266
Difference	0%	-62%	-14%	0%	0%	0%	-21%	-8%	n/a	n/a	n/a	n/a	n/a	-18%	-10%	-10%
OP margin																
New	6.5%	8.5%	20.8%	20.2%	19.3%	18.0%	21.5%	13.8%	13.3%	9.6%	-2.6%	1.4%	8.1%	16.4%	18.2%	17.0%
Old	6.5%	17.7%	22.5%	20.2%	19.3%	18.0%	24.2%	14.6%	13.3%	9.6%	-2.6%	1.4%	8.1%	18.6%	19.3%	18.2%
Difference	0.0%	-9.2%	-1.7%	0.0%	0.0%	0.0%	-2.7%	-0.8%	n/a	n/a	n/a	n/a	n/a	-2.2%	-1.1%	-1.1%
Pre-tax income																
New	26	101	77	90	60	58	83	49	189	117	-21	17	106	295	251	241
Old	26	48	90	90	60	58	106	54	189	117	-21	17	106	255	278	268
Difference	0%	110%	-14%	0%	0%	0%	-21%	-8%	n/a	n/a	n/a	n/a	n/a	16%	-10%	-10%
Effective tax rate																
New	16.6%	11.1%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	23.3%	23.8%	35.2%	-19.1%	20.8%	18.9%	24.0%	24.0%
Old	16.6%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	23.3%	23.8%	35.2%	-19.1%	20.8%	23.2%	24.0%	24.0%
Difference	0.0%	-12.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n/a	n/a	n/a	n/a	n/a	-4.3%	0.0%	0.0%
Net profit																
New	22	90	59	68	45	44	63	38	145	89	-14	21	84	239	191	183
Old	22	37	68	68	45	44	81	41	145	89	-14	21	84	196	211	204
Difference	0%	145%	-14%	0%	0%	0%	-21%	-8%	n/a	n/a	n/a	n/a	n/a	22%	-10%	-10%
ROE - annualized																
New	9.0%	35.0%	21.3%	23.5%	14.8%	14.1%	19.3%	11.0%	19.8%	10.7%	-1.6%	2.4%	9.0%	22.0%	14.8%	12.5%
Old	9.0%	14.7%	26.2%	24.6%	15.5%	14.7%	25.4%	12.3%	19.8%	10.7%	-1.6%	2.4%	9.0%	18.5%	16.9%	14.1%
Difference	0.0%	20.3%	-4.9%	-1.2%	-0.7%	-0.6%	-6.1%	-1.3%	n/a	n/a	n/a	n/a	n/a	3.5%	-2.2%	-1.6%
EBITDA																
New	20	27	86	99	68	67	92	58	202	138	25	50	111	232	286	276
Old	20	57	99	99	68	67	115	62	202	138	25	50	111	274	312	303
Difference	1%	-52%	-13%	0%	0%	0%	-20%	-7%	n/a	n/a	n/a	n/a	n/a	-15%	-8%	-9%
Capex																
New	5	14	12	19	14	15	15	16	97	70	60	21	26	50	60	60
Old	12	14	12	12	14	15	15	16	97	70	60	21	26	50	60	60
Difference	-58%	0%	0%	58%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%
Net debt																
New	-153	-175	-180	-175	-232	-141	-223	-284	-38	-98	-54	-135	-107	-175	-284	-371
Old	-153	-151	-166	-247	-167	-201	-283	-369	-38	-98	-54	-135	-107	-247	-369	-448
Difference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-29%	-23%	-17%
BVPS																
New	20,184	22,065	23,273	24,680	25,611	26,323	27,627	28,398	16,597	18,174	17,813	18,240	19,936	24,680	28,398	31,867
Old	20,185	20,739	22,146	23,552	24,483	25,196	26,851	27,688	16,597	18,174	17,813	18,240	19,936	23,552	27,688	31,579
Difference	0%	6%	5%	5%	5%	4%	3%	3%	n/a	n/a	n/a	n/a	n/a	5%	3%	1%

Source: Company, BofA Global Research estimates

BofA GLOBAL RESEARCH



Exhibit 74: Minimal revisions to 2027-28E EPS estimates post inline 2Q results as we continue to expect solid sales (W500bn+ pa) and stable OP margin (21% range) to sustain

Duksan Neolux – Earnings revisions (2026-28E)

Wbn, Won	1Q26	2Q26	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2021	2022	2023	2024	2025	2026E	2027E	2028E
EPS																
New	649	784	803	1,161	583	643	984	1,122	1,918	1,567	1,442	1,843	2,142	3,396	3,332	3,723
Old	648	604	769	1,009	587	681	948	1,114	1,918	1,567	1,442	1,843	2,142	3,030	3,330	3,719
Difference	n/a	30%	4%	15%	-1%	-6%	4%	1%	n/a	n/a	n/a	n/a	n/a	12%	0%	0%
Dividend/share																
New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Old	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Difference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sales																
New	73	95	120	177	93	107	140	165	191	177	164	212	344	465	506	572
Old	73	99	121	148	93	107	141	164	191	177	164	212	344	440	505	571
Difference	n/a	-4%	0%	20%	0%	0%	0%	1%	n/a	n/a	n/a	n/a	n/a	6%	0%	0%
Gross margin																
New	42.1%	41.8%	39.1%	34.0%	34.6%	39.9%	39.0%	36.6%	35.5%	33.8%	35.1%	38.4%	33.7%	38.2%	37.6%	36.3%
Old	50.9%	39.9%	38.1%	37.4%	41.9%	41.0%	38.1%	36.8%	35.5%	33.8%	35.1%	38.4%	33.7%	40.4%	39.0%	37.6%
Difference	n/a	1.9%	1.0%	-3.4%	-7.3%	-1.1%	0.9%	-0.2%	n/a	n/a	n/a	n/a	n/a	-2.2%	-1.4%	-1.3%
OP																
New	17	19	25	36	18	20	32	35	51	45	33	52	61	97	105	118
Old	17	18	24	31	18	21	30	35	51	45	33	52	61	91	105	118
Difference	n/a	1%	5%	15%	0%	-5%	4%	0%	n/a	n/a	n/a	n/a	n/a	7%	0%	0%
OP margin																
New	23.5%	19.6%	20.8%	20.5%	19.1%	19.0%	22.4%	21.2%	26.6%	25.4%	20.1%	24.7%	17.6%	20.9%	20.7%	20.6%
Old	23.5%	18.5%	19.9%	21.2%	19.1%	20.1%	21.6%	21.3%	26.6%	25.4%	20.1%	24.7%	17.6%	20.6%	20.7%	20.6%
Difference	n/a	1.0%	0.9%	-0.7%	0.0%	-1.1%	0.9%	-0.1%	n/a	n/a	n/a	n/a	n/a	0.2%	0.0%	0.0%
Pre-tax income																
New	21	26	27	38	20	22	34	37	56	45	42	55	64	112	113	126
Old	21	20	26	33	20	23	32	37	56	45	42	55	64	100	113	126
Difference	n/a	26%	4%	15%	0%	-5%	4%	0%	n/a	n/a	n/a	n/a	n/a	11%	0%	0%
Effective tax rate																
New	18.8%	21.9%	23.0%	22.0%	22.0%	24.0%	24.0%	22.0%	16.9%	13.1%	14.2%	14.9%	16.1%	21.6%	23.0%	23.0%
Old	18.8%	22.0%	23.0%	22.0%	22.0%	24.0%	24.0%	22.0%	16.9%	13.1%	14.2%	14.9%	16.1%	21.6%	23.0%	23.0%
Difference	n/a	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n/a	n/a	n/a	n/a	n/a	0.0%	0.0%	0.0%
Net profit																
New	17	20	21	30	15	17	25	29	47	39	36	46	54	87	87	97
Old	17	16	20	26	15	18	25	29	47	39	36	46	54	79	87	97
Difference	n/a	26%	4%	15%	0%	-5%	4%	0%	n/a	n/a	n/a	n/a	n/a	11%	0%	0%
ROE - annualized																
New	14.4%	16.3%	16.3%	22.1%	11.1%	11.8%	17.0%	18.4%	19.5%	12.8%	10.6%	12.3%	12.7%	17.6%	14.9%	14.3%
Old	14.3%	13.0%	15.8%	19.6%	11.3%	12.6%	16.7%	18.6%	19.5%	12.8%	10.6%	12.3%	12.7%	16.0%	15.1%	14.5%
Difference	n/a	3.3%	0.5%	2.5%	-0.2%	-0.8%	0.4%	-0.2%	n/a	n/a	n/a	n/a	n/a	1.6%	-0.2%	-0.2%
EBITDA																
New	22	23	30	41	23	25	36	40	57	51	41	62	76	115	124	138
Old	23	24	30	37	24	28	37	41	57	51	41	62	76	114	129	144
Difference	n/a	-4%	-1%	10%	-5%	-9%	0%	-3%	n/a	n/a	n/a	n/a	n/a	1%	-4%	-4%
Capex																
New	5	5	6	4	7	7	8	8	11	14	16	15	12	20	30	30
Old	4	5	6	5	7	7	8	8	11	14	16	15	12	20	30	30
Difference	n/a	0%	0%	-28%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%
Net debt																
New	-29	-3	-11	-32	-86	-72	-87	-106	-115	-114	-18	-49	-25	-32	-106	-183
Old	4	-12	-21	-41	-59	-76	-93	-114	-115	-114	-18	-49	-25	-41	-114	-192
Difference	n/a	-76%	-49%	-23%	47%	-6%	-6%	-8%	n/a	n/a	n/a	n/a	n/a	-23%	-8%	-5%
BVPS																
New	18,862	19,725	20,564	21,765	22,388	23,071	24,097	25,260	11,558	12,896	14,220	16,065	18,197	21,765	25,260	29,161
Old	18,950	19,586	20,392	21,441	22,064	22,782	23,771	24,932	11,558	12,896	14,220	16,065	18,197	21,441	24,932	28,828
Difference	n/a	1%	1%	2%	1%	1%	1%	1%	n/a	n/a	n/a	n/a	n/a	2%	1%	1%

Source: Company, BofA Global Research estimates

BofA GLOBAL RESEARCH



Glossary

ASP: Average selling price

CVD: Chemical vapor deposition

DRAM: Dynamic random-access memory

Gb/Tb: Gigabit/Terabit

HBM: High bandwidth memory using DRAM dies

HBM4: 6th gen of HBM

OEM: Original equipment manufacturer

OLED: Organic light emitting diode

NAND: Not-AND memory

Price objective basis & risk

Duksan Neolux (XDSXF)

Our PO of W70,000 is derived from 21x 2027E P/E, which is slightly lower than the long-term historical average of 23x to be conservative (negative impact of memory chip shortage). Upside risk is related to stronger new orders for OLED materials and turbomachinery. Downside risks are weaker material demand coupled with smartphone industry saturation and geopolitics (e.g., US tariffs on Samsung and Apple products).

Wonik IPS (XRHQF)

Our PO of W85,000 is based on 22x 2027E P/E, which is about 35% higher than long-term historical average given Samsung's gradually increasing capex spend even for conventional memory.

Upside risks: stronger-than-expected equipment order levels

Downside risks: significant market-share loss to foreign equipment vendors or steeper order cuts than envisaged from Samsung and Hynix.

Analyst Certification

We, Simon Woo, CFA and Matt Shin, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alchip	ALCPF	3661 TT	Haas Liu
	All Ring	XNQNF	6187 TT	Haas Liu
	AMEC	XRTOF	688012 CH	Dai Shen
	ASE Technology Holding	XSRIF	3711 TT	Haas Liu
	ASE Technology Holding -ADR	ASX	ASX US	Haas Liu
	ASMPT	ASMFV	522 HK	Simon Woo, CFA
	Aspeed	XLKMF	5274 TT	Mike Yang
	Chroma ATE	CRMJF	2360 TT	Haas Liu
	eMemory	XYLWF	3529 TT	Mike Yang
	GigaDevice	XGXIF	603986 CH	Daley Li, CFA
	Global Unichip Corp.	GBUHF	3443 TT	Haas Liu
	Grand Process Technology Corp	XZOWF	3131 TT	Haas Liu
	Hanmi Semiconductor	HNSIF	042700 KS	Simon Woo, CFA
	Hon Precision	XXPIF	7769 TT	Haas Liu
	Horizon Robotics	HRZRF	9660 HK	Daley Li, CFA
	Iluvatar CoreX	XSIBF	9903 HK	Daley Li, CFA
	Ingenic	XISCF	300223 CH	Dai Shen
	InnoScience Technology	XSCHF	2577 HK	Daley Li, CFA
	JCET Group Co Ltd	XJIEF	600584 CH	Dai Shen
	King Yuan Electronics Corp.	KYUFF	2449 TT	Haas Liu
	Kinik	KIKCF	1560 TT	Haas Liu
	Macronix International	MXICF	2337 TT	Dai Shen
	MediaTek	MDTKF	2454 TT	Haas Liu
	Montage Technology	XRDF	688008 CH	Daley Li, CFA
	MPI Corporation	XMJCF	6223 TT	Mike Yang
	Nanya Technology	NNYAF	2408 TT	Simon Woo, CFA
	NCE Power	XVFFF	605111 CH	Daley Li, CFA
	OmniVision	XXHQF	603501 CH	Dai Shen
	Phison Electronics	PISNF	8299 TT	Simon Woo, CFA
	Powerchip Semiconductor Manufacturing Co	XCHPF	6770 TT	Haas Liu
	Powertech Technology	PWOGF	6239 TT	Simon Woo, CFA
	Rockchip	XRPF	603893 CH	Daley Li, CFA
	Samsung C&T	XCDTF	028260 KS	Simon Woo, CFA
	Samsung Elec -G	SSNHZ	SMSN LI	Simon Woo, CFA
	Samsung Electronics	SSNLF	005930 KS	Simon Woo, CFA
	Samsung Electronics Preferred	SSNNF	005935 KS	Simon Woo, CFA
	Silergy Corp.	SLEGF	6415 TT	Mike Yang
	Silicon Motion	SIMO	SIMO US	Simon Woo, CFA
	SK Hynix	HXSOF	000660 KS	Simon Woo, CFA
	SK Hynix ADR	SKHY	SKHY US	Simon Woo, CFA
	SK Square	SKSQF	402340 KS	Simon Woo, CFA
	Taiwan Semiconductor Manufacturing Co.	TSM	TSM US	Haas Liu
	Taiwan Semiconductor Manufacturing Co.	TSMWF	2330 TT	Haas Liu
	Vanguard International Semiconductor Co	VGILF	5347 TT	Haas Liu
	Winbond Electronics	WBEKF	2344 TT	Dai Shen
	WinWay Technology	XWCLF	6515 TT	Mike Yang
	WT Microelectronics	XZOPF	3036 TT	Mike Yang
NEUTRAL				
	ASMedia Technology Inc.	XZSFF	5269 TT	Mike Yang
	Black Sesame Intl Holding	BSIHF	2533 HK	Daley Li, CFA
	Hangzhou Silan Microelectronics	XDFRF	600460 CH	Daley Li, CFA
	Lion Electronics	XDHF	605358 CH	Dai Shen
	MetaX	XMEZF	688802 CH	Daley Li, CFA
	Novatek	NVKMF	3034 TT	Mike Yang
	Realtek	RLTKF	2379 TT	Mike Yang
	Shenzhen Goodix	XQPLF	603160 CH	Daley Li, CFA
UNDERPERFORM				
	Crystal Clear	XPPTF	300655 CH	Dai Shen
	Faraday	FDYTF	3035 TT	Haas Liu
	GlobalWafers	XWLFF	6488 TT	Mike Yang
	Hua Hong Semi	HHUSF	1347 HK	Dai Shen
	LX Semicon	XLXSF	108320 KS	Simon Woo, CFA
	M31 Technology	XMTZF	6643 TT	Mike Yang



APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Maxscend	MXSF	300782 CH	Daley Li, CFA
	Parade	PRDWF	4966 TT	Mike Yang
	Soulbrain	XSBOF	357780 KS	Simon Woo, CFA
	United Microelectronics Corp.	XUMIF	2303 TT	Haas Liu
	United Microelectronics Corp.	UMC	UMC US	Haas Liu
	VeriSilicon	XMLZF	688521 CH	Daley Li, CFA
	Win Semiconductors	WSMIF	3105 TT	Haas Liu
	Wonik IPS	XRHQF	240810 KS	Simon Woo, CFA

APR - Technology Hardware Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	AAC Technologies	AACAF	2018 HK	Katherine Zhu
	Asia Vital Components	AVMPF	3017 TT	Doris Kao
	BizLink	BIZLF	3665 TT	Doris Kao
	Chenbro	CEOMF	8210 TT	Doris Kao
	Cowell	CWLLF	1415 HK	Katherine Zhu
	Crystal-Optech	XMKAF	002273 CH	Katherine Zhu
	Delta Electronics (Thailand)	XLETF	DELTA TB	Suppamong lemkongaek, CFA, CMT
	Delta Electronics Inc.	DLTEF	2308 TT	Robert Cheng
	Duksan Neolux	XDSXF	213420 KS	Simon Woo, CFA
	Dynamic Holding	XLHCF	3715 TT	Mike Yang
	E Ink Holdings	PVWIF	8069 TT	Doris Kao
	Elite Material	ETMCF	2383 TT	Mike Yang
	Foxconn Industrial Internet	XDAZF	601138 CH	Robert Cheng
	Goertek	XGKCF	002241 CH	Katherine Zhu
	Gold Circuit	GOCCF	2368 TT	Doris Kao
	Hana Microelectronics	XHNMF	HANA TB	Suppamong lemkongaek, CFA, CMT
	Hon Hai Precision Industry	HNHAF	2317 TT	Robert Cheng
	Huaqin	XHUAF	603296 CH	Katherine Zhu
	Huaqin	XPEZF	3296 HK	Katherine Zhu
	ISU Petasys	IPTYF	007660 KS	Matt Shin
	Jentech	XVFSF	3653 TT	Doris Kao
	King Slide	KGSLF	2059 TT	Doris Kao
	Kinsus	KNSUF	3189 TT	Mike Yang
	Largan Precision	LGANF	3008 TT	Robert Cheng
	Lens Tech	XLTVF	6613 HK	Katherine Zhu
	LG CNS	XLGLF	064400 KS	Simon Woo, CFA
	LG Electronics	LGEAF	066570 KS	Simon Woo, CFA
	LG Innotek	XLGQF	011070 KS	Simon Woo, CFA
	Lotes	ZYZTF	3533 TT	Doris Kao
	Luxshare	XNJQF	002475 CH	Robert Cheng
	Netweb Technologies	XNTZF	NETWEB IN	Jatin Kalra, CFA
	NYPFB	NANYF	8046 TT	Mike Yang
	Quanta Computer	QUCPF	2382 TT	Robert Cheng
	Samsung Electro-Mechanics	SMSGF	009150 KS	Simon Woo, CFA
	Samsung SDI	SSDIF	006400 KS	Simon Woo, CFA
	Samsung SDS	XWPBF	018260 KS	Simon Woo, CFA
	Shennan Circuits	XAMKF	002916 CH	Katherine Zhu
	Taiwan Union Technology Corporation	TWUNF	6274 TT	Mike Yang
	Unimicron	UMCRF	3037 TT	Mike Yang
	Universal Display	OLED	OLED US	Simon Woo, CFA
	Victory Giant	XENEF	300476 CH	Katherine Zhu
	Wistron	WICOF	3231 TT	Doris Kao
	Wiwynn	XWQF	6669 TT	Robert Cheng
	Xiaomi Corporation	XIACF	1810 HK	Robert Cheng
	Yageo	YGEQF	2327 TT	Robert Cheng
	Zhen Ding Tech	XFAGF	4958 TT	Doris Kao
	Zhongji Innolight	XZICF	300308 CH	Katherine Zhu
	ZTE Corporation	SHZZF	000063 CH	Katherine Zhu
	ZTE Corporation	ZTCOF	763 HK	Katherine Zhu

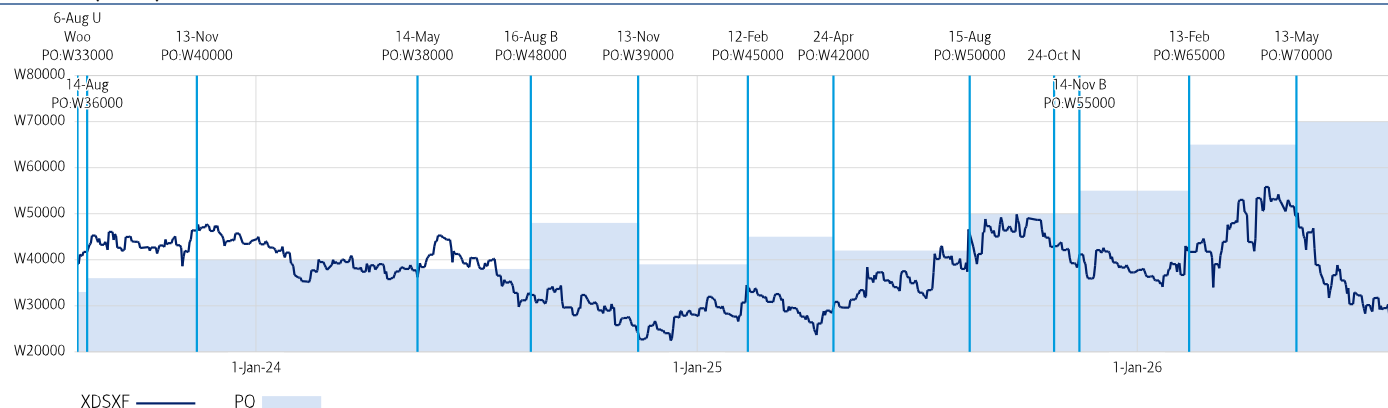
APR - Technology Hardware Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
NEUTRAL				
	Advantech	ADTEF	2395 TT	Robert Cheng
	Asustek	AKCPF	2357 TT	Robert Cheng
	Auras Technology	AUTCF	3324 TT	Doris Kao
	BYD Electronic	BYDIF	285 HK	Katherine Zhu
	DS Precision	XBASF	002384 CH	Katherine Zhu
	Lenovo Group	LNVGf	992 HK	Robert Cheng
	Lenovo Group	LNVGy	LNVGy US	Robert Cheng
	Lite-On Tech	LOTZF	2301 TT	Doris Kao
	Sunny Optical	SNPTF	2382 HK	Katherine Zhu
UNDERPERFORM				
	Acer	ASIYF	2353 TT	Robert Cheng
	Catcher Tech	CHERF	2474 TT	Robert Cheng
	Compal Electron	XLCPF	2324 TT	Doris Kao
	Everwin Precision	XSHZF	300115 CH	Katherine Zhu
	Genius Electronic Optical	GNSEF	3406 TT	Robert Cheng
	Lens Tech	XLTF	300433 CH	Katherine Zhu
	LG Display	LPHLF	034220 KS	Simon Woo, CFA
	LG Display-ADR	LPL	LPL US	Simon Woo, CFA
	Lianchuang Electronic	XWOFF	002036 CH	Katherine Zhu
	Pegatron	PGTRF	4938 TT	Robert Cheng
	Sanan Opto	XEQYF	600703 CH	Katherine Zhu
	Seoul Semiconductor	SLSOF	046890 KS	Simon Woo, CFA
	Shengyi	DGUNF	600183 CH	Mike Yang
	Sunway Communications	XWSVF	300136 CH	Katherine Zhu
	Transsion	XCINF	688036 CH	Robert Cheng

Disclosures

Important Disclosures

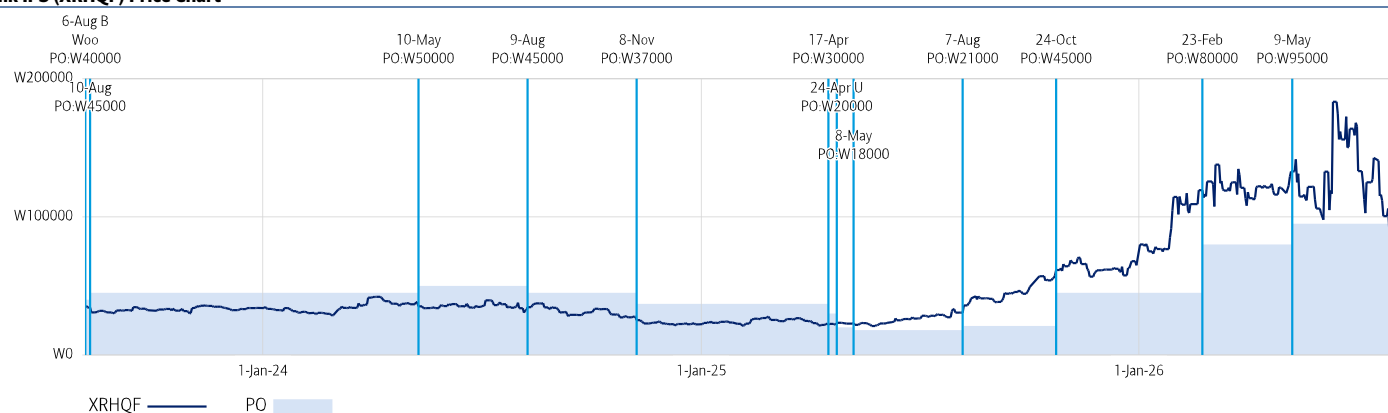
Duksan Neolux (XDSXF) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.



Wonik IPS (XRHQF) Price Chart

B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Technology Group (as of 30 Jun 2026)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	243	60.60%	Buy	123	50.62%
Hold	87	21.70%	Hold	45	51.72%
Sell	71	17.71%	Sell	21	29.58%

Equity Investment Rating Distribution: Global Group (as of 30 Jun 2026)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1987	56.11%	Buy	1190	59.89%
Hold	797	22.51%	Hold	496	62.23%
Sell	757	21.38%	Sell	391	51.65%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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