

# Build for future AI infrastructure – CPU, GPU, ASIC, Optical, and China chips

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**GREATER CHINA TECHNOLOGY SEMICONDUCTORS**

Asia Pacific

Industry View

**Attractive**

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## Strong AI Semi Outlook

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- Top ideas:
  - **OW:**
    - **AI:** MediaTek(Top Pick), TSMC, SMIC, Aspeed, Alchip, GUC, KYEC, ASE, FOCl, ASMPT, AllRing
    - **Memory (Turning very selective):** Macronix (Top Pick), AP Memory, GigaDevice
    - **China AI/ Semis/WFE:** Iluvatar, Cambricon, NAURA Tech, AMEC, USI
    - **Testing Equipment and Consumables:** Winway, MPI, Hon Precision
  - **EW/UW:** UMC, Vanguard, WIN Semi, OmniVision, ASMedia, Realtek, Phison, Winbond, Nanya Tech, MetaX

### Long-term demand drivers:

- **Tech inflation:** We expect “price elasticity” to affect demand for tech products. Rising wafer, OSAT and memory costs create more margin headwinds for chip designers in 2026.
- **AI cannibalization:** Besides demand weakness (AI to replace some human jobs), we see the semi supply chain also prioritizing AI semis over non-AI semis, e.g., T-Glass and memory shortage.
- **China AI: DeepSeek is triggering inferencing AI demand:** DeepSeek has demonstrated cheaper inferencing. Local foundry supply chain also getting more capable for AI GPU production.

## Valuation Comparison: Foundry, Back-end, Memory, IDM and Semi Cap

Ticker	Company	Price 4/27/2026	Curr ency	Price Target	Upside/ Downside	Rating	Dividend Yield (%)	FCF Yield (%)	Market Cap (US\$M)	3M Avg. Daily Trading (US\$M)	P/E Ratio (x)			EPS Growth			ROAE			P/B Ratio (x)			
											2025e	2026e	2027e	2025e	2026e	2027e	2025e	2026e	2027e	2025e	2026e	2027e	
<b>Foundry</b>																							
2330.TW	TSMC	2,315.0	TWD	2,588.0	12%	O	1.4%	1.8%	1,895,298	2,562.2	34.9	22.4	17.9	46%	56%	25%	35%	41%	38%	11.1	8.0	5.9	
2303.TW	UMC	72.2	TWD	68.0	-6%	E	5.1%	5.3%	28,781	308.2	21.7	20.4	15.9	-12%	6%	28%	11%	11%	14%	2.4	2.3	2.2	
0981.HK	SMC	68.2	HKD	70.0	3%	O	0.0%	-5.0%	53,817	501.3	NM	NM	NM	39%	118%	42%	3%	7%	9%	NM	NM	NM	
5347.TWO	Vanguard	136.0	TWD	130.0	-4%	E	5.1%	3.1%	7,981	121.2	32.5	30.3	25.1	10%	8%	21%	11%	12%	14%	3.7	3.7	3.5	
1347.HK	Hua Hong	109.7	HKD	88.0	-20%	E	0.1%	-4.6%	24,375	262.2	NM	NM	NM	-6%	636%	24%	1%	6%	7%	NM	NM	NM	
6770.TW	PSMC	54.0	TWD	71.0	31%	O	0.0%	5.6%	7,202	483.1	NM	NM	NM	22%	-459%	-74%	-12%	26%	5%	2.8	1.1	1.1	
3105.TWO	WIN Semi	493.5	TWD	130.0	-74%	U	0.5%	-3.8%	2,264	336.0	NM	NM	NM	88.9	66%	33%	40%	3%	4%	6%	5.2	5.2	5.2
8086.TWO	AWSC	131.0	TWD	85.0	-35%	U	1.1%	-3.9%	813	30.7	42.6	40.2	37.6	16%	6%	7%	8%	8%	8%	3.1	3.0	2.8	
<b>Mean:</b>							1.7%	-0.2%				37.6	35.2	50.5	23%	50%	14%	8%	14%	13%	4.7	3.9	3.5
<b>Median:</b>							0.8%	-1.0%				33.7	26.3	25.1	19%	20%	25%	5%	10%	8%	3.4	3.4	3.2
<b>Memory</b>																							
603986.SS	Giga Device	301.8	CNY	348.0	15%	O	0.3%	4.1%	28,001	1,345.0	NM	37.3	23.3	50%	227%	60%	9%	27%	34%	NM	8.7	6.6	
2408.TW	Nanya Tech	220.0	TWD	278.0	26%	E	0.0%	13.6%	21,411	826.8	NM	4.1	3.5	-359%	NM	NM	4%	66%	45%	4.0	2.0	1.3	
2344.TW	Winbond	90.8	TWD	100.0	10%	E	0.0%	16.6%	12,902	620.5	NM	5.5	4.6	523%	NM	NM	4%	56%	43%	4.0	2.5	1.6	
8299.TWO	Phison	1,780.0	TWD	1,800.0	1%	E	1.6%	1.6%	12,251	458.5	42.3	12.7	17.5	18%	233%	-27%	18%	46%	27%	7.1	4.8	4.4	
SIMO.O	Silicon Motion	153.5	USD	155.0	1%	O	1.1%	2.1%	5,196	75.9	48.3	23.5	14.1	6%	106%	66%	13%	24%	32%	6.0	5.1	4.0	
2337.TW	Macronix	141.0	TWD	202.0	43%	O	4.6%	17.2%	8,261	606.4	NM	NM	NM	3%	-431%	233%	-7%	22%	51%	5.7	4.9	2.9	
<b>Mean:</b>							1.3%	9.2%				45.3	16.6	12.6	40%	34%	83%	7%	40%	39%	5.4	4.7	3.5
<b>Median:</b>							0.7%	8.8%				45.3	12.7	14.1	12%	166%	63%	7%	37%	38%	5.7	4.8	3.5
<b>Backend</b>																							
3711.TW	ASEH	505.0	TWD	408.0	-19%	O	2.2%	6.0%	69,576	269.7	54.8	33.5	21.8	24%	64%	54%	11%	17%	23%	5.9	5.3	4.6	
600584.SS	JCET	46.0	CNY	48.5	5%	E	0.3%	5.7%	11,440	462.8	49.3	30.7	20.5	3%	61%	49%	5%	8%	11%	2.7	2.5	2.2	
601231.SS	USI	40.1	CNY	40.1	0%	O	1.0%	-7.4%	12,216	294.0	47.9	33.9	25.0	12%	41%	36%	10%	13%	16%	4.6	4.1	3.7	
2449.TW	KYEC	285.0	TWD	338.0	19%	O	1.8%	1.6%	11,004	211.4	31.8	29.0	19.7	41%	10%	47%	24%	22%	28%	6.9	6.1	5.1	
<b>Mean:</b>							1.3%	1.5%				39.9	31.4	22.4	20%	44%	46%	13%	15%	20%	5.0	4.5	3.9
<b>Median:</b>							1.4%	3.7%				39.9	31.4	22.4	18%	51%	48%	11%	15%	19%	5.2	4.7	4.1
<b>Power Semis/ IDM</b>																							
688396.SS	CR Micro	55.5	CNY	43.0	-23%	U	0.2%	1.6%	10,121	129.4	NM	50.7	35.5	-20%	119%	43%	3%	7%	8%	2.9	2.7	2.5	
600460.SS	Silan Micro	28.0	CNY	20.0	-29%	U	0.1%	2.1%	6,475	182.7	73.0	32.7	22.2	190%	123%	47%	5%	9%	12%	3.2	3.0	2.6	
603290.SS	StarPower	108.8	CNY	105.0	-3%	O	0.6%	0.0%	#N/A	90.8	42.7	33.1	28.7	12%	29%	15%	9%	10%	11%	NA	NA	NA	
300373.SZ	Yangjie	78.7	CNY	88.0	12%	O	1.4%	-2.8%	5,903	178.6	34.0	27.8	20.2	26%	22%	38%	13%	15%	18%	4.3	3.8	3.3	
<b>Mean:</b>							0.6%	0.2%				49.9	36.1	26.7	52%	73%	36%	7%	10%	12%	3.5	3.2	2.8
<b>Median:</b>							0.4%	0.8%				42.7	32.9	25.5	19%	74%	40%	7%	10%	12%	3.2	3.0	2.6
<b>Semicap / Equipment/ Materials/ Supply Chain</b>																							
002371.SZ	NAURA	479.0	CNY	550.0	15%	O	0.6%	-0.9%	48,218	553.0	42.4	32.9	26.7	7%	29%	23%	20%	25%	25%	9.2	7.5	6.2	
688012.SS	AMEC	326.0	CNY	400.0	23%	O	0.0%	11.8%	28,448	495.7	NM	56.8	43.3	21%	82%	31%	10%	15%	17%	NM	8.0	6.8	
7769.TW	Hon Precision	4,795.0	CNY	5,000.0	4%	O	2.2%	NA	27,239	183.3	NM	41.3	24.8	NA	52%	66%	NA	34%	47%	NM	NM	10.4	
6223.TWO	MPI	4,640.0	CNY	5,800.0	25%	O	0.0%	-5.4%	14,356	152.2	NM	72.5	34.9	34%	95%	108%	27%	35%	50%	NM	NM	NM	
6515.TW	Winway	9,515.0	CNY	12,000.0	26%	O	0.9%	1.3%	10,741	107.7	NM	NM	48.3	40%	123%	89%	28%	48%	64%	NM	NM	NM	
3036.TW	WT Micro	200.5	CNY	288.0	44%	O	4.4%	-21.4%	8,012	71.0	NM	11.5	8.7	43%	45%	33%	12%	18%	21%	NM	2.0	1.7	
6488.TWO	GlobalWafers	611.0	TWD	588.0	-4%	O	2.7%	1.7%	9,224	76.7	40.0	24.5	17.6	-26%	63%	39%	8%	12%	16%	3.2	2.9	2.7	
0522.HK	ASM Pacific	164.9	HKD	188.0	14%	O	1.8%	6.5%	8,384	41.7	NM	44.9	26.9	161%	69%	67%	6%	9%	13%	3.8	3.7	3.4	
3702.TW	WPG	96.9	TWD	121.0	25%	O	7.2%	-27.2%	5,138	37.5	16.3	10.0	10.2	38%	63%	-2%	12%	19%	17%	1.9	1.7	1.6	
688234.SS	SICC	108.4	CNY	100.2	-8%	O	0.6%	NA	7,300	112.6	NM	NM	NM	NM	NM	NM	-3%	1%	3%	7.3	7.3	7.1	
ACMR.O	ACM Research	56.1	USD	68.0	21%	O	1.1%	-0.7%	3,681	69.1	40.4	20.1	15.3	-11%	101%	32%	6%	10%	12%	1.9	1.8	1.6	
3680.TWO	Gudeng Precision	435.5	USD	480.0	10%	O	0.9%	-6.1%	1,321	24.5	55.0	20.8	16.4	-36%	165%	26%	6%	16%	17%	3.5	3.0	2.6	
6187.TWO	AllRight Tech	1,100.0	USD	1,280.0	16%	O	2.8%	1.1%	3,342	81.5	71.1	54.4	32.0	6%	31%	70%	21%	25%	36%	NM	NM	NM	
3363.TWO	FOCI	761.0	TWD	708.0	-7%	O	0.2%	4.8%	2,527	84.3	NM	NM	NM	NM	NM	NM	1%	3%	56%	NM	NM	NM	
<b>Mean:</b>							1.8%	-2.9%				44.2	35.4	25.4	25%	77%	49%	12%	19%	28%	4.4	4.2	4.4
<b>Median:</b>							1.0%	0.2%				41.4	32.9	25.8	21%	66%	36%	10%	17%	19%	3.5	3.0	3.0

Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: Data as of April 27, 2026.

## Valuation Comparison: Fabless, Power Semis, FPGA and Analog

Ticker	Company	Price 4/27/2026	Curr ency	Price Target	Upside/ Downside	Rating	Dividend Yield (%)	FCF Yield (%)	Market Cap (US\$M)	3M Avg. Daily Trading (US\$M)	P/E Ratio (x)			EPS Growth			ROAE			P/B Ratio (x)		
											2025e	2026e	2027e	2025e	2026e	2027e	2025e	2026e	2027e	2025e	2026e	2027e
<b>Fabless</b>																						
<b>AI accelerators</b>																						
688256.SS	Cambricon	1,359.7	RMB	1,588.0	17%	O	0.0%	NA	79,648	1,352.4	279.1	93.8	60.4	NA	197%	55%	NA	NA	NA	NA	NA	NA
9903.HK	Iluvatar	436.0	HKD	600.0	38%	O	NA	NA	0	36.9	NM	NM	76.5	NA	-81%	-653%	NA	NA	NA	NA	NA	NA
688802.SS	MetaX	719.0	RMB	758.0	5%	E	0.0%	NA	39,965	142.7	NM	13343.4	539.6	NA	-103%	2373%	NA	NA	NA	NA	NA	NA
<b>Smartphone/Wireless Semis</b>																						
2454.TW	MediaTek	2,505.0	TWD	2,588.0	3%	O	9.7%	0.9%	123,805	650.3	40.0	36.5	19.4	-6%	10%	88%	25%	23%	39%	9.6	9.5	7.2
603501.SS	OmniVision	99.5	CNY	111.0	12%	E	0.5%	2.1%	16,670	233.8	29.9	27.0	20.4	22%	11%	32%	15%	15%	17%	4.3	3.8	3.3
300782.SZ	Maxscend	106.3	CNY	48.00	-55%	U	0.1%	-2.2%	7,886	230.0	NM	NM	56.0	-136%	-485%	85%	-1%	5%	9%	5.7	5.4	4.9
603160.SS	Goodix	65.3	CNY	58.0	-11%	U	0.7%	-1.4%	4,180	55.0	35.8	54.8	48.4	39%	-35%	13%	9%	6%	6%	3.2	3.1	3.0
6462.TWO	Egis	118.5	TWD	105.0	-11%	E	1.0%	-16.3%	341	6.2	NM	NM	22.1	-6%	-88%	-462%	-11%	-1%	5%	1.2	1.2	1.2
<b>IP/Design Service</b>																						
3661.TW	Alchip	4,175.0	TWD	4,388.0	5%	O	1.5%	5.1%	10,733	238.1	63.6	25.6	22.4	-17%	149%	14%	14%	30%	29%	NM	NM	NM
301269.SZ	Empyrean Technology	90.3	CNY	115.0	27%	E	0.1%	NA	6,810	59.1	NM	NM	NM	184%	102%	42%	6%	11%	14%	NM	NM	NM
3443.TW	GUC	3,890.0	TWD	4,888.0	26%	O	0.8%	4.7%	16,461	231.5	NM	66.9	38.6	9%	108%	73%	31%	42%	49%	NM	NM	NM
6531.TW	AP Memory	726.0	TWD	777.0	7%	O	1.1%	4.1%	3,710	95.4	NM	44.9	27.6	-22%	112%	63%	10%	20%	28%	9.6	8.4	7.1
<b>PC/Cloud/Display Semis</b>																						
3034.TW	Novatek	419.5	TWD	323.0	-23%	U	6.0%	14.3%	8,061	54.3	15.6	18.0	17.5	-20%	-13%	3%	24%	21%	21%	3.8	3.8	3.6
2379.TW	Realtek	545.0	TWD	550.0	1%	E	3.5%	5.0%	8,780	59.6	18.9	16.7	17.2	-4%	13%	-3%	26%	27%	23%	4.8	4.2	3.8
5269.TW	ASMedia	1,285.0	TWD	1,380.0	7%	U	2.9%	0.9%	3,029	50.5	18.2	16.4	14.6	37%	11%	12%	15%	15%	15%	2.6	2.3	2.0
5274.TWO	Aspeed	16,225.0	TWD	15,555.0	-4%	O	1.2%	1.3%	19,368	105.6	NM	79.9	56.4	53%	95%	42%	59%	79%	77%	NM	NM	NM
4966.TWO	Parade	619.0	TWD	530.0	-14%	E	2.9%	1.6%	1,526	18.4	18.1	20.3	16.4	5%	-11%	23%	12%	10%	12%	2.0	1.9	1.8
2458.TW	Elan Micro	136.5	TWD	160.0	17%	O	4.8%	9.6%	1,234	14.6	16.1	15.1	13.9	-11%	7%	8%	24%	24%	24%	3.8	3.5	3.2
HIMX.O	Himax	12.1	TWD	8.0	-34%	E	2.8%	8.3%	2,061	24.3	47.7	57.4	16.9	-44%	-17%	240%	5%	5%	15%	2.5	2.5	2.3
<b>Analog IC</b>																						
6415.TW	Silergy	403.0	TWD	388.0	-4%	E	1.4%	4.8%	4,938	79.8	63.3	37.7	24.3	8%	68%	55%	7%	10%	13%	4.2	3.8	3.4
300661.SZ	SG Micro	86.8	CNY	75.0	-14%	E	0.3%	1.1%	7,478	257.3	94.7	62.6	47.8	-12%	51%	31%	11%	15%	17%	NM	NM	NM
<b>MCU</b>																						
4919.TW	Nuvoton	135.0	TWD	98.0	-27%	U	0.8%	14.5%	1,789	49.3	NM	NM	30.6	-857%	-69%	-457%	-12%	-4%	14%	4.3	4.5	3.9
688018.SS	Espressif	170.4	CNY	175.0	3%	O	1.0%	20.3%	3,936	70.2	53.6	49.6	40.0	47%	8%	24%	15%	12%	14%	NM	NM	NM
<b>FPGA</b>																						
002049.SZ	Unigroup Guoxin	71.5	CNY	57.0	-20%	U	0.3%	1.5%	8,438	201.5	31.9	25.2	21.2	61%	27%	19%	14%	16%	16%	4.3	3.7	3.2
1385.HK	Shanghai Fudan	44.4	HKD	47.3	6%	O	0.1%	0.1%	6,905	31.3	NM	34.5	28.3	-59%	353%	22%	4%	16%	16%	5.9	5.0	4.3

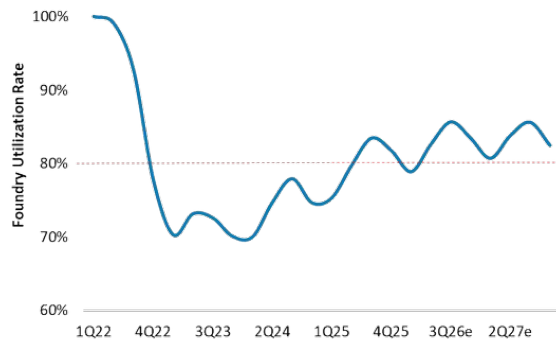
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: Data as of April 27, 2026.

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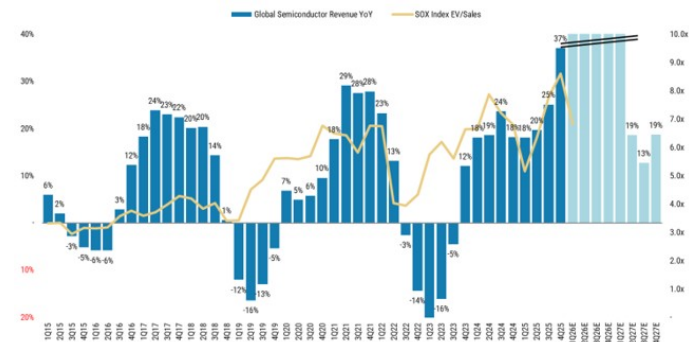
# Broader Semi Cycle

## Broader Semiconductor Cycle

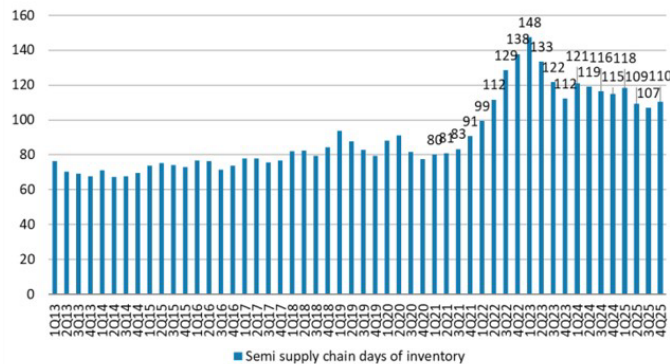
Logic semi foundry utilization could reach 80% in 2H26



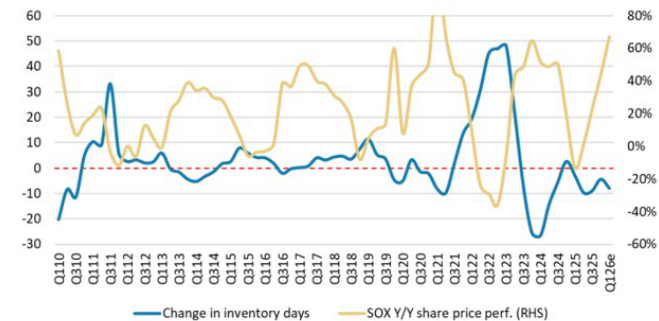
Excluding memory and NVIDIA's AI GPU revenue, non-AI semi growth is expected to decline in 2026



Semi supply chain days of inventory as of 4Q25



Historically, when inventory days went down, semi stock index went up



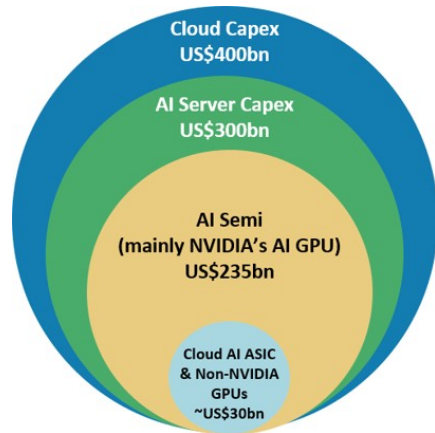
Source: SIA, FactSet, company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

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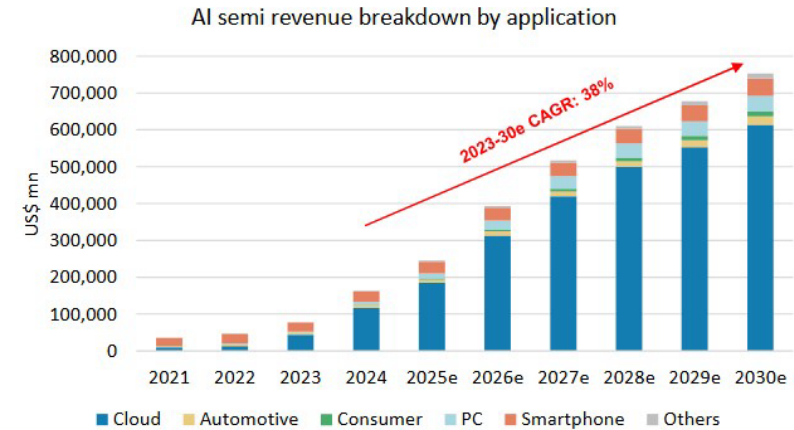
# AI Semi Supply Chain

## The Global Semi Industry Market Size May Reach US\$1.5 trillion in 2030, half from AI Semis

Our supply chain data-driven bull case assumption is that cloud AI Semi TAM may grow to US\$235bn in 2025e



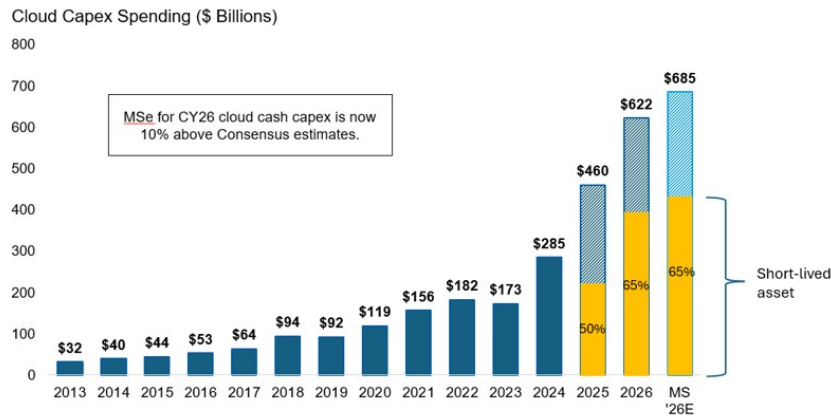
We expect the AI semi TAM to reach nearly US\$753bn by 2030



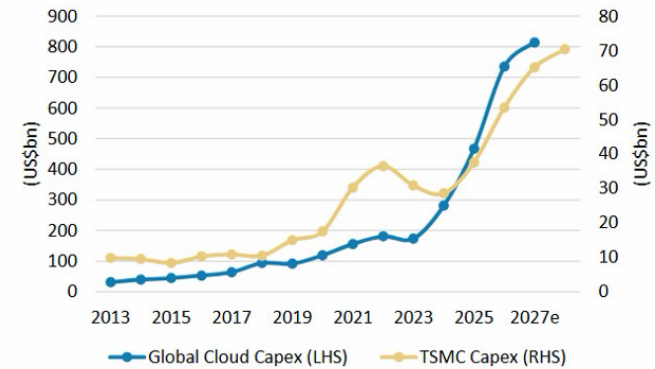
Source: Nvidia, Morgan Stanley Research. e = Morgan Stanley Research estimates. Note: From our Asia Pacific tech team's downstream estimates.

## Cloud Capex Remains Robust From Major CSPs

**Morgan Stanley cloud capex tracker estimates nearly US\$685bn of cloud capex spending in 2026 (Purely Top 10 listed global CSPs; no sovereign AI)**



## Global Cloud Capex vs. TSMC capex



Source: FactSet, company data, Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: Estimates are top-down and from our US tech team.

Morgan Stanley

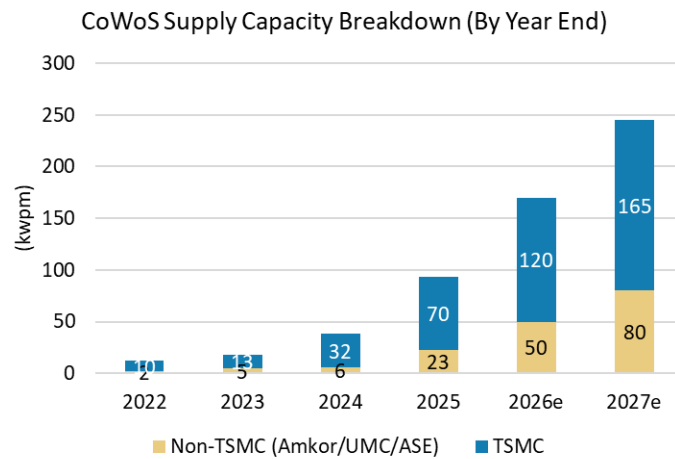
## Announced Power Deployment Implications for TSMC

Announced Power Deployment Implication for TSMC				
GPU/ASIC Vendor	NVIDIA	AMD	Broadcom	AWS
Power Deployed (GW)	10	6	3.5	2
Rack name	Vera Rubin NVL144	Helios	TPU	Trainium3 UltraServers
Power consumption per Rack (kW)	220	220	63	144
Rack Number (k units)	45	27	56	14
Chip Name	Rubin GPU	MI455 GPU	TPUv7 (Ironwood) TPUv8ax (Sunfish)	Trainium3 (4)
Chip Volume (k units)	3,273	1,964	3,571	2,000
Life Cycle for the project	3	3	5	8
Implied life-cycle CoWoS Volume (k wafers)	409	166	260	118
Implied life-cycle 2/3nm wafer Volume (k wafers)	260	95	190	107
2027 annual CoWoS demand (k wafers)	136	55	52	15

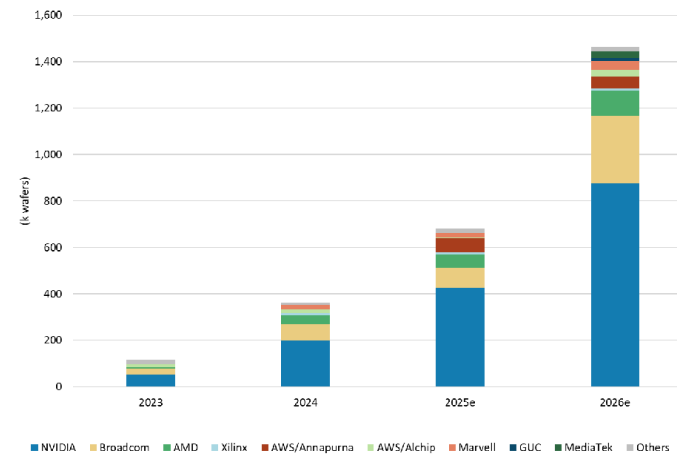
Source: Company data, Morgan Stanley Research; Note: Estimates are compiled using our Asia supply-chain checks. Note: We assume 64 units of TPU chips per rack with TPUv7 and v8ax per chip TDP being ~980W.

## TSMC May Expand CoWoS Capacity to 165kwpm By 2027 Given Continual Strong AI Demand

**Global CoWoS capacity expansion by year-end and by vendor**



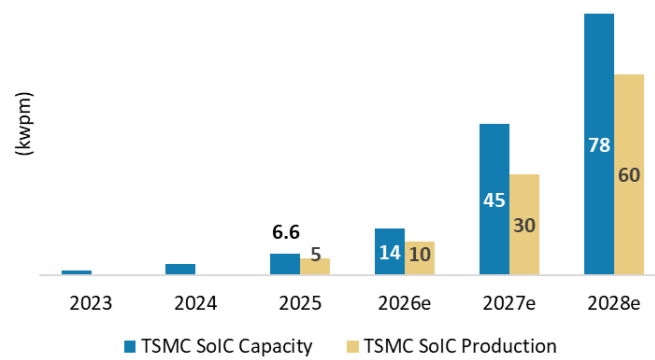
**Global CoWoS consumption, by customer**



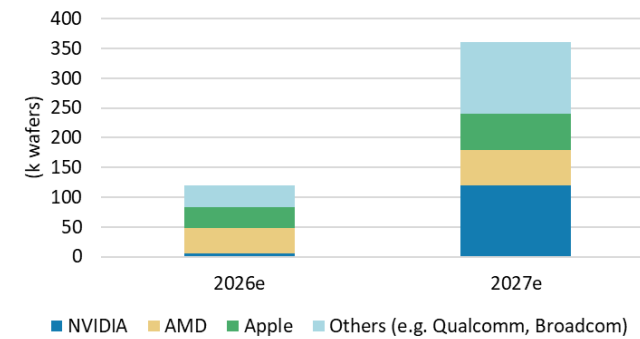
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## SoIC Expansion Will Be a Key Focus Area for TSMC in The Coming Years

**TSMC SoIC Supply Capacity Breakdown (by year-end)**



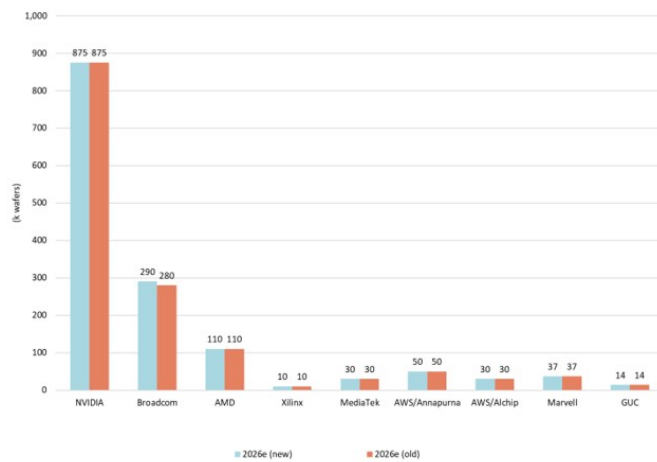
**SoIC demand breakdown, by customer**



Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## TSMC Likely Doubled CoWoS and SoIC Capacity in 2025, and We Expect It to Continue into 2026

Key changes for 2026 CoWoS allocation in a chart



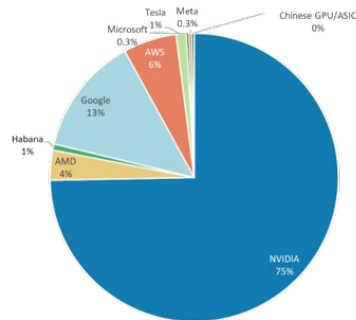
Key changes on 2026 CoWoS allocation in a table (see numbers marked in red)

(k wafer)	2023	2024	2025e	2026e	2023	2024	2025e	2026e
<b>NVIDIA</b>	53	200	425	875	45%	54%	62%	60%
TSMC			390	680				
CoWoS-L			390	650				
CoWoS-S			0	20				
CoWoS-R			0	10				
Non-TSMC			35	165				
Amkor			35	135				
CoWoS-S			20	75				
CoWoS-R			15	60				
ASE/SPIL			0	30				
CoWoS-S			0	0				
CoWoS-R			0	30				
<b>Broadcom</b>	23	68	85	290	20%	18%	12%	20%
TSMC			83	230				
CoWoS-L			0	15				
CoWoS-S			83	215				
ASE/SPIL			2	30				
CoWoS-L			0	0				
CoWoS-S			2	30				
<b>Amkor</b>				30				
CoWoS-L				30				
<b>AMD</b>	7	40	60	110	6%	11%	9%	8%
TSMC			60	80				
CoWoS-L			0	70				
CoWoS-S			60	10				
ASE/SPIL			0	30				
CoWoS-L			0	30				
CoWoS-S			0	0				

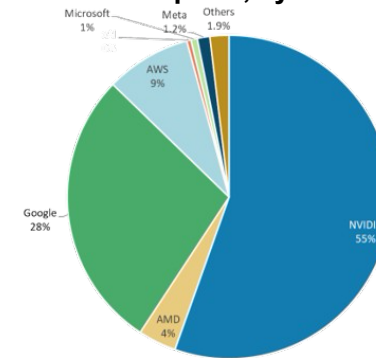
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## AI Computing Wafer Consumption Could be up to US\$26bn in 2026 with NVIDIA Accounting For The Majority

AI semi wafer consumption, by customer, 2025e



AI semi wafer consumption, by customer, 2026e

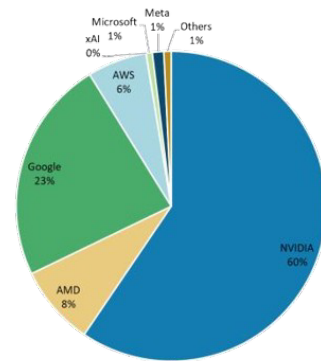


AI chip vendor	Product name	CoWoS capacity allocation (k wafers)	Chips per CoWoS wafer	Implied shipments (k)	Compute die size	Geometry	Compute die units	Wafer consumption (k wafers)	Wafer price (US\$)	Wafer revenue TAM (US\$ mn)	Backend revenue (US\$ mn)
<b>AI GPU (2026e)</b>											
NVIDIA	B300	390	14	5,460	850	4nm	2	433	21,945	9,510	8,241
	Rubin R200	260	8	2,080	850	3nm	2	165	26,000	4,292	5,494
	H200	75	27	2,025	814	4nm	1	57	21,945	1,243	1,275
AMD	MI300	3	12	36	110	5nm	8	1	18,000	19	79
	MI350/375	7	12	84	110	3nm	8	2	26,000	64	194
	MI400	65	10	650	110	2nm	8	32	28,125	886	1,805
<b>AI ASIC (2026e)</b>											
Google	TPU v7p (Ironwood)	145	16	2,320	700	3nm	2	152	26,000	3,942	3,327
	TPU v7e (Sunfish; AVGO)	80	12	960	800	3nm	2	72	26,000	1,864	1,835
	TPU v8 (Zebrafish;MediaTek)	30	20	600	800	3nm	2	45	26,000	1,165	688
AWS	Trainium 2.5	20	16	320	600	5nm	2	12	20,000	237	411
	Trainium 3	80	17	1,360	700	3nm	2	73	26,000	1,886	1,642
Microsoft	Maia 200	4	29	116	700	3nm	1	3.0	26,000	79	87
	Maia 300	5	11	55	850	2nm	1	2.9	28,125	82	109
Meta	MTIA 3 (Iris)	15	10	150	850	3nm	2	11.9	26,000	310	1
<b>Total</b>		<b>1,434</b>						<b>1,084</b>		<b>26,159</b>	<b>25,219</b>

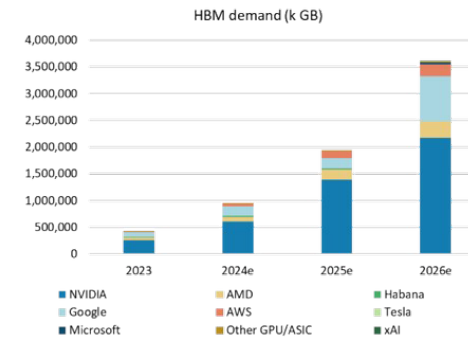
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: Estimates are compiled using our supply-chain checks.

## HBM Consumption in 2026e – Up to 32bn Gb

HBM consumption by customer in 2026e



NVIDIA still consumes most HBM supply in 2026e



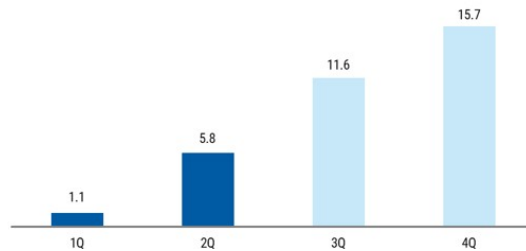
AI chip vendor	Product name	CoWoS capacity allocation (k wafers)	Chips per CoWoS wafer	Implied shipments (k)	HBM chip density (GB)	HBM chip units	Total HBM size (GB)	HBM generation	HBM vendor	Total HBM demand (k GB)
<b>AI GPU (2026e)</b>										
NVIDIA	B300	390	14	5,460	36	8	288	HBM3e 12hi	Hynix/Micron/Samsung	1,572,480
	Rubin R200	260	8	2,080	36	8	288	HBM4	Hynix/Micron/Samsung?	599,040
AMD	H200	75	27	2,025	24	6	141	HBM3e 8hi	Hynix	285,525
	MI300	3	12	36	24	8	192	HBM3	Samsung	6,912
	MI350/375	7	12	84	36	8	288	HBM3e 12hi	Samsung/Micron	24,192
	MI400	65	10	650	36	12	432	HBM4	Samsung/Micron	280,800
<b>AI ASIC (2026e)</b>										
Google	TPU v7p (Ironwood)	145	16	2,320	24	8	192	HBM3e 8hi	Hynix/Samsung	445,440
	TPU v7e (Sunfish; AVGO)	80	12	960	36	8	288	HBM3e 12hi	Hynix/Samsung/Micron	276,480
	TPU v8 (Zebrafish;MediaTek)	30	20	600	36	6	216	HBM3e 12hi	Hynix/Micron	129,600
AWS	Trainium 2.5	20	16	320	24	4	96	HBM3e 8hi	Hynix/Samsung/Micron	30,720
	Trainium 3	80	17	1,360	36	4	144	HBM3e 12hi	Hynix/Samsung/Micron	195,840
Microsoft	Maia 200	4	29	116	16	4	64	HBM3	Samsung	7,424
	Maia 300	5	11	55	36	8	288	HBM4	Samsung	15,840
Meta	MTIA 3 (Iris)	15	10	150	36	8	288	HBM3e 12hi	Hynix/Samsung	43,200
<b>Total</b>		<b>1,434</b>								<b>3,942,725</b>
<b>Total HBM demand (mn Gb)</b>										<b>31,542</b>

Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## NVIDIA GB200/300 Rack Output Estimates

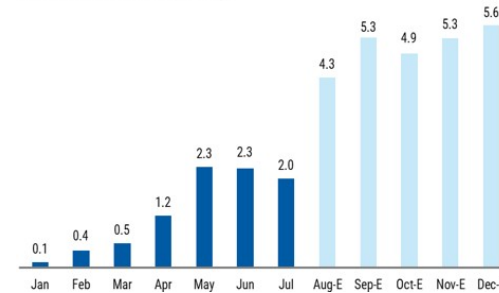
**GB200/300 NVL72 Rack Ramp Quarterly Trajectory**

GB200/300 NVL72 racks (000s)

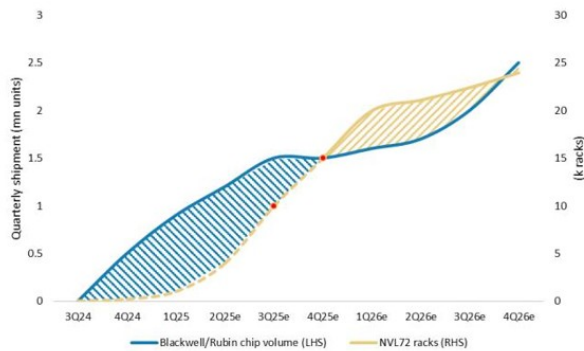


**Industry-wide GB200 NVL72 Rack Monthly Output**

GB200/300 NVL72 racks (Monthly)



**We estimate TSMC produced 5.1mn chips in 2025, with full-year GB200 NVL72 shipments seen reaching 30k**

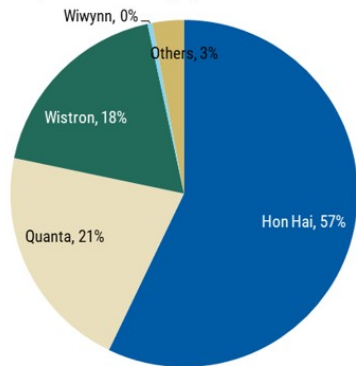


Source: Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: We think the actual rack deliveries to end-customers are lower than the numbers we have here because we include Wistron's computing tray (L10) rack equivalent number (without accounting for rack assembly and test times for L11). Estimates are from our Asia Pacific tech team's downstream estimates.

## NVIDIA GB200/300 Server Racks Supply/Demand Assumptions

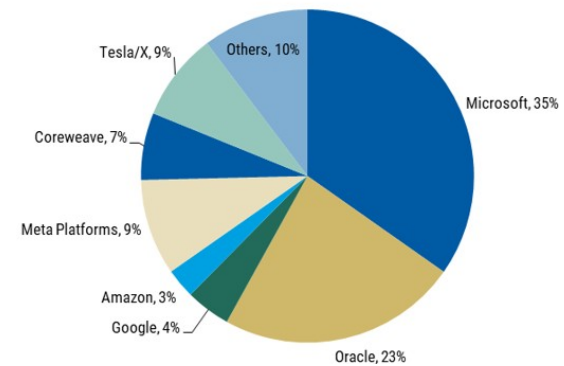
**NVIDIA GB200/300 rack supply share (2025)**

**GB200/300 NVL72-equivalent rack supply share**



**NVIDIA GB200/300 rack demand share (2025)**

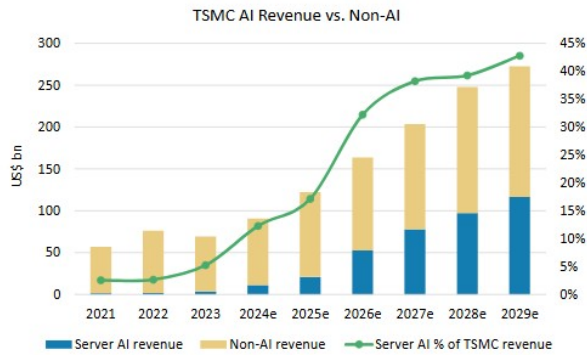
**Nvidia GB200 server demand share, 2025e**



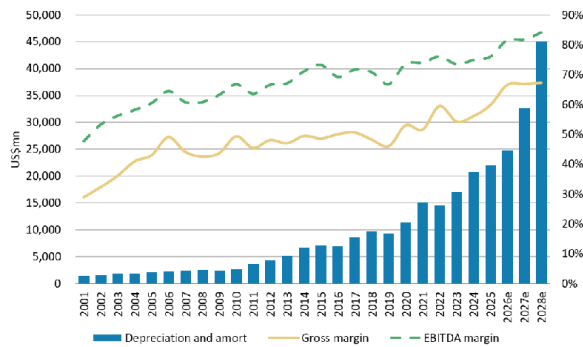
Source: Morgan Stanley Research. E = Morgan Stanley Research estimates. Note: Estimates are from our Asia Pacific tech team's downstream estimates.

## TSMC AI Semis Revenue Could Reach 60% from 2024 to 2029e

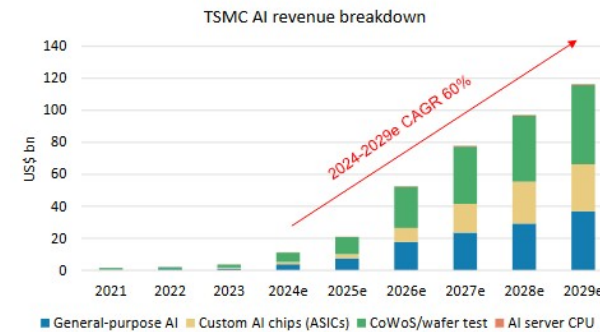
### TSMC – AI semis revenue could account for >30% of 2026e revenue



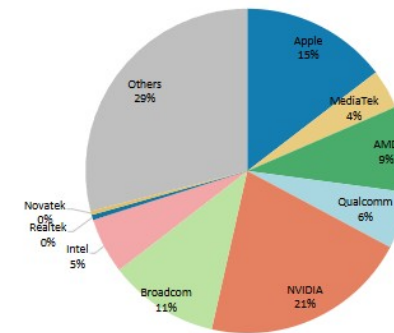
### TSMC – margin expansion



### TSMC – AI semis revenue breakdown



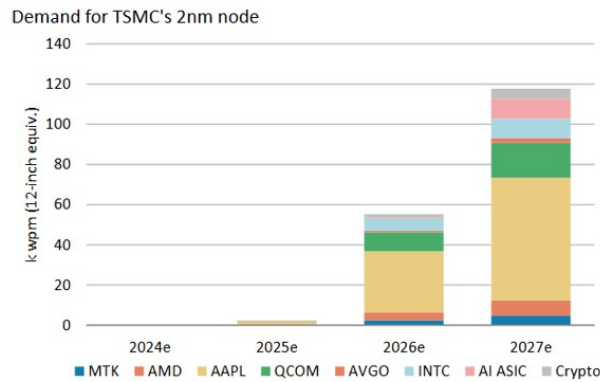
### TSMC – 2026e revenue breakdown by customer



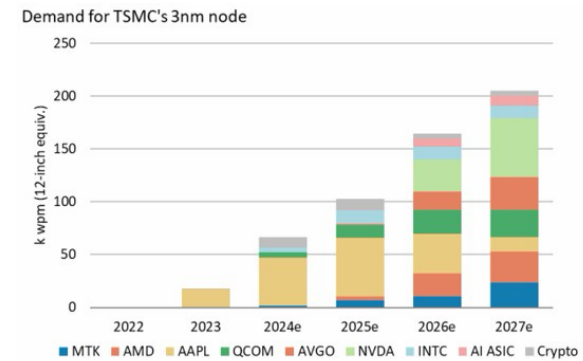
Source: Company data, Morgan Stanley Research (e) estimates

## TSMC Leading-edge Wafer Demand Breakdown

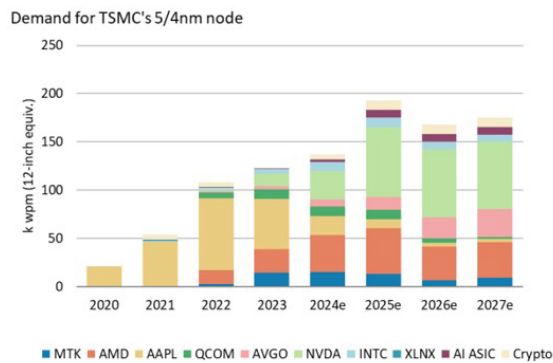
### TSMC – 2nm customer demand breakdown



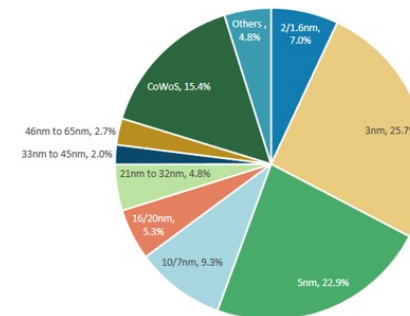
### TSMC – 3nm customer demand breakdown



### TSMC – 4/5nm customer demand breakdown



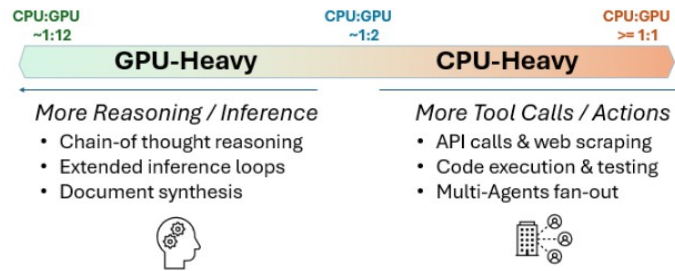
### TSMC – 2026e revenue breakdown by nodes and CoWoS



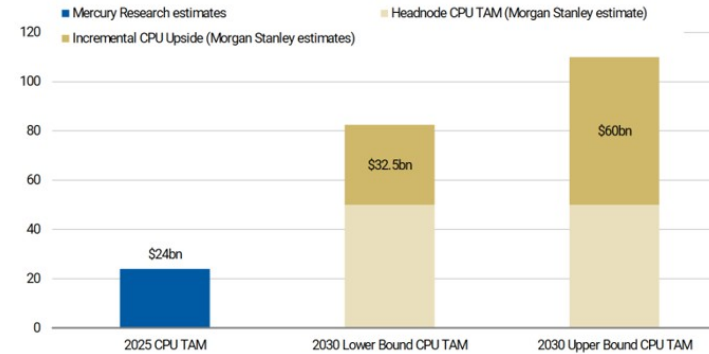
Source: Company data, Morgan Stanley Research (e) estimates

## Agentic AI - Growing the CPU Opportunity

Cluster-level CPU:GPU intensity rises as AI moves from reasoning to action



Agentic AI could add \$32.5-60bn CPU opportunity...



Source: Morgan Stanley Research (e) estimates

Morgan Stanley

# AI ASIC, CPO and Chip Testing

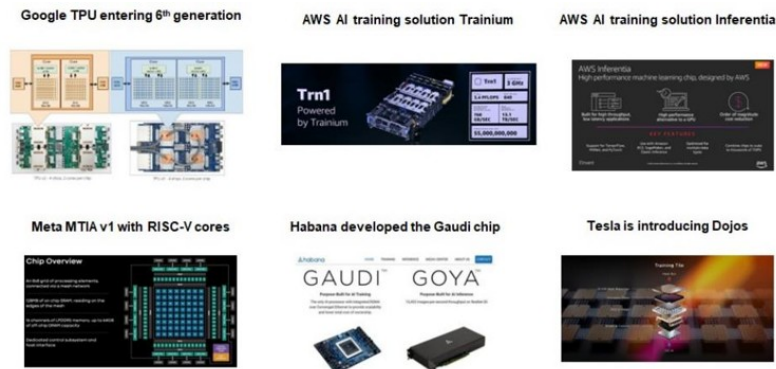
## AI Semis: Now and the future – “Prompts”

---

- Generative AI Demand Driver:
  - Killer apps
  - Competition
  - Sovereign
- Growth limitations:
  1. Budget
  2. Energy -> in the US
  3. Chip Capacity -> in China
  4. Regulation
- Semiconductor solutions:
  - Moore's Law
  - CoWoS/ SolC
  - HBM
  - CPO
  - Custom chip
  - GaN HVDC 800V
- Growth perspective:
  1. Inference vs. Training AI semis
  2. Edge vs. Cloud AI semis
  3. Custom ASIC vs. AI GPU

## CSPs Still Need Custom Chips Even with NVIDIA Providing Powerful AI GPUs

### Global CSP cloud AI custom chips



### Latest evidence of AI ASIC: AWS Trainium3



### Trainium Forecasts from MS Asia Research team

k Units	2023	2024	2025e	2026e	2027e	2028e
Trainium1/Inferentia2	300	600	30			
Trainium2		300	1,200	320		
Trainium3			20	1,360	1,200	-
Trainium4					600	2,000
<b>Total</b>	<b>300</b>	<b>900</b>	<b>1,250</b>	<b>1,680</b>	<b>1,800</b>	<b>2,000</b>

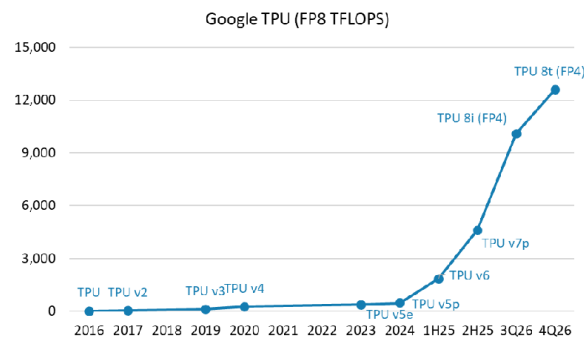
Source: AWS, Google, Meta, Intel, Tesla, Morgan Stanley Research estimates.

### More ASIC Projects Are Coming, According to Each CSP Plan

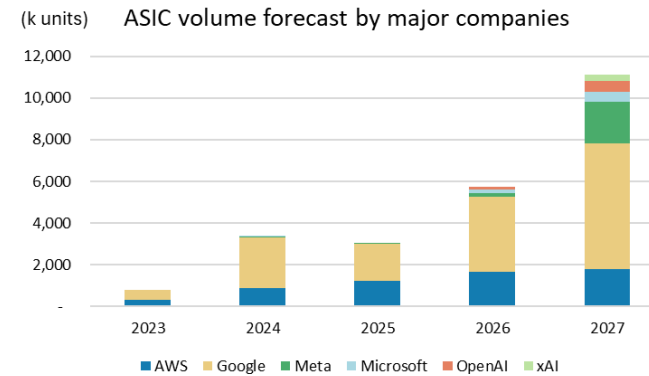
TPU Forecasts from MS Asia Research team

k Units	2023	2024	2025e	2026e	2027e	2028e
v5	500	2,400	250			
v6 (Trillium)			1,000			
v7 (Ironwood, by Broadcom)			500	2,300	500	
v8i (Sunfish; 3nm, by Broadcom)				900	3,000	3,500
v8t (Zebrafish; 3nm, by MediaTek)				400	2,500	2,500
v9 (Pumafish; 2nm, by Broadcom)						500
v10 (Humufish; 2nm, by MediaTek)						500
<b>Total</b>	<b>500</b>	<b>2,400</b>	<b>1,750</b>	<b>3,600</b>	<b>6,000</b>	<b>7,000</b>

#### Google TPU performance is growing rapidly



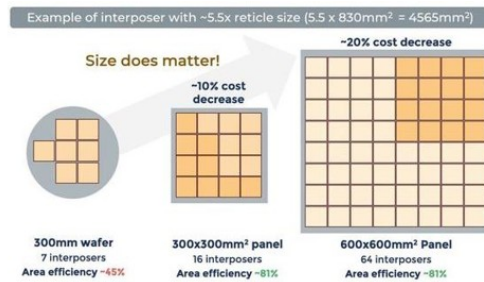
#### ASIC volume forecast by major companies



Source: Company data, Morgan Stanley Research estimates

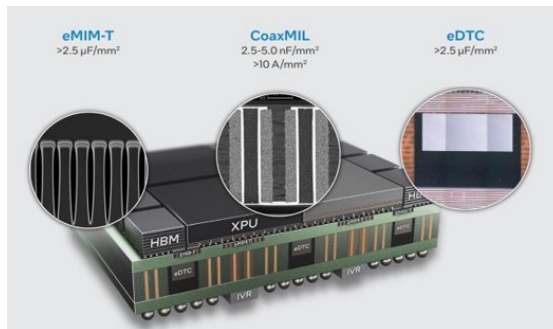
## What About the Competition Between TSMC CoWoS and Intel EMIB?

TSMC CoWoS can support up to 9.5x reticles, or four chips per wafer

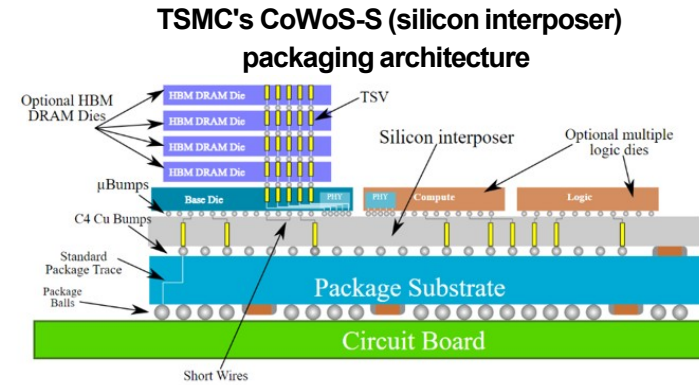


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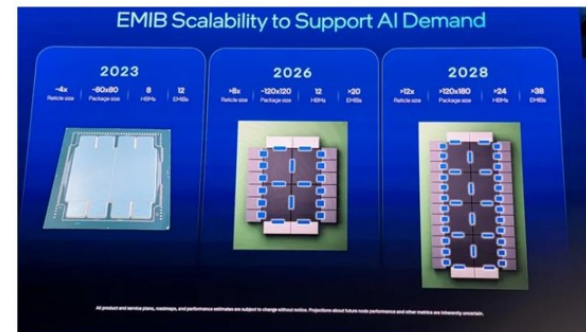
Intel EMIB eDTC: APMemory's technology



Source: Intel, Yole, Morgan Stanley Research

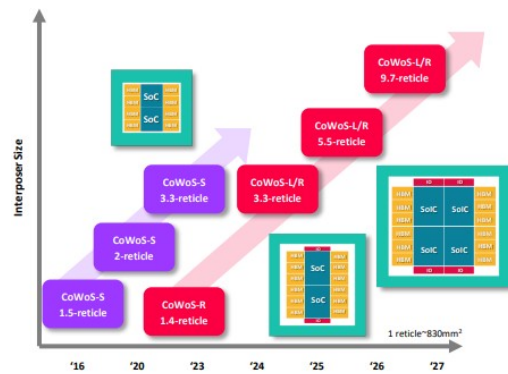


Intel's EMIB can easily support larger chips with more reticles (>12) if its supply chain can execute well

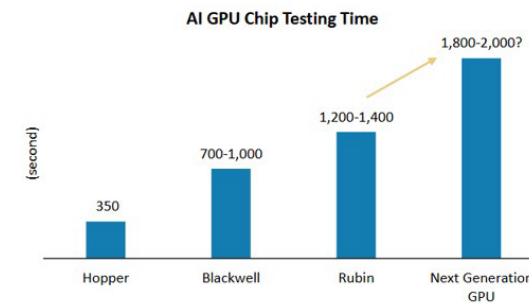


## Larger Package Sizes are Emerging as a Key Industry Trend

TSMC's roadmap for interposer size



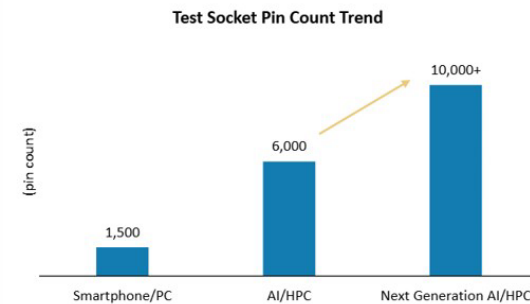
Chip testing time continuing to trend up



Testing equipment market is expected to grow at 35% CAGR during 2024-27e

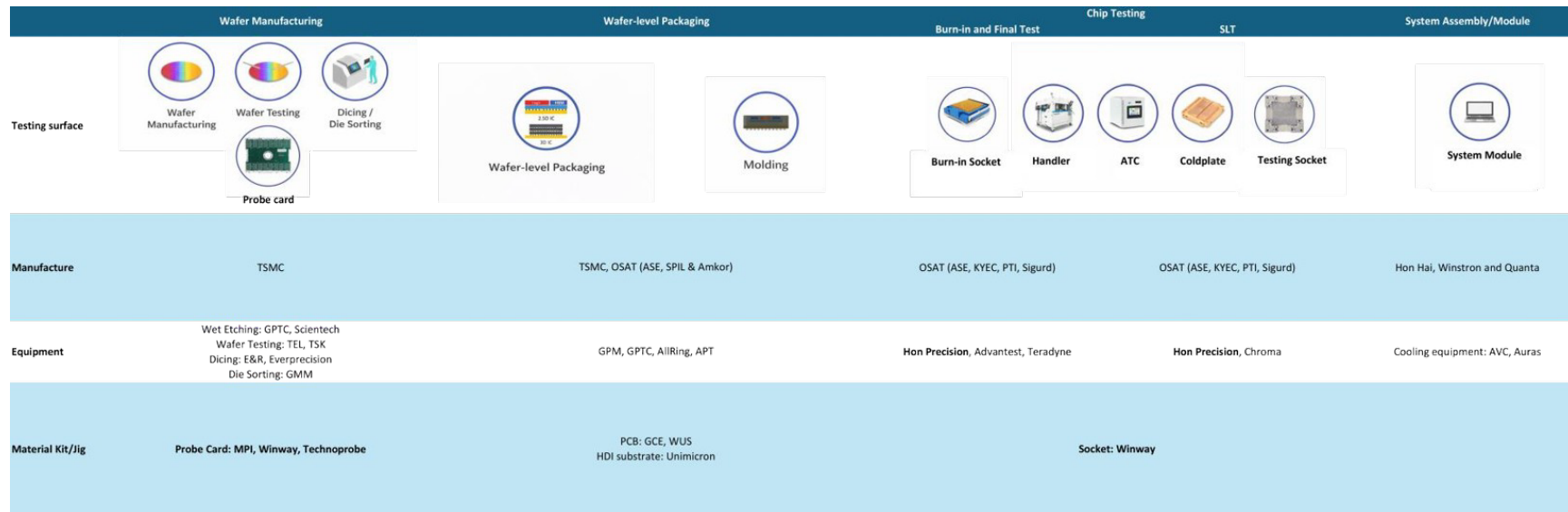


AI/HPC test socket needs higher pin counts vs. traditional consumer tech applications




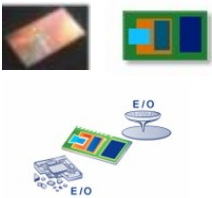

Source: Company data, Morgan Stanley Research

## Mapping the Roles of Hon Precision, WinWay and MPI in the Semi Supply Chain



Source : Company data, Morgan Stanley Research

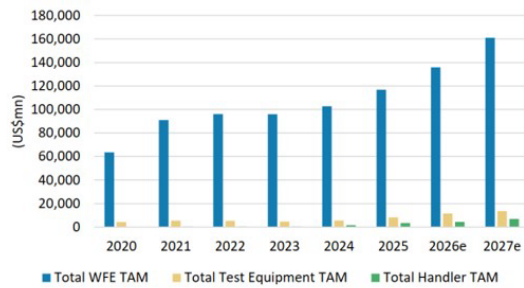
## New Evolution for Testing Equipment and Components: CPO

Test Insertion Test content	Insertion 1 Electronic IC (EIC) & Photonic IC (PIC)	Insertion 2 EIC die to PIC wafer (after SoIC)	Insertion 3 Optical engine (die-to-die)	Insertion 4 (>3) CPO package (ASIC+OE)
Testing surface				
Testing surface	El. & opt. DC, (power, loss, dark current etc.)	E/O, O/E, O/O, high speed, S-parameters	Full calibration/DC, high-speed functional, optical loopback, alternatively: S-parameters	Full system functional validation, optical loopback
Testing service provider	Foundry (Wafer-level) TSMC	Foundry (Wafer-level) TSMC	OSAT (Die/chip level) SPIL	OSAT (Die/chip level) SPIL
Equipment and Consumable Vendor	PIC ATE tester: 1) Advantest + TEL + Formfactor 2) Chroma (underqualification)  EIC tester: 1) Teradyne + TEL	Wafer level testing: 1)Ficontec +Formfactor +Teradyne 2) Chroma 3) Advantest+TEL+Formfactor 4) Advantest+ MPI	Die-to-die prober: 1. TEL 2. MPI  Optical engine E/O tester+laser reliability test+ELS source test head: Chroma  <b>Optical and Electrical Test Socket:</b> Winway	ATE tester: 1) Advantest (under qualification) 2)Teradyne  <b>FT Handler+ELS source test head+optical alignmnet stage : Hon Precision</b>  CPO switch tester: Chroma  <b>Coaxial socket/Hypersocket: Winway</b>

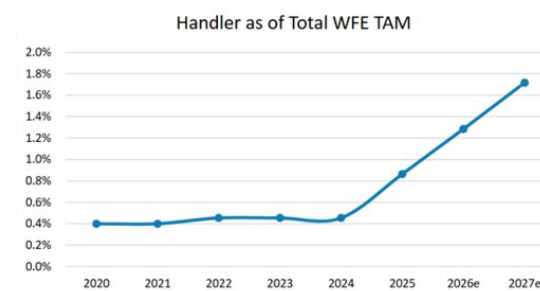
Source : Company data, Morgan Stanley Research

### Hon Precision: Key Beneficiary of the Structural Trend Toward Longer Testing Times; OW

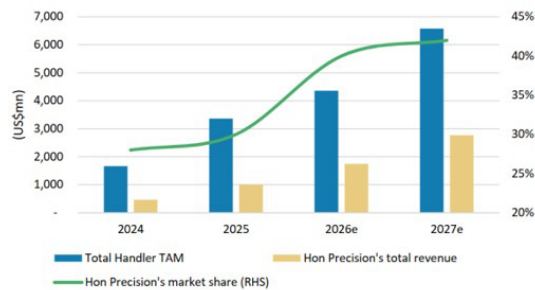
**We expect the overall handler market to increase from US\$436mn in 2023 to US\$6.6bn in 2027e**



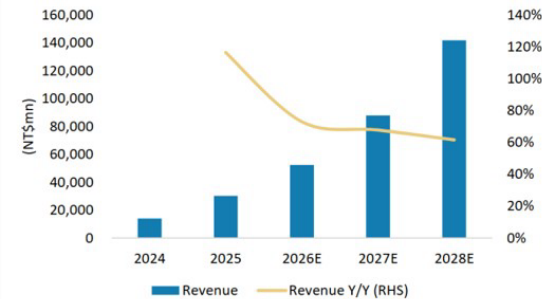
**We expect handlers to account for 1.7% of global WFE TAM in 2027e, vs 0.4% in 2020**



**Hon Precision to grow its total handler market share from 28% in 2024 to 42% by 2027e**



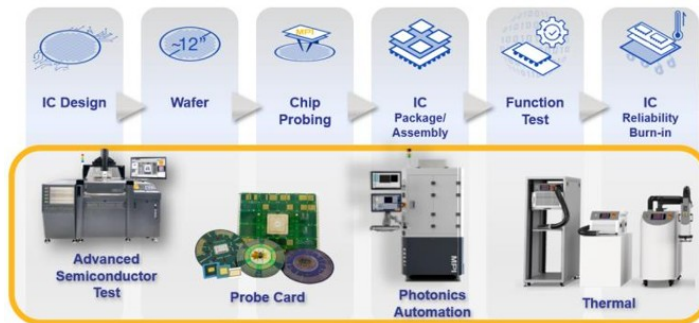
**We expect Hon Precision's revenue to expand at a 67% CAGR, 2025-28e**



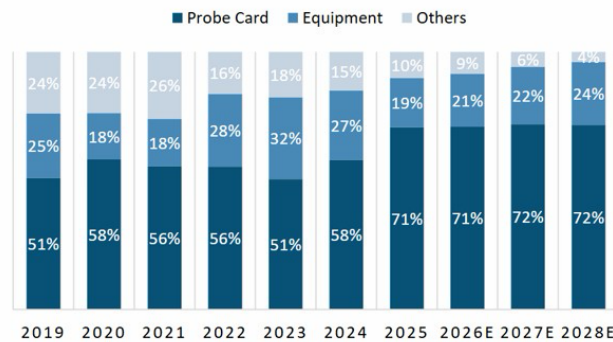
Source: Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates.

**MPI: Probe Card Technology Leader with CPO Optionality; OW**

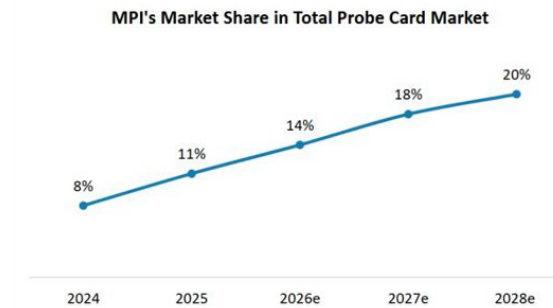
**MPI's product in chip manufacturing and test process**



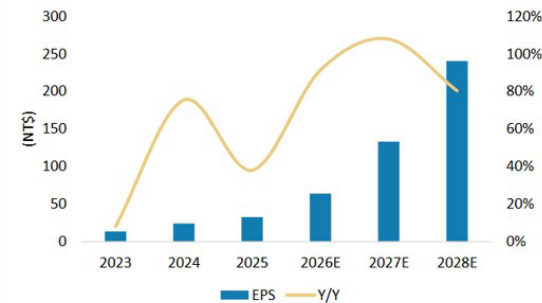
**Probe card to remain the key focus, with CPO equipment acting as driving force**



**We expect MPI's probe card market share to grow from 8% in 2024 to 20% by 2028e**



**We expect MPI's EPS to rise at a 94% CAGR, 2025-28e**



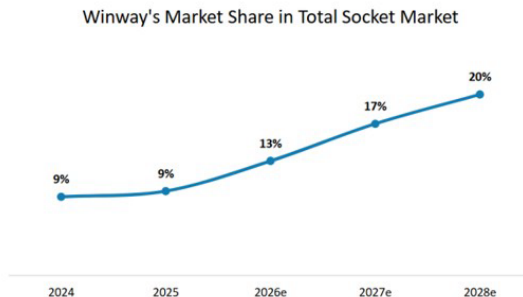
Source: Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates.

**WinWay: Socket Leader Leveraging AI Packaging Complexity; OW**

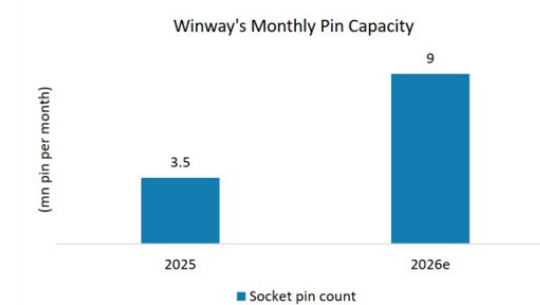
**WinWay's total solution of probe card and socket enables vertical integration strategy**



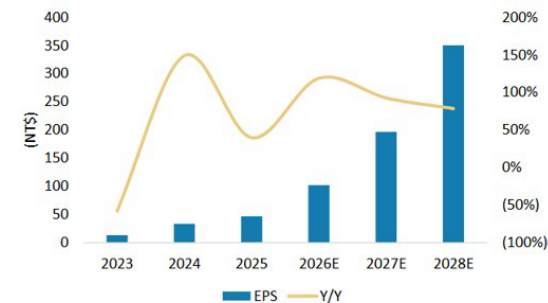
**We expect WinWay's market share to grow from 8.6% in 2024 to 20% in 2028e**



**WinWay to expand its pin capacity from 3.5mn per month in 2025 to 9mn per month in 2026**



**We expect WinWay's EPS to rise at 95% CAGR, 2025-28e**



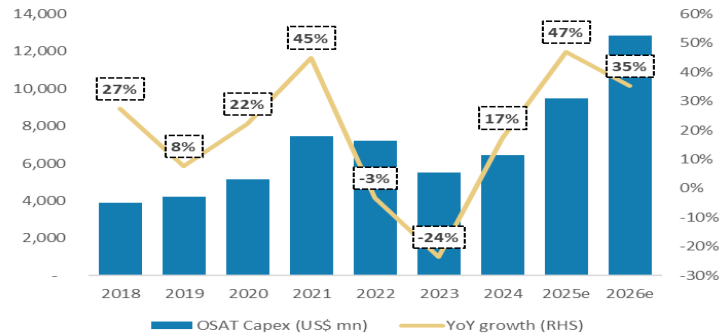
Source: Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates.

Morgan Stanley

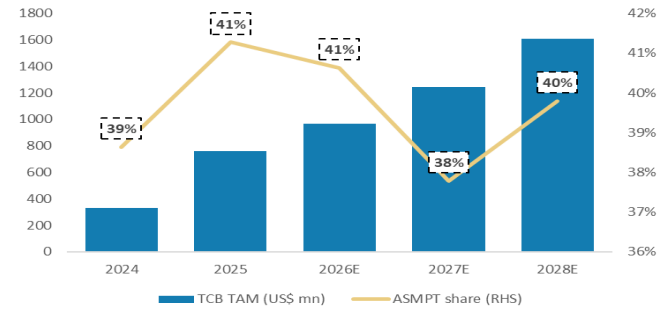
# China Semis: OSAT, Compound, MCU, and AI GPU

## Positive on back-end equipment (ASMPT) while Neutral on China OSAT

OSAT capex expected to grow ~35% in 2026 driven by both mainstream semi and advanced packaging



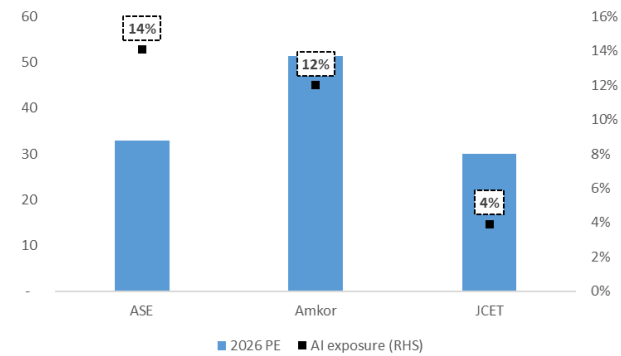
We expect ASMPT's share in TCB to be ~40% in 2028



ASMPT Equipment Matrix – CPO Assembly Flow

CPO Assembly Step	Process Technology	ASMPT Equipment	Precision
LD on PIC (Laser Diode Attach)	Eutectic Bonding	NANO	< 0.5 μm
μLens on PIC (Microlens Attach)	C2W (Chip to Wafer)	NANO	0.2 μm
EIC on PIC (Electronic IC Attach)	TCB / Mass Reflow / Hybrid Bonding	FIREBIRD / NOVA Pro / LITHOBOLT	0.2 – 1 μm
FAU on PIC (Fiber Array Unit Attach)	High-Precision Bonding	NOVA / NANO	< 1 μm
OE on Substrate (Optical Engine Attach)	TCB / Mass Reflow	FIREBIRD XD / NUCLEUS XD	1 μm

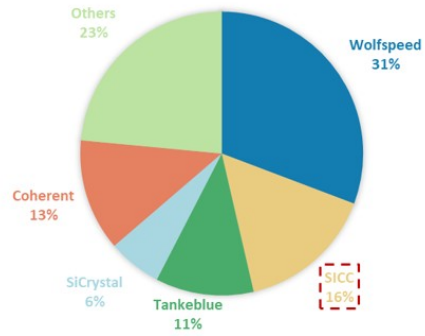
JCET's AI exposure the lowest vs. its peers



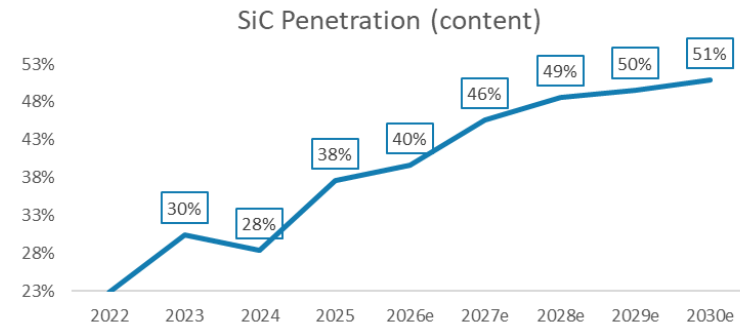
Source: Bloomberg, Company data, Morgan Stanley Research estimate

**Prefer SiC over GaN: SICC (OW) and InnoScience (EW)**

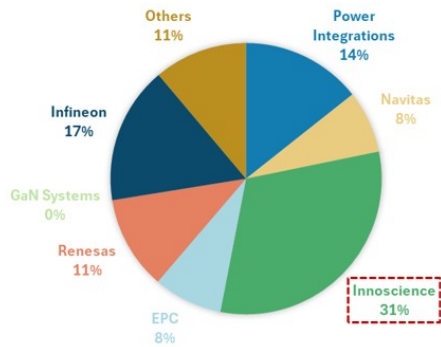
**SICC market share rise in SiC substrate market (2025)**



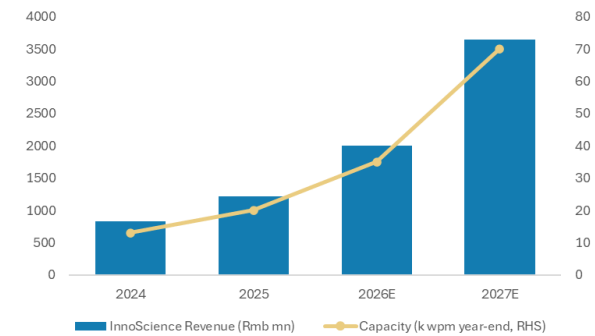
**We expect SiC penetration to exceed 50% by 2030**



**InnoScience dominate the GaN market with TAM ~US\$584mn in 2025**



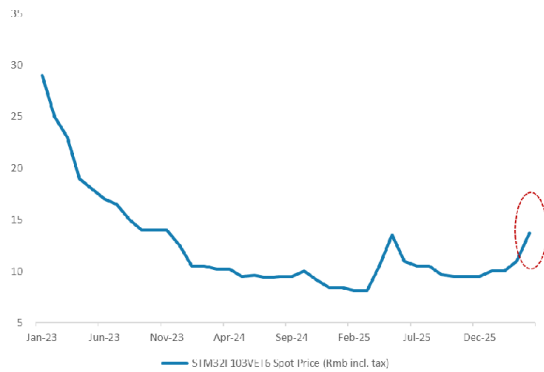
**Significant capacity expansion to support strong revenue growth but depreciation may weigh on profitability**



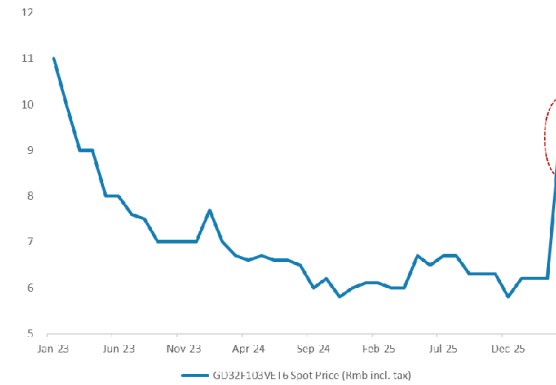
Source: Yole, Company data, Morgan Stanley Research estimate

## MCU: Bottoming but not out

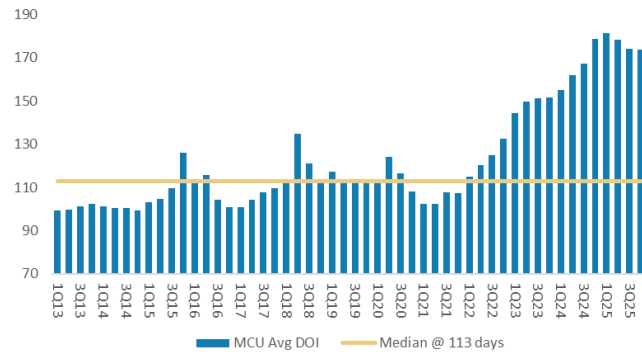
STM32F103VET6 spot market price trend



GD32F103VET6 spot market price trend

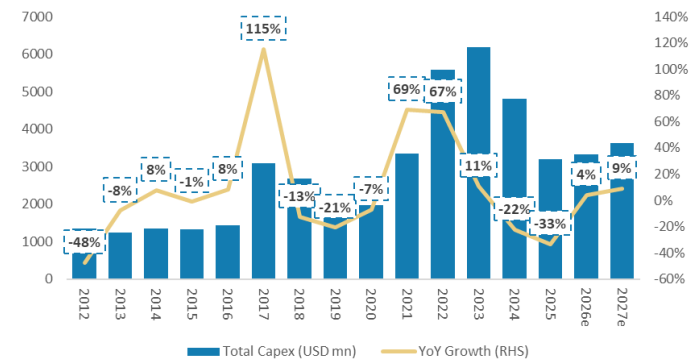


Inventory days for producers peaked in 1Q25 and was flat in 4Q25



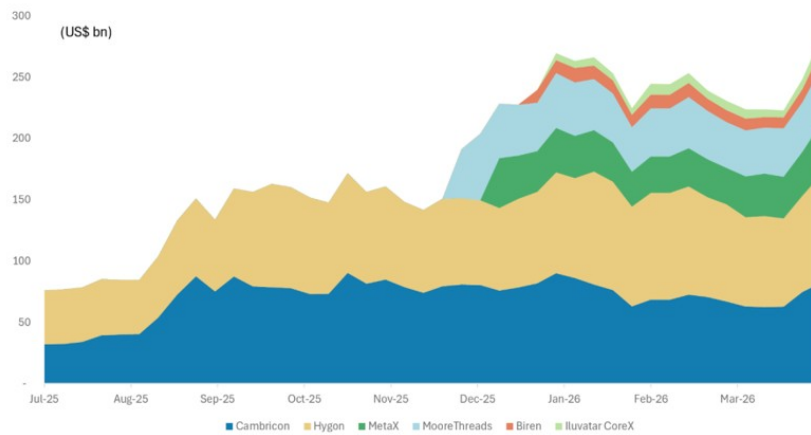
Source: Bom.ai, Bloomberg, Morgan Stanley Research

Leading MCU companies' capex declined for 2 years and is showing slight growth in 2026

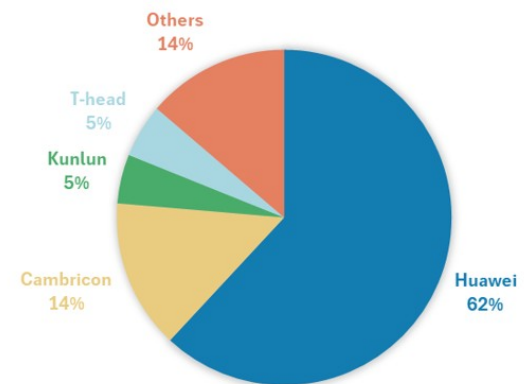


## Growing Market Size and Share of Domestic AI Semis

**China AI GPU market cap growing, with more IPOs to come**



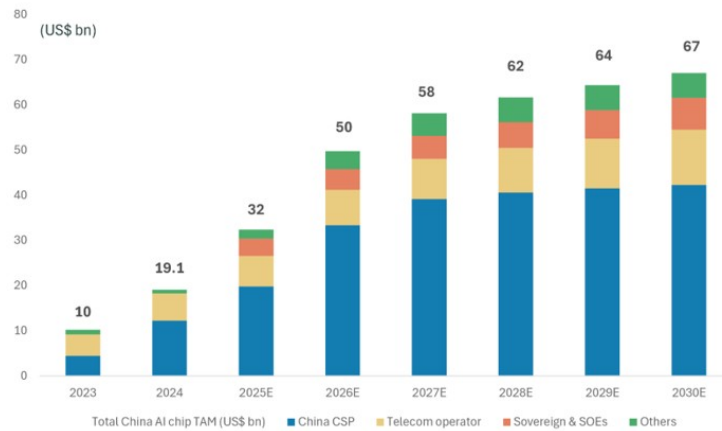
**Domestic AI accelerator market share in 2026e**



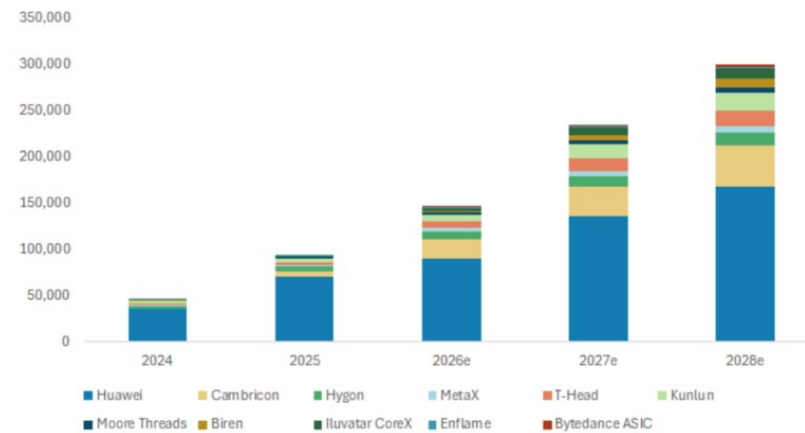
Source: Bloomberg, company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## We Expect China AI GPU TAM to Grow to US\$67bn by 2030e

**We expect China AI chip TAM to grow to US\$67bn by 2030**



**AI accelerators' revenue trend**



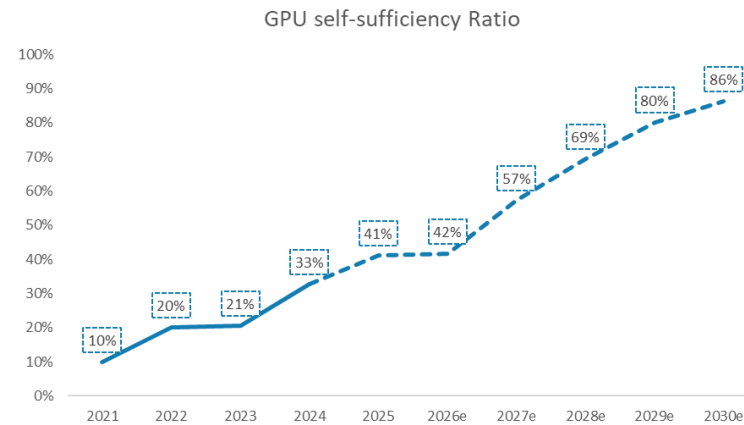
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## China's Advanced Node Capacity Expansion to Fulfil Local AI GPU Production Demand

**Chinese advanced node capacity may support US\$58 AI accelerator revenue in 2030**



**We expect China AI chip self-sufficiency to reach 86% in 2030e (US\$58bn / US\$67bn)**



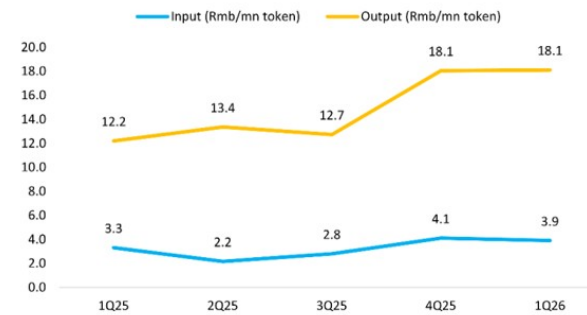
Source: Company data, Morgan Stanley Research (e) estimates.

## Near-term market tracker for China AI GPU demand

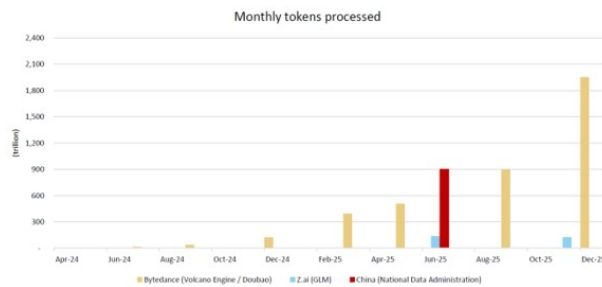
### Nvidia's 5090 price keeps rising in China



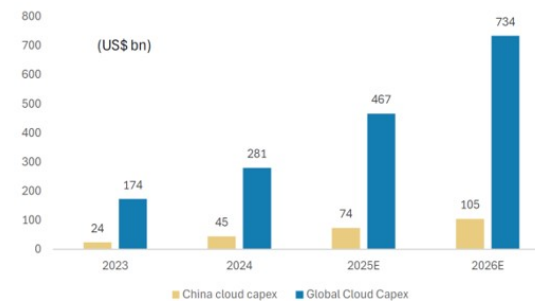
### Average token price for China's mainstream AI LLMs



### Surge in ByteDance (Volcano Engine/Doubao) tokens indicates high AI demand

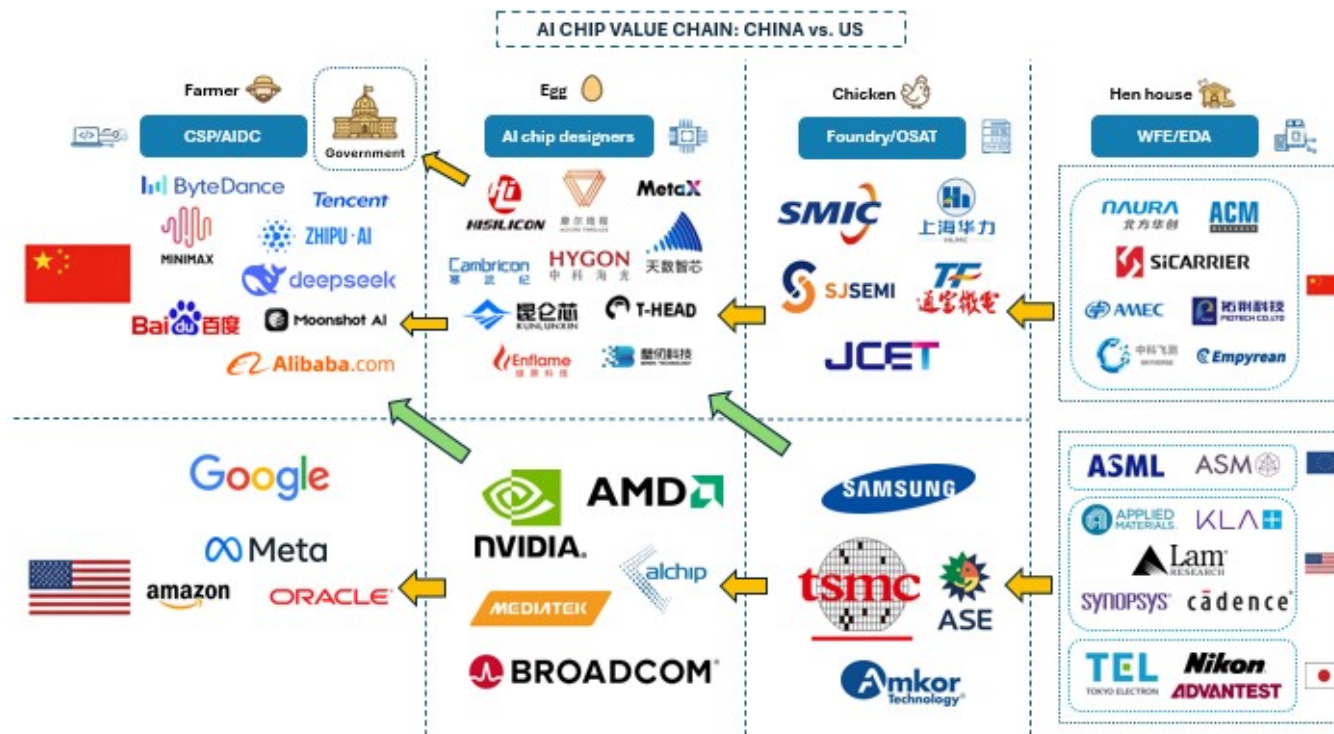


### China cloud vs. global cloud capex trend



Source: Company data, Taobao, Morgan Stanley Research.

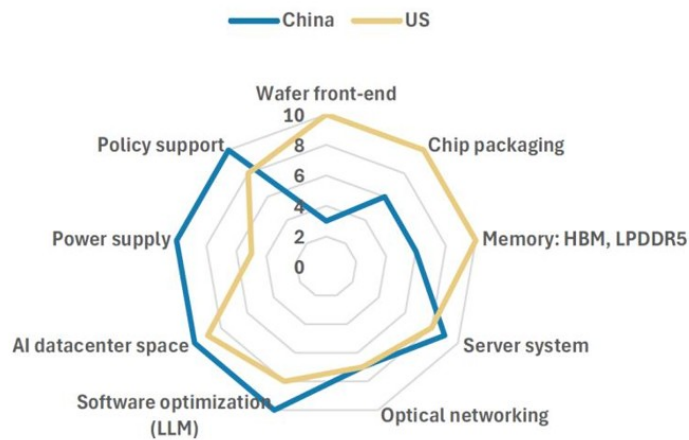
### AI Chip Value Chain – China vs. the US – a Decoupling of AI Compute



Source: Morgan Stanley Research.

## China's Infrastructure Strength Narrows Perceived Technology Gap

### Nine factors comparison between US and China AI – Chip, System, Infrastructure



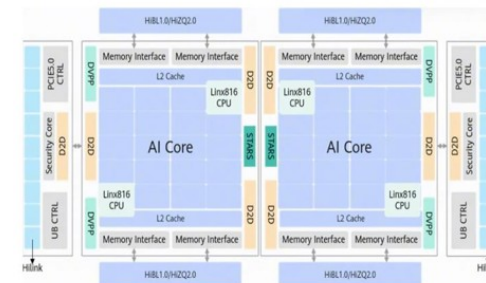
**Step 1: If one compute die is not powerful, package more dies into a single chip.**

**Step 2: If one chip is not powerful enough, build larger racks and clusters.**

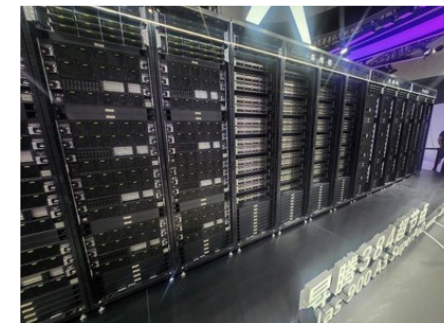
**Step 3: If one fab is not sufficient, expand manufacturing capacity.**

Source: Morgan Stanley Research.

### Die shot of Ascend 950

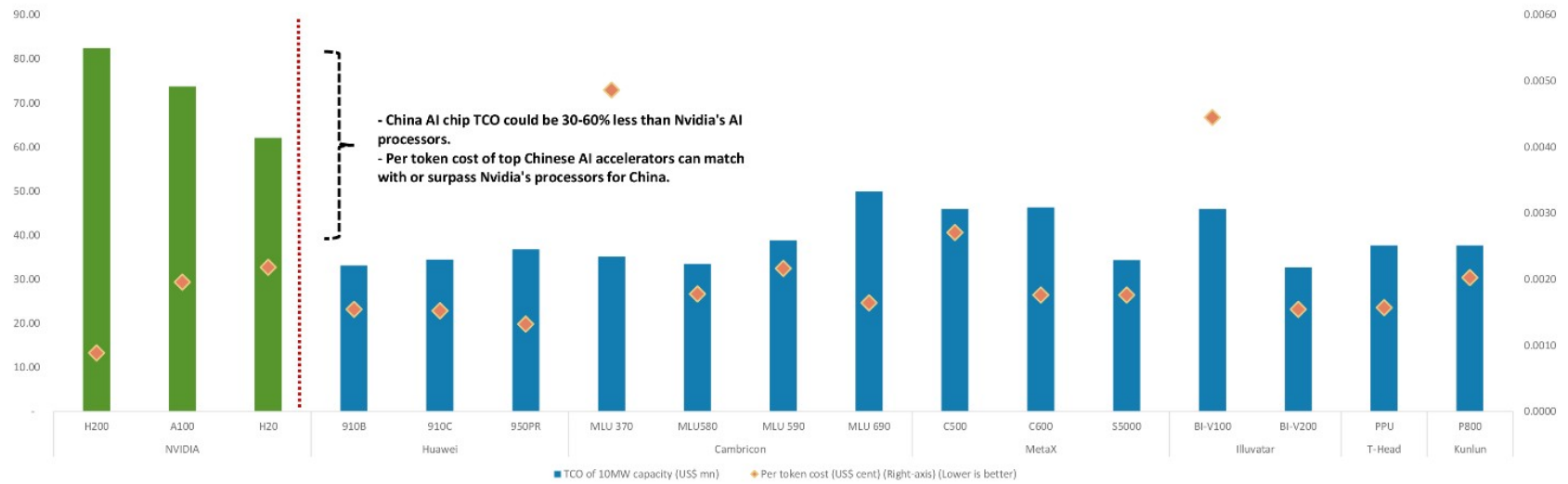


### Huawei CloudMatrix 384 A3 SuperPod



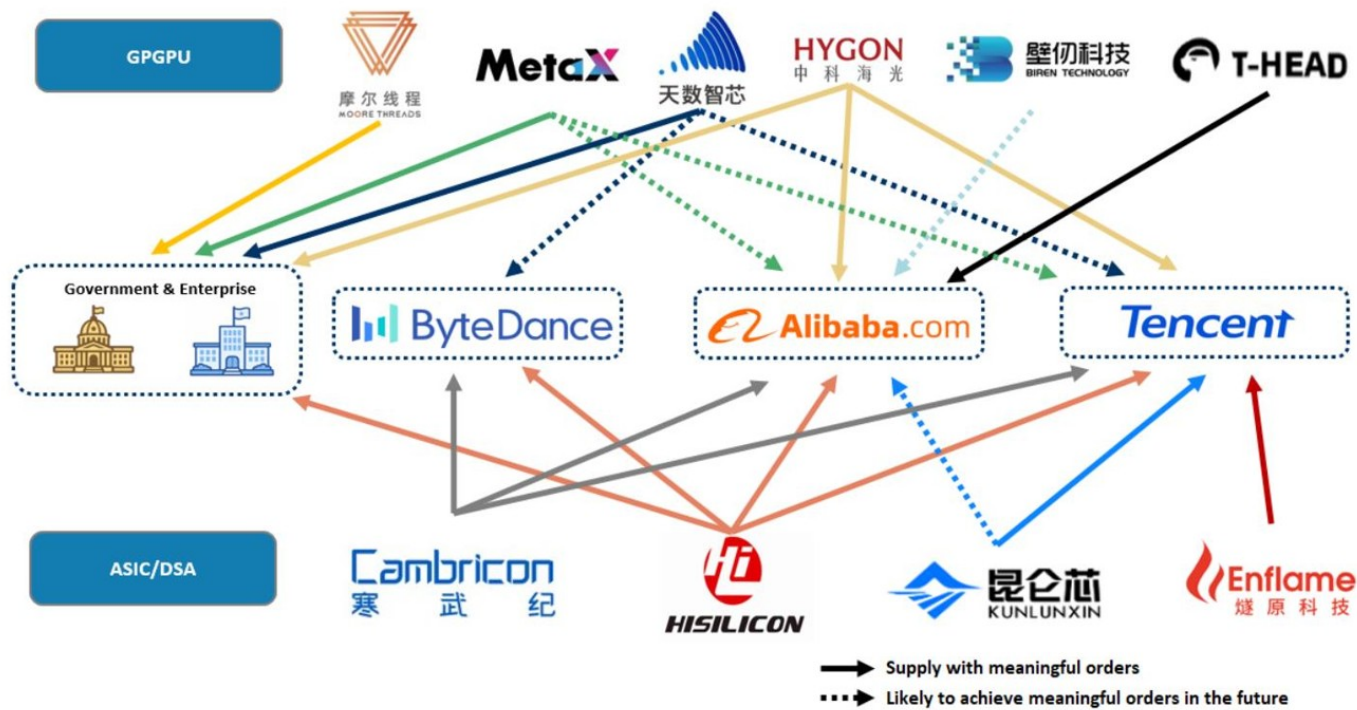
## Inference Economics: TCO and Cost per Token

**Domestic chips have lower TCO and comparable per token cost (AI LLM inference) vs. NVIDIA's processors for China**



Source : Company data, Morgan Stanley Research estimates.

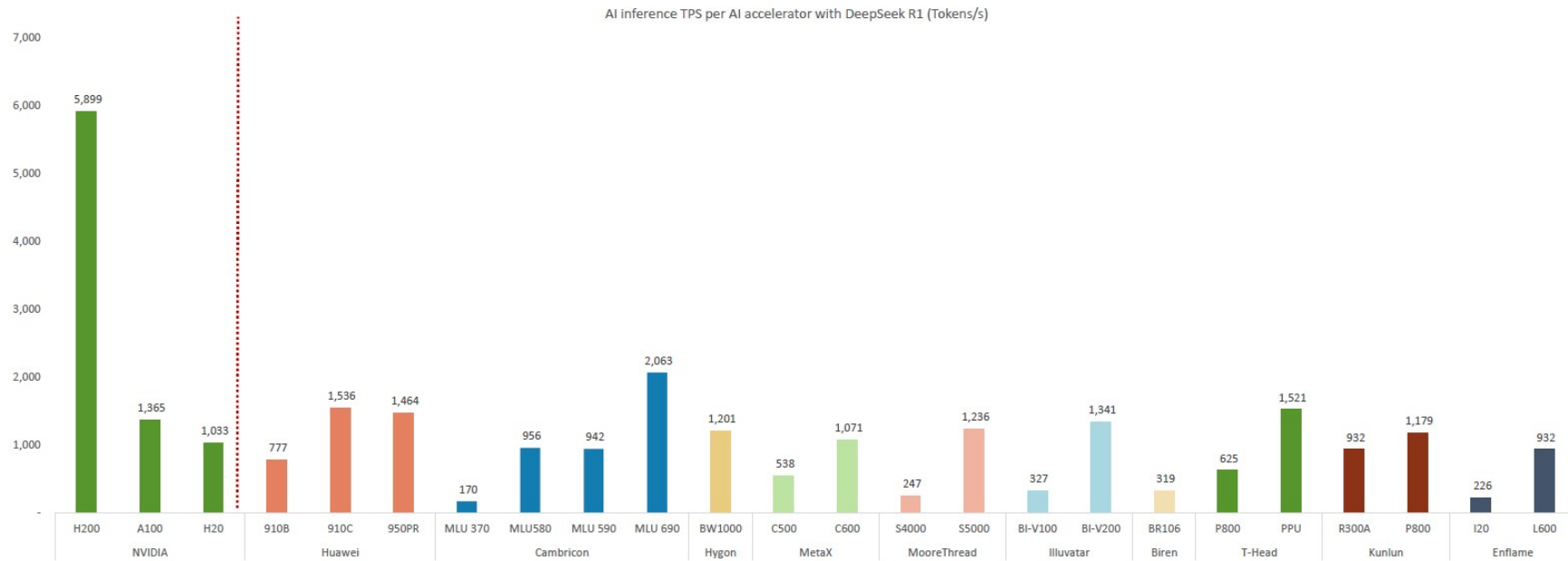
Order placement and potential orders for domestic AI accelerators developers



Source : Morgan Stanley Research

## TPS (Tokens Output per Second) – Performance Analysis

### TPS (tokens per second) analysis for China AI accelerators












Source: Company data, Morgan Stanley Research estimates (\*Our assumptions include: AI LLM: DeepSeek R1; Input token: 1,024; Output token: 1,024; Number of active experts: 9 out of 257; Model size: 671GB; Model layer: 61; Batch size: 1; Computing power: FP8, and if FP8 is not available, we will use FP16).

## Domestic Chips Deliver Stronger Performance per Dollar due to Materially Lower Pricing









\* = Based on Morgan Stanley estimates. Source : Company data, Morgan Stanley Research

"10 Dragons" of Chinese AI GPGPU vendors. We focus on Cambricon, MetaX , Iluvatar

Company	Ticker	GPU Product	Node	GPGPU/ASIC	Foundry sourcing viability	Sovereign background	Affiliated design house	AI inference performance
 HUAWEI	Private	950, 910C, 910B	7nm	ASIC	✓	✓	X	↗
 寒武纪	688256-SS	MLU series	7nm	ASIC	✓	X	X	↗
<b>HYGON</b>	688041-SS	DCU	7nm	GPGPU	✓	✓	X	→
 沐曦	688802-SH	MXC series; MXG series	7nm/12nm	GPGPU	✓	X	X	→
 摩尔线程 MOORE THREADS	688795-SH	MUSA MTT S5000, S4000	7nm/12nm	GPGPU	▲	X	X	→
 壁仞科技 BIREN TECHNOLOGY	6082-HK	BR100	7nm/12nm	GPGPU	▲	X	X	→
 天数智芯 Iluvatar CoreX	9903-HK	TianGai-100 series, Zhikai- 100 Series	7nm	GPGPU	✓	X	X	→
 T-HEAD	Currently under H-share listing counseling process	Hangguang 800, PPU	12nm	GPGPU	✓	X	✓	↗
 昆仑芯 KUNLUNXIN	Currently under H-share listing counseling process	R and P series	6nm	ASIC	▲	X	✓	→
 燧原科技 ENFLAME	Currently under A-share listing counseling process	S60, I20, L600	12nm	ASIC	▲	X	✓	↘

Source: Company data, Morgan Stanley Research.

### Comparison among Cambricon, MetaX and Iluvatar

			
Ticker	688256-SH	688802-SH	9903-HK
Product	MLU 220/270/370/580/590/690 (AI Training + inference)	C Series (AI training + inference) N Series (AI Inference) G Series (Graphic rendering)	Tiangai 100/150/200/300 (AI training + inference) Zhikai 100 (AI inference)
GPGPU/ASIC	ASIC	GPGPU	GPGPU
Chip suppliers			
Process node for latest products	7nm/N+2	12nm/N+1	7nm
Secured orders from major CSPs	✓	✗	✓
Sovereign fund as major shareholder	✗	✓	✗
Per token cost performance	↑	→	→
2025 Revenue (Rmb mn)	CNY 6,497	CNY 1,644	CNY 1,034
Profitability	✓	✗	✗

Source: Company data, Morgan Stanley Research.

## Cambricon: Leading in inference performance and customer anchoring; OW

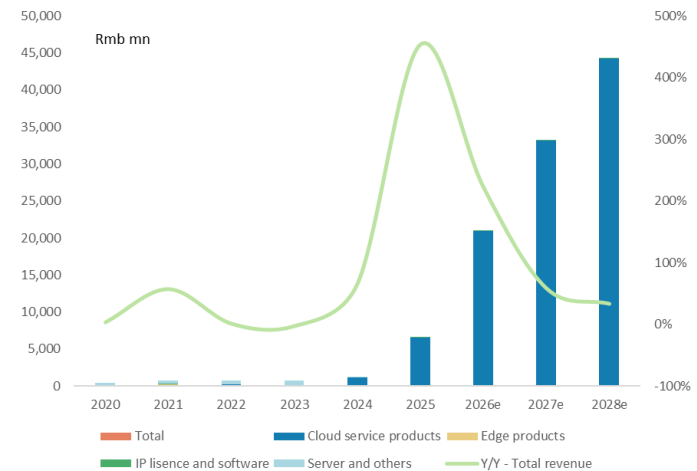
### Cambricon's products and specs

	Product	Type	Manufacture	Node	Computing power (TFLOPS/TOPS)			Memory type	Memory size (GB)	Memory bandwidth (GB/s)	Chip-to-chip networking bandwidth (GB/s)	TDP (W)	
					FP16 (TFLOPS)	FP8 (TFLOPS)	Int8 (TOPS)						
AI Training	MLU 370	DSA	TSMC	7nm	96		X	X	LPDDR5	48	614	200	250
	MLU 580*	DSA	SMIC	12nm	280		560	X	HBM3	96	1,600	425	560
	MLU 590*	DSA	TSMC	7nm	315		630	X	HBM3	96	1,600	425	580
	MLU 690*	DSA	SMIC	7nm	700		1,400	X	HBM3	96	2,400	1,200	750
Edge AI	MLU 220	DSA	TSMC	16nm			X	X	LPDDR4	8	400	X	15

### Cambricon's supply chain and customers



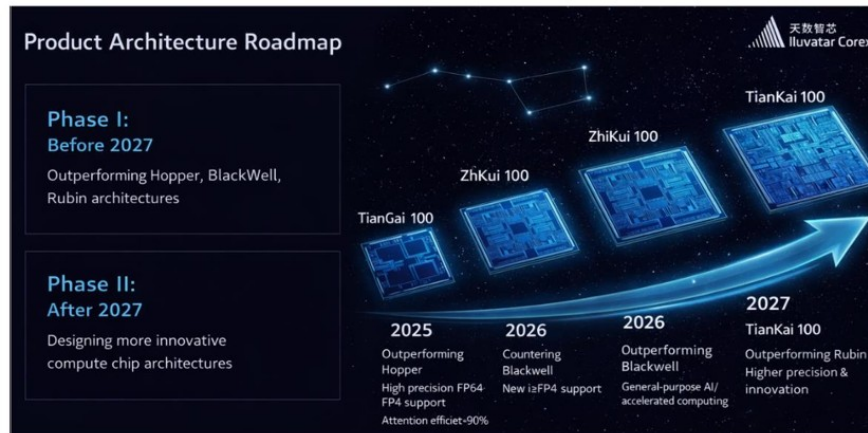
### We expect Cambricon's revenue to expand at a 90% CAGR, 2025-28e



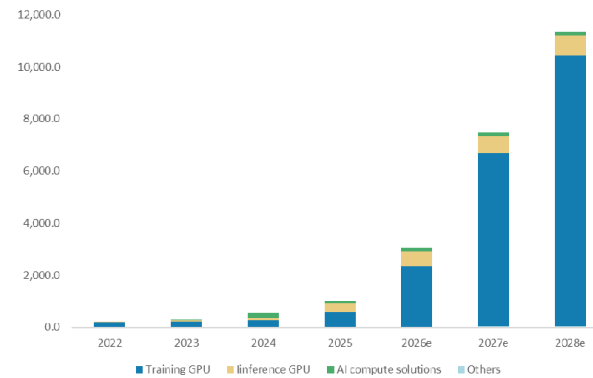
Source: Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates.

**Iluvatar: Leveraging supply chain resilience with strong order visibility; OW**

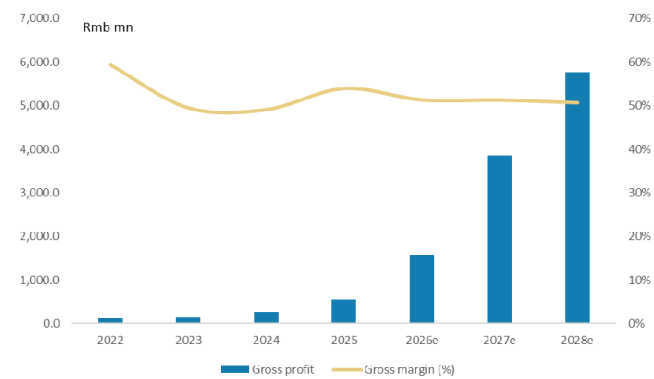
**Aggressive product roadmap for Iluvatar**



**We expect Iluvatar's revenue to expand at a 122% CAGR, 2025-28e**



**We expect Iluvatar's GM to be mild**



Source: Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates.

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## Global Stock Ratings Distribution

(as of March 31, 2026)

The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm.

For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1534	42%	461	50%	30%	698	43%
Equal-weight/Hold	1573	43%	372	40%	24%	716	44%
Not-Rated/Hold	4	0%	1	0%	25%	1	0%
Underweight/Sell	568	15%	89	10%	16%	209	13%
Total	3,679		923			1624	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

## Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

## Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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## INDUSTRY COVERAGE: Greater China Technology Semiconductors

COMPANY (TICKER)	RATING (AS OF)	PRICE* (04/27/2026)
<b>Charlie Chan</b>		
ACM Research Inc (ACMR.O)	O (03/07/2023)	US\$56.10
Advanced Micro-Fabrication Equipment Inc (688012.SS)	O (11/06/2023)	Rmb352.01
Advanced Wireless Semiconductor Co (8086.TWO)	U (07/14/2025)	NT\$134.00
Alchip Technologies Ltd (3661.TW)	O (05/14/2021)	NT\$4,160.00
ASE Technology Holding Co. Ltd. (3711.TW)	O (09/15/2024)	NT\$495.50
Cambricon Technology Corporation (688256.SS)	O (04/27/2026)	Rmb1,356.72
Global Unichip Corp (3443.TW)	O (07/27/2024)	NT\$3,955.00
GlobalWafers Co Ltd (6488.TWO)	O (09/19/2025)	NT\$620.00
Gudeng Precision (3680.TWO)	O (11/25/2025)	NT\$449.00
Hua Hong Semiconductor Ltd (1347.HK)	E (03/12/2026)	HK\$114.60
Iluvatar CoreX Semiconductor Co., Ltd. (9903.HK)	O (04/27/2026)	HK\$414.20

King Yuan Electronics Co Ltd (2449.TW)	O (03/03/2023)	NT\$283.50
Maxscend Microelectronics Co Ltd (300782.SZ)	U (01/11/2021)	Rmb106.58
MediaTek (2454.TW)	O (11/28/2025)	NT\$2,435.00
MetaX Integrated Circuits (688802.SS)	E (04/27/2026)	Rmb724.12
Nanya Technology Corp. (2408.TW)	E (03/20/2026)	NT\$226.50
NAURA Technology Group Co Ltd (002371.SZ)	O (11/06/2023)	Rmb516.25
OmniVision Integrated Circuits Group Inc (603501.SS)	E (11/17/2025)	Rmb104.63
Phison Electronics Corp (8299.TWO)	E (02/25/2026)	NT\$1,835.00
SG Micro Corp. (300661.SZ)	E (11/03/2025)	Rmb90.12
Silergy Corp. (6415.TW)	E (04/21/2026)	NT\$420.00
SMIC (0981.HK)	O (10/21/2025)	HK\$68.25
TSMC (2330.TW)	O (02/07/2022)	NT\$2,265.00
UMC (2303.TW)	E (04/20/2026)	NT\$72.70
Vanguard International Semiconductor (5347.TWO)	E (01/14/2026)	NT\$138.50
WIN Semiconductors Corp (3105.TWO)	U (07/14/2025)	NT\$492.50
<b>Daisy Dai, CFA</b>		
ASMPT Ltd (0522.HK)	O (07/24/2025)	HK\$165.80
China Resources Microelectronics Limited (688396.SS)	U (03/02/2026)	Rmb55.16
Elan Microelectronics Corp (2458.TW)	O (10/03/2025)	NT\$136.00
Empyrean Technology Co Ltd (301269.SZ)	E (01/17/2025)	Rmb92.77
Hangzhou Silan Microelectronics Co. Ltd. (600460.SS)	U (08/25/2025)	Rmb28.93
Innoscence (2577.HK)	E (10/13/2025)	HK\$67.45
JCET Group Co Ltd (600584.SS)	E (01/16/2026)	Rmb46.32
Shanghai Fudan Microelectronics (1385.HK)	O (03/07/2025)	HK\$44.76
SICC Co Ltd (688234.SS)	O (03/20/2026)	Rmb107.70
StarPower Semiconductor Ltd (603290.SS)	O (03/01/2022)	Rmb110.70
Unigroup Guoxin Microelectronics Co Ltd (002049.SZ)	U (01/10/2023)	Rmb73.36
Universal Scientific Ind. (Shanghai) (601231.SS)	O (11/05/2025)	Rmb39.65
Yangjie Technology (300373.SZ)	O (06/10/2022)	Rmb79.13
<b>Daniel Yen, CFA</b>		
AP Memory Technology Corp (6531.TW)	O (07/11/2025)	NT\$753.00
ASMedia Technology Inc (5269.TW)	U (10/03/2025)	NT\$1,290.00
Aspeed Technology (5274.TWO)	O (06/09/2025)	NT\$16,000.00
Egis Technology Inc (6462.TWO)	E (01/28/2026)	NT\$120.00
Espressif Systems (688018.SS)	O (05/15/2023)	Rmb176.25
GigaDevice Semiconductor Beijing Inc (603986.SS)	O (05/15/2025)	Rmb303.42
Macronix International Co Ltd (2337.TW)	O (09/18/2025)	NT\$145.00
Montage Technology Co Ltd (6809.HK)	O (03/18/2026)	HK\$259.20
Montage Technology Co Ltd (688008.SS)	O (03/18/2026)	Rmb178.09
Novatek (3034.TW)	U (02/04/2026)	NT\$416.50
Nuvoton Technology Corporation (4919.TW)	U (11/10/2025)	NT\$136.00
Parade Technologies Ltd (4966.TWO)	E (01/30/2026)	NT\$615.00
Powerchip Semiconductor Manufacturing Co (6770.TW)	O (10/27/2025)	NT\$54.50
Realtek Semiconductor (2379.TW)	E (01/30/2026)	NT\$555.00
Shenzhen Goodix Technology Co Ltd (603160.SS)	U (07/14/2025)	Rmb66.41
Winbond Electronics Corp (2344.TW)	E (03/20/2026)	NT\$93.90
WPG Holdings (3702.TW)	O (03/16/2026)	NT\$95.50
WT Microelectronics Co. Ltd. (3036.TW)	O (01/27/2026)	NT\$201.00
<b>Duan Liu</b>		
Dosilicon Co Ltd (688110.SS)	U (09/06/2024)	Rmb132.94
Shenzhen Longsys Electronics Co Ltd (301308.SZ)	E (02/25/2026)	Rmb393.46
<b>Tiffany Yeh</b>		
AllRing Tech Co. (6187.TWO)	O (09/23/2025)	NT\$1,080.00
FOCI Fiber Optic Communications Inc (3363.TWO)	O (01/15/2025)	NT\$739.00

Himax Technologies Inc (HIMX.O)	E (02/04/2026)	US\$12.09
Hon Precision (7769.TW)	O (04/17/2026)	NT\$4,970.00
MPI Corporation (6223.TWO)	O (04/17/2026)	NT\$4,880.00
Silicon Motion (SIMO.O)	O (05/06/2024)	US\$153.46
Winway Technology Co Ltd (6515.TW)	O (04/17/2026)	NT\$9,580.00

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