June 22, 2026 05:46 PM GMT

Greater China Semiconductors | Asia Pacific

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**

investors should be aware that the firm may have a conflict of

Research as only a single factor in making their investment decision.

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Strong AI Semi Outlook

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

Long-term demand drivers:

- **Chip 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.

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

Ticker	Company	Price 6/22/2026	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) 2026e	P/E Ratio (x) 2027e	P/E Ratio (x) 2028e	EPS Growth 2026e	EPS Growth 2027e	EPS Growth 2028e	ROAE 2026e	ROAE 2027e	ROAE 2028e	P/B Ratio (x) 2026e	P/B Ratio (x) 2027e	P/B Ratio (x) 2028e
Foundry																						
2330.TW	TSMC	2,510.0	TWD	2,588.0	3%	O	1.4%	1.8%	2,054,945	2,875.4	24.3	19.5	15.8	56%	25%	23%	41%	38%	35%	8.6	6.4	4.9
2303.TW	UMC	160.0	TWD	138.0	-14%	O	5.1%	5.3%	63,781	718.0	35.6	28.2	23.2	35%	26%	22%	14%	17%	19%	4.9	4.6	4.2
0981.HK	SMIC	78.9	HKD	85.0	8%	O	0.0%	-5.0%	70,955	973.0	NM	NM	NM	142%	45%	20%	7%	10%	11%	NM	NM	NM
5347.TWO	Vanguard	191.5	TWD	180.0	-6%	E	4.9%	3.1%	11,238	156.5	35.1	28.3	23.0	31%	24%	23%	12%	14%	17%	4.2	3.9	3.7
1347.HK	Hua Hong	164.6	HKD	118.0	-28%	E	0.1%	-4.6%	36,574	494.2	NM	NM	NM	584%	55%	27%	5%	7%	8%	NM	NM	NM
6770.TW	PSMC	81.6	TWD	88.0	8%	O	0.0%	5.6%	10,883	410.1	NM	NM	NM	-136%	259%	18%	3%	8%	7%	1.8	1.5	1.2
3105.TWO	WIN Semi	541.0	TWD	300.0	-45%	U	0.5%	-3.8%	2,264	508.3	NM	60.8	42.0	59%	40%	45%	6%	9%	12%	5.4	5.3	5.1
8086.TWO	AWSC	165.5	TWD	130.0	-21%	U	1.1%	-3.9%	1,027	37.4	26.1	23.2	18.7	89%	13%	24%	14%	14%	16%	3.5	3.1	2.7
Mean:							**1.6%**	**-0.2%**			**30.6**	**37.5**	**27.9**	**108%**	**61%**	**25%**	**13%**	**14%**	**16%**	**4.7**	**4.1**	**3.6**
Median:							**0.8%**	**-1.0%**			**30.6**	**28.2**	**23.0**	**58%**	**33%**	**23%**	**10%**	**12%**	**14%**	**4.5**	**4.2**	**4.0**
Memory																						
603986.SS	Giga Device	689.7	CNY	585.0	-15%	O	0.3%	4.1%	63,991	2,533.4	53.8	33.3	29.9	417%	62%	11%	37%	42%	35%	16.9	11.9	9.2
2408.TW	Nanya Tech	505.0	TWD	380.0	-25%	O	0.0%	13.6%	49,148	1,178.2	8.2	6.2	11.3	NM	NM	NM	74%	53%	21%	4.3	2.5	2.0
2344.TW	Winbond	222.0	TWD	222.0	0%	O	0.0%	16.6%	31,545	861.7	10.9	6.8	6.4	NM	NM	NM	64%	59%	46%	5.7	3.1	2.7
8299.TWO	Phison	2,580.0	TWD	2,248.0	-13%	E	1.5%	1.6%	17,757	553.1	12.9	22.0	50.0	402%	-41%	-56%	55%	25%	11%	5.6	5.5	5.6
SIMO.O	Silicon Motion	321.7	USD	155.0	-52%	O	1.1%	2.1%	10,807	199.4	49.2	29.6	NM	106%	66%	NA	24%	32%	NA	10.6	8.4	NA
2337.TW	Macronix	185.5	TWD	202.0	9%	O	4.6%	17.2%	10,868	614.0	NM	NM	NM	-513%	183%	3%	28%	53%	35%	6.0	3.5	2.5
Mean:							**1.3%**	**9.2%**			**27.0**	**19.6**	**24.4**	**103%**	**67%**	**-14%**	**47%**	**44%**	**30%**	**8.2**	**5.8**	**4.4**
Median:							**0.7%**	**8.8%**			**12.9**	**22.0**	**20.6**	**254%**	**64%**	**3%**	**46%**	**47%**	**35%**	**5.9**	**4.5**	**2.7**
Backend																						
3711.TW	ASEH	674.0	TWD	558.0	-17%	O	2.2%	6.0%	92,860	384.8	40.0	25.0	16.5	83%	60%	52%	19%	26%	33%	6.9	5.9	4.8
600584.SS	JCET	91.3	CNY	50.0	-45%	E	0.3%	5.7%	22,704	1,265.0	63.2	45.7	38.3	65%	38%	19%	8%	11%	11%	5.1	4.6	4.2
601231.SS	USI	37.5	CNY	45.4	21%	O	1.4%	-7.4%	11,872	297.6	31.6	21.3	18.3	42%	48%	17%	13%	17%	17%	3.8	3.3	3.0
2449.TW	KYEC	339.0	TWD	338.0	0%	O	1.8%	1.6%	13,089	334.2	34.5	23.5	18.1	10%	47%	30%	22%	28%	30%	7.3	6.0	5.0
3363.TWO	FOCI	712.0	TWD	708.0	-1%	O	0.2%	4.8%	2,364	79.4	NM	NM	NM	NM	NM	NM	3%	56%	78%	NM	NM	NM
Mean:							**1.4%**	**1.5%**			**33.0**	**22.4**	**18.2**	**50%**	**48%**	**29%**	**16%**	**20%**	**23%**	**5.8**	**5.0**	**4.2**
Median:							**1.6%**	**3.7%**			**33.0**	**22.4**	**18.2**	**54%**	**48%**	**25%**	**16%**	**21%**	**24%**	**6.0**	**5.3**	**4.5**
Power Semis/ IDM																						
688396.SS	CR Micro	78.2	CNY	51.6	-34%	U	0.2%	1.6%	14,254	274.1	65.6	44.0	31.7	138%	49%	39%	6%	9%	11%	3.9	3.6	3.2
600460.SS	Silan Micro	44.8	CNY	26.9	-40%	U	0.5%	2.1%	10,357	314.7	54.4	36.5	28.5	244%	49%	28%	10%	14%	15%	5.3	4.7	4.1
603290.SS	StarPower	135.6	CNY	120.0	-11%	E	1.0%	0.0%	#N/A	164.3	86.6	50.9	34.0	-7%	70%	50%	5%	8%	12%	NA	NA	NA
300373.SZ	Yangjie	128.1	CNY	136.0	6%	O	1.4%	-2.8%	9,609	287.2	43.7	31.2	23.3	27%	40%	34%	15%	18%	21%	6.2	5.3	4.4
Mean:							**0.8%**	**0.2%**			**62.6**	**40.6**	**29.4**	**100%**	**52%**	**38%**	**9%**	**12%**	**15%**	**5.1**	**4.5**	**3.9**
Median:							**0.7%**	**0.8%**			**60.0**	**40.2**	**30.1**	**82%**	**49%**	**36%**	**8%**	**11%**	**14%**	**5.3**	**4.7**	**4.1**
Semicap / Equipment/ Materials/ Supply Chain																						
002371.SZ	NAURA	745.0	CNY	818.0	10%	O	0.6%	-0.9%	74,997	964.4	58.6	40.0	31.5	45%	46%	27%	19%	24%	25%	10.5	8.7	7.2
688012.SS	AMEC	372.7	CNY	550.0	48%	O	0.0%	17.6%	32,524	999.5	61.0	44.7	32.6	90%	37%	37%	16%	18%	20%	8.8	7.3	6.0
7769.TW	Hon Precision	6,915.0	TWD	10,008.0	45%	O	2.5%	NA	39,282	202.7	53.5	31.1	18.6	69%	72%	67%	37%	53%	65%	NM	14.4	10.4
6223.TWO	MPI	6,425.0	TWD	7,500.0	17%	O	0.0%	-5.4%	19,878	213.3	93.7	44.8	22.3	109%	109%	101%	38%	54%	69%	NM	NM	NM
6515.TW	Winway	9,460.0	TWD	15,000.0	59%	O	0.9%	1.3%	10,679	112.6	NM	46.1	21.7	104%	116%	113%	45%	67%	84%	NM	NM	NM
6488.TWO	GlobalWafers	1,115.0	TWD	750.0	-33%	E	2.7%	1.7%	16,833	151.5	49.9	33.4	26.2	46%	50%	27%	11%	15%	18%	5.4	4.9	4.4
0522.HK	ASM Pacific	207.4	HKD	188.0	-9%	O	1.8%	6.5%	10,545	79.4	56.5	33.8	24.2	69%	67%	40%	9%	14%	18%	4.6	4.2	3.8
688234.SS	SICC	158.0	CNY	112.1	-29%	O	0.6%	NA	10,638	284.7	NM	NM	NM	NM	NM	NM	1%	3%	3%	10.6	10.3	10.0
ACMR.O	ACM Research	109.9	USD	90.0	-18%	O	1.1%	-0.7%	7,209	92.1	38.7	26.6	22.2	104%	46%	20%	10%	13%	14%	3.4	3.1	2.8
3680.TWO	Gudeng Precision	547.0	TWD	648.0	18%	O	0.0%	-6.1%	1,659	45.8	28.1	19.9	14.4	106%	42%	38%	15%	19%	22%	4.0	3.5	2.9
6187.TWO	AllRing Tech	1,260.0	TWD	1,580.0	25%	O	2.8%	1.1%	3,829	127.9	57.2	32.2	28.0	42%	78%	15%	27%	39%	36%	NM	NM	NM
Mean:							**1.2%**	**1.7%**			**55.3**	**35.3**	**24.2**	**78%**	**66%**	**49%**	**21%**	**29%**	**34%**	**6.8**	**7.1**	**5.9**
Median:							**0.9%**	**1.1%**			**56.5**	**33.6**	**23.2**	**80%**	**58%**	**38%**	**16%**	**19%**	**22%**	**5.4**	**6.1**	**5.2**

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Valuation Comparison: Fabless, Power Semis, FPGA and Analog

Ticker	Company	Price 6/22/2026	Currency	Price Target	Upside/ Downside	Rating	Dividend Yield (%)	FCF Yield (%)	Market Cap (US$M)	3M Avg. Daily Trading (US$M)	P/E Ratio (x) 2026e	P/E Ratio (x) 2027e	P/E Ratio (x) 2028e	EPS Growth 2026e	EPS Growth 2027e	EPS Growth 2028e	ROAE 2026e	ROAE 2027e	ROAE 2028e	P/B Ratio (x) 2026e	P/B Ratio (x) 2027e	P/B Ratio (x) 2028e
Fabless																						
AI accelerators																						
688256.SS	Cambricon	1,457.0	RMB	1,528.0	5%	O	0.0%	-2.2%	85,347	2,263.6	115.2	74.9	54.8	160%	54%	37%	48%	51%	46%	32.9	20.9	14.0
9903.HK	Iluvatar	726.5	HKD	688.0	-5%	O	NA	NA	23,627	68.3	NM	112.8	63.3	-83%	-805%	78%	-6%	26%	34%	33.8	26.0	18.4
688802.SS	MetaX	758.0	RMB	758.0	0%	E	0.0%	NA	42,133	259.4	NM	546.4	304.1	-103%	2214%	80%	0%	4%	7%	23.0	22.1	20.6
Smartphone/Wireless Semis																						
2454.TW	MediaTek	4,465.0	TWD	5,088.0	14%	O	15.7%	0.9%	220,675	1,279.2	63.8	33.4	15.9	12%	91%	110%	25%	37%	52%	14.6	10.3	6.8
603501.SS	OmniVision	90.6	CNY	111.0	23%	E	0.5%	2.1%	15,171	377.6	27.2	18.7	15.2	0%	45%	23%	14%	18%	19%	3.5	3.0	2.5
300782.SZ	Maxscend	112.4	CNY	48.00	-57%	U	0.1%	-2.2%	8,334	448.4	NM	59.1	NM	-485%	85%	NA	5%	9%	NA	5.7	5.2	NA
603160.SS	Goodix	59.2	CNY	58.0	-2%	U	0.7%	-1.4%	3,786	62.9	49.6	43.9	39.7	-35%	13%	11%	6%	6%	7%	2.8	2.7	2.6
6462.TWO	Egis	122.0	TWD	105.0	-14%	E	1.0%	-16.3%	352	9.5	NM	22.8	NM	-88%	-462%	NA	-1%	5%	NA	1.2	1.2	NA
IP/Design Service																						
3661.TW	Alchip	4,325.0	TWD	5,088.0	18%	O	1.0%	5.1%	11,135	297.5	28.5	24.0	19.8	124%	19%	21%	28%	28%	30%	NM	NM	NM
301269.SZ	Empyrean Technology	101.7	CNY	95.0	-7%	E	0.1%	NA	7,672	177.5	NM	NM	NM	283%	136%	70%	4%	10%	15%	NM	NM	NM
3443.TW	GUC	4,755.0	TWD	4,888.0	3%	E	0.8%	4.7%	20,121	325.4	81.8	47.1	35.4	108%	73%	33%	50%	58%	54%	NM	NM	NM
6531.TW	AP Memory	1,115.0	TWD	1,555.0	39%	O	1.2%	4.1%	5,697	174.4	63.2	32.5	18.4	128%	95%	77%	22%	35%	47%	12.6	10.1	7.5
PC/Cloud/Display Semis																						
3034.TW	Novatek	567.0	TWD	414.0	-27%	U	6.1%	14.3%	10,895	84.4	16.4	16.0	18.8	29%	2%	-15%	30%	28%	23%	4.6	4.4	4.4
2379.TW	Realtek	900.0	TWD	570.0	-37%	E	4.8%	5.0%	14,500	88.3	25.4	27.6	26.4	23%	-8%	5%	33%	28%	28%	7.9	7.6	7.2
5269.TW	ASMedia	1,450.0	TWD	1,482.0	2%	U	4.1%	0.9%	3,418	74.0	15.8	16.3	15.3	25%	-3%	6%	18%	16%	15%	2.7	2.4	2.2
5274.TWO	Aspeed	19,275.0	TWD	23,456.0	22%	O	1.2%	1.3%	23,008	145.4	83.0	58.8	41.7	123%	41%	41%	85%	79%	81%	NM	NM	NM
4966.TWO	Parade	695.0	TWD	1,000.0	44%	O	2.9%	1.6%	1,708	54.3	22.8	13.8	11.8	-11%	66%	16%	11%	16%	17%	2.3	2.1	1.9
2458.TW	Elan Micro	178.5	TWD	180.0	1%	O	4.8%	9.6%	1,614	19.6	18.7	17.2	17.1	13%	9%	0%	25%	25%	23%	4.5	4.1	3.8
HIMX.O	Himax	18.1	TWD	17.4	-4%	E	2.7%	8.3%	3,088	62.1	45.5	25.0	12.4	65%	82%	102%	8%	14%	26%	3.7	3.4	2.9
Analog IC																						
6415.TW	Silergy	673.0	TWD	388.0	-42%	U	1.4%	4.8%	8,247	102.9	66.3	40.9	31.7	59%	62%	29%	10%	15%	17%	6.4	5.7	5.1
300661.SZ	SG Micro	136.8	CNY	82.0	-40%	E	0.3%	1.1%	11,787	399.9	100.4	70.3	56.4	49%	43%	25%	15%	18%	20%	NM	NM	NM
MCU																						
4919.TW	Nuvoton	216.0	TWD	98.0	-55%	U	0.8%	14.5%	2,863	102.7	NM	49.0	27.4	-69%	-457%	79%	-4%	14%	21%	7.2	6.3	5.1
688018.SS	Espressif	123.1	CNY	125.0	2%	O	NA	NA	2,845	120.2	NM	NM	NM	NA	NA	NA	12%	14%	15%	NM	NM	NM
FPGA																						
002049.SZ	Unigroup Guoxin	82.0	CNY	57.0	-30%	U	0.4%	1.5%	9,674	325.9	33.7	25.9	22.2	44%	30%	17%	14%	16%	16%	4.5	3.9	3.3
1385.HK	Shanghai Fudan	28.1	HKD	47.3	69%	O	0.1%	0.1%	6,905	28.2	21.8	17.9	16.0	353%	22%	12%	16%	16%	16%	3.2	2.7	2.3
IC distributor																						
3702.TW	WPG	112.5	TWD	160.0	42%	O	7.2%	-27.2%	5,965	54.7	8.8	9.0	8.5	115%	-2%	5%	24%	21%	20%	1.9	1.7	1.6
3036.TW	WT Micro	225.0	TWD	349.0	55%	O	4.4%	-21.4%	8,991	94.5	9.1	8.0	7.1	107%	13%	13%	25%	25%	24%	2.1	1.9	1.6

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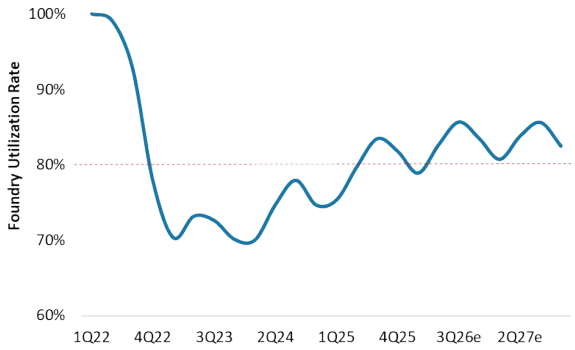
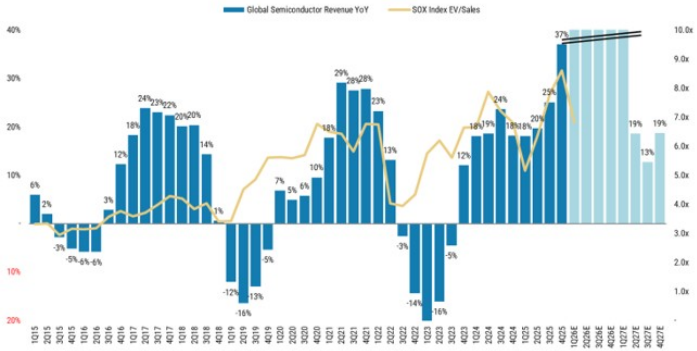
Broader Semiconductor Cycle

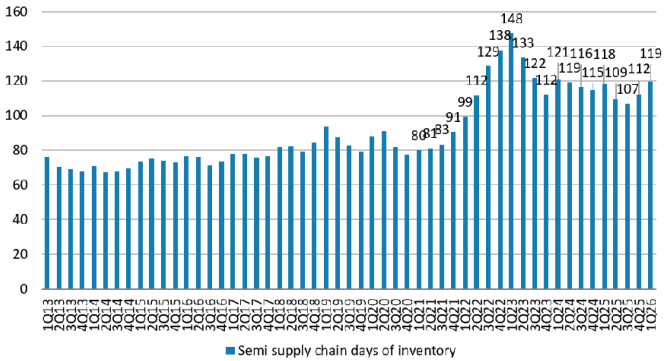
Logic semi foundry utilization could reach 80% in 2H26



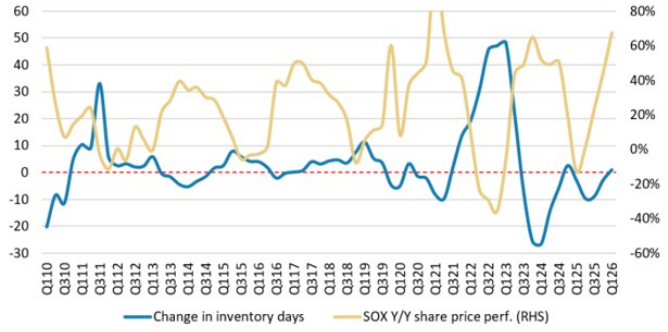
Excluding memory and NVIDIA's AI GPU revenue, non-AI semi growth is expected to decline in 2026



Semi supply chain days of inventory as of 1Q26



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



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AI Semi Supply Chain and Niche Memory

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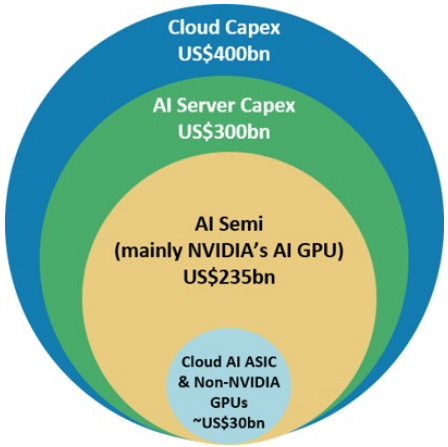
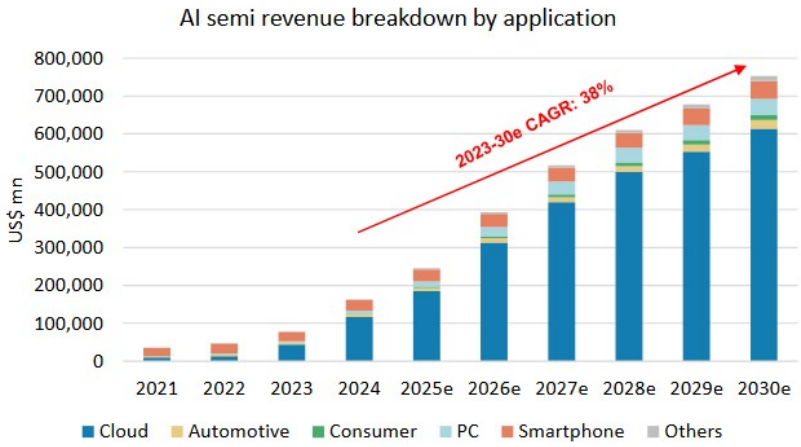
The Global Semi Industry Market Size May Reach US$1.5 trillion in 2030, Half from AI Semis

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



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



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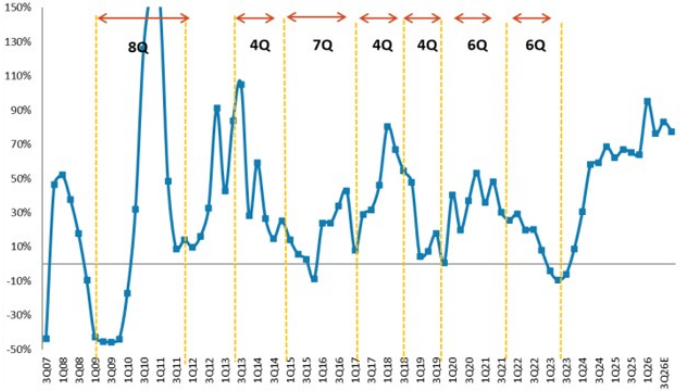
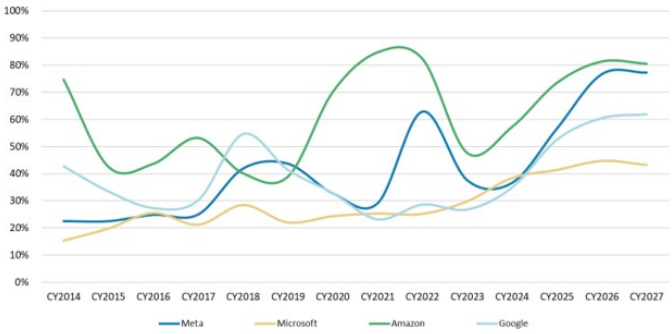
Cloud Semis: Brighter Outlook

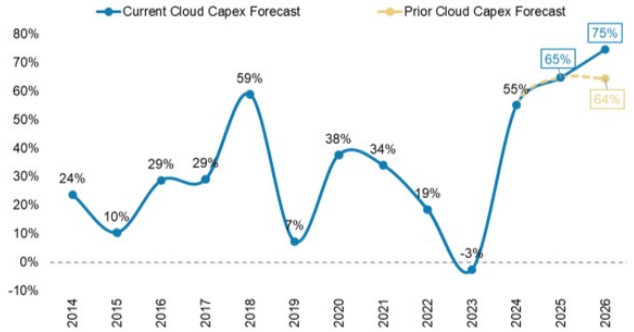
Top 4 CSPs (Amazon, Google, Microsoft and Meta) capex was up 95% Y/Y in 1Q26CY



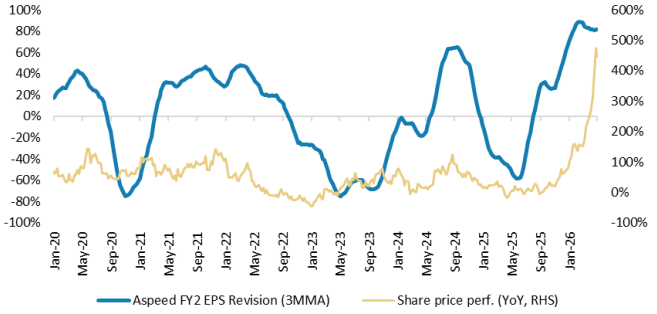
Capex-to-EBITDA ratio should remain stable at around 50%



Top 4 Cloud Providers: Cloud Capex Y/Y Growth



Aspeed earnings estimate revision breadth



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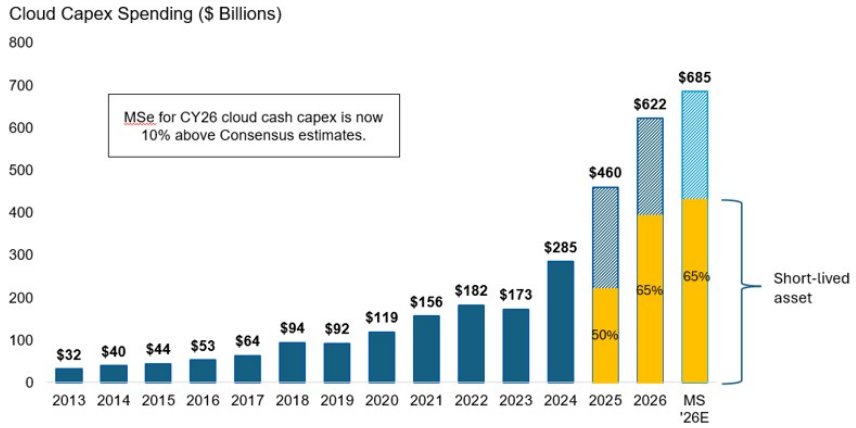
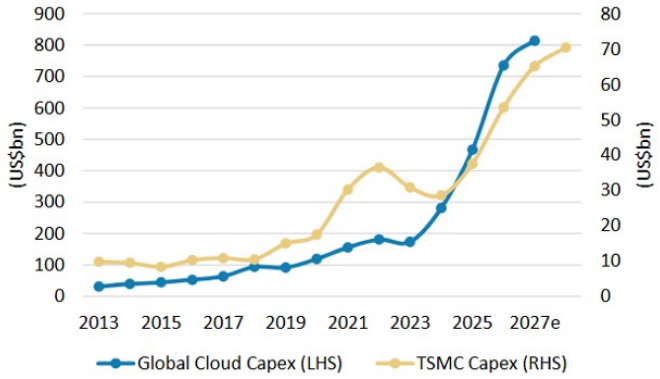
Cloud Capex Remains Robust From Major CSPs

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



Global Cloud Capex vs. TSMC Capex



Source: FactSet, company data,

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Announced Power Deployment Implications for TSMC

GPU/ASIC Vendor	Announced Power Deployment Implication for TSMC NVIDIA (Top US AI firm)	AMD (Top US AI firm)	Broadcom	AWS (Top US AI firm)
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) TPUv8i (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

v8i per chip TDP being ~980W.

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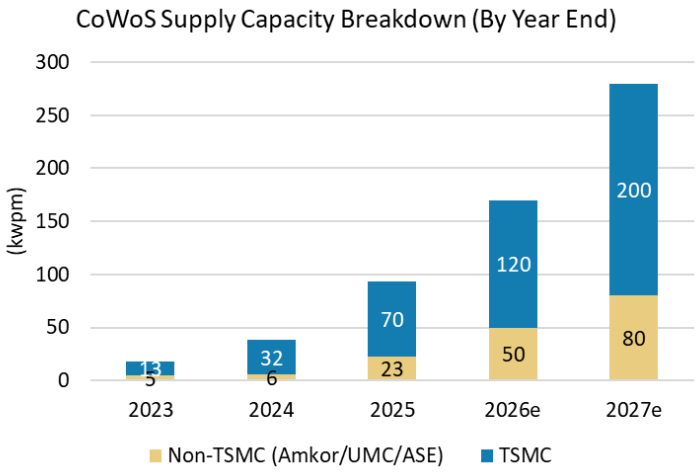
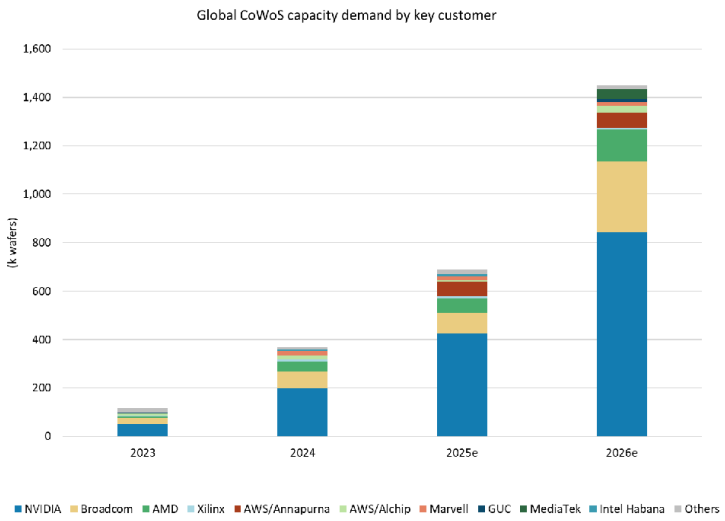
TSMC May Expand CoWoS Capacity to 200kwpm by 2027 Given Continual Strong AI Demand

Global CoWoS capacity expansion by year-end and by vendor



Global CoWoS consumption, by customer



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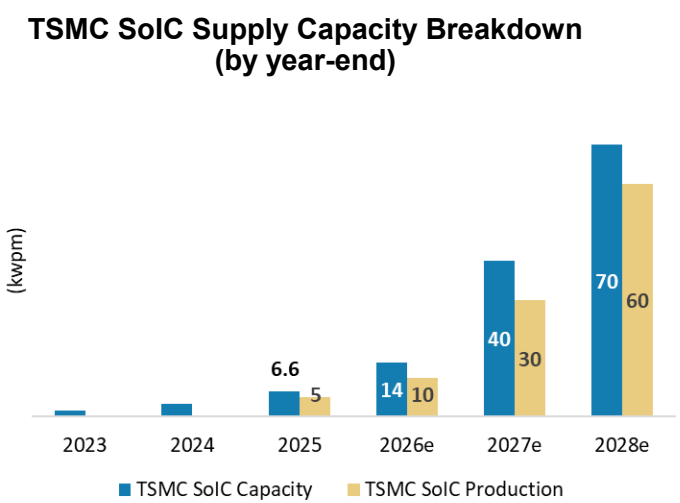
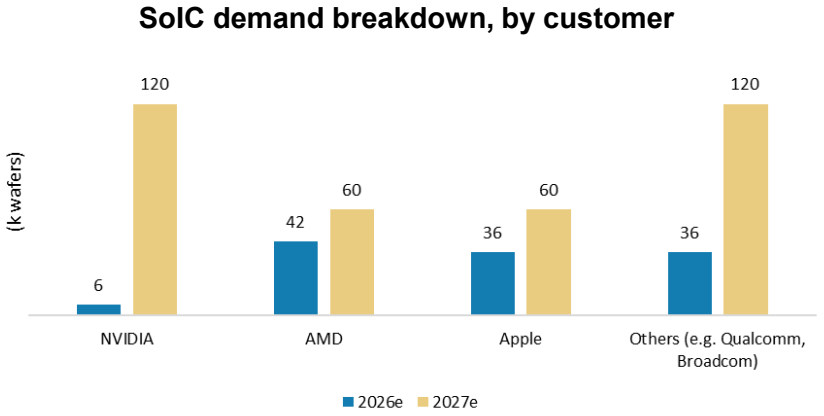
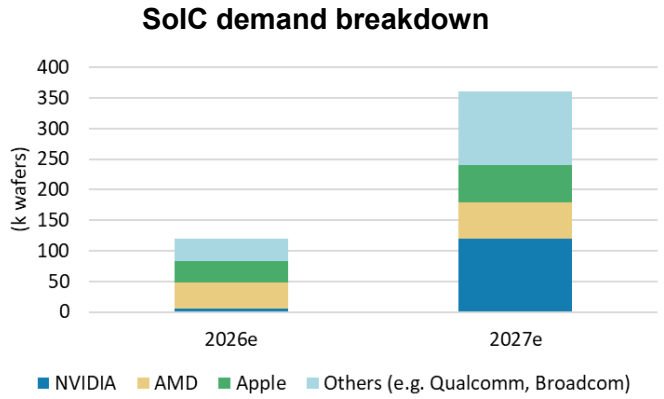
SoIC Expansion Expected to Be a Key Focus Area for TSMC in the Coming Years







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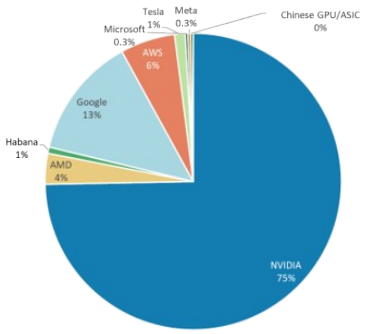
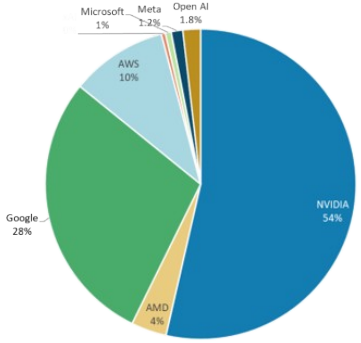
AI Computing Wafer Consumption Could Reach US$27bn in 2026, with NVIDIA Accounting for the Majority

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)
AI GPU (2026e)										
NVIDIA	B300	390	14	5,460	850	4nm	2	433	21,945	9,510
	Vera CPU	90	23	2,070		3nm				
	Spectrum/CPX	60		-						
	Rubin R200	260	8	2,080	850	3nm	2	165	26,000	4,292
	H200	75	27	2,025	814	4nm	1	57	21,945	1,243
AMD	MI300	3	12	36	110	5nm	8	1	18,000	19
	MI350/375	7	12	84	110	3nm	8	2	26,000	64
	MI400	65	10	650	110	2nm	8	32	28,125	8
AI ASIC (2026e)										
Google	TPU v7p (Ironwood; AVGO)	145	16	2,320	700	3nm	2	152	26,000	3,9
	TPU v8i (Sunfish; AVGO)	80	12	960	800	3nm	2	72	26,000	1,8
	TPU v8t (Zebrafish; MediaTek)	40	20	800	800	3nm	2	60	26,000	1,5
AWS	Trainium 3	100	17	1,700	700	3nm	2	91	26,000	2,3
Microsoft	Maia 200	4	29	116	700	3nm	1	3.0	26,000	
	Maia 300	5	11	55	850	2nm	1	2.9	28,125	
Open AI	Nexus (Titan 1)	10	13	130	750	3nm	4	18.2	26,000	4
Total		**1,479**						**1,117**		**27,0**

Source: Company

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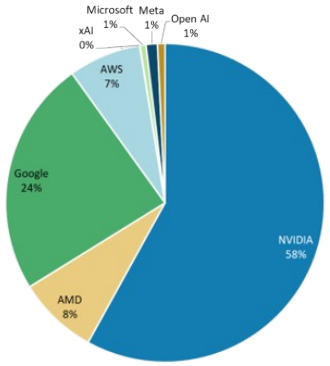
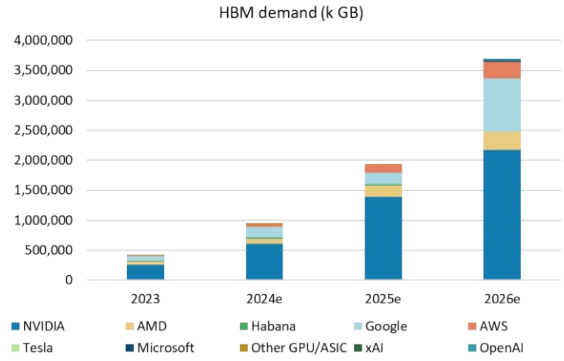
HBM Consumption in 2026e – Up to 32bn Gb

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)
AI GPU (2026e)										
NVIDIA	B300	390	14	5,460	36	8	288	HBM3e 12hi	Hynix/Micron/Samsung	1,572,480
	Vera CPU	90	23	2,070						
	Spectrum/CPX	60		-						
	Rubin R200	260	8	2,080	36	8	288	HBM4	Hynix/Micron/Samsung?	599,040
	H200	75	27	2,025	24	6	141	HBM3e 8hi	Hynix	285,525
AMD	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
AI ASIC (2026e)										
Google	TPU v7p (Ironwood; AVGO)	145	16	2,320	24	8	192	HBM3e 8hi	Hynix/Samsung	445,440
	TPU v8i (Sunfish; AVGO)	80	12	960	36	8	288	HBM3e 12hi	Hynix/Samsung/Micron	276,480
	TPU v8t (Zebrafish; MediaTek)	40	20	800	36	6	216	HBM3e 12hi	Hynix/Micron	172,800
AWS	Trainium 3	100	17	1,700	36	4	144	HBM3e 12hi	Hynix/Samsung/Micron	244,800
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
Open AI	Nexus (Titan 1)	10	13	130	36	6	216	HBM4	Hynix	28,080
Total		**1,479**								**4,034,885**
								Total HBM demand (mn Gb)		**32,279**

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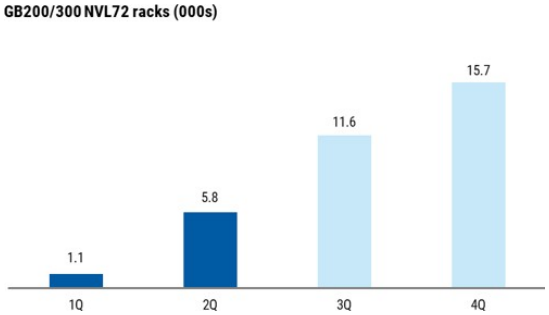
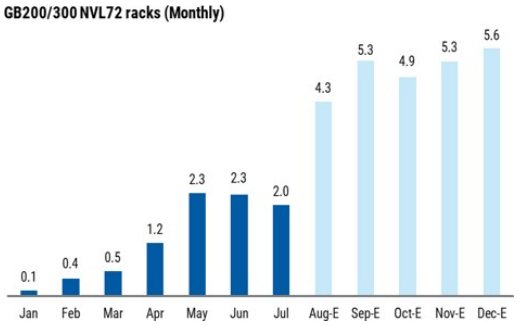
NVIDIA GB200/300 Rack Output Estimates

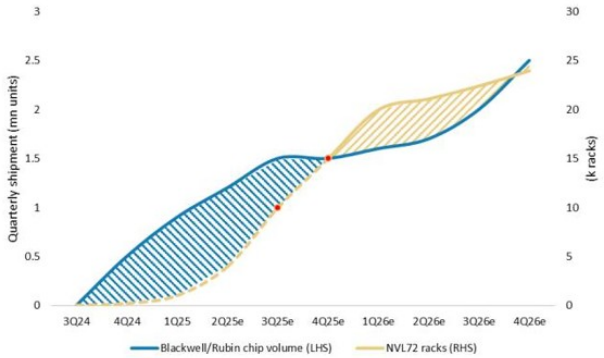
GB200/300 NVL72 Rack Ramp Quarterly Trajectory



Industry-wide GB200 NVL72 Rack Monthly Output



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



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.

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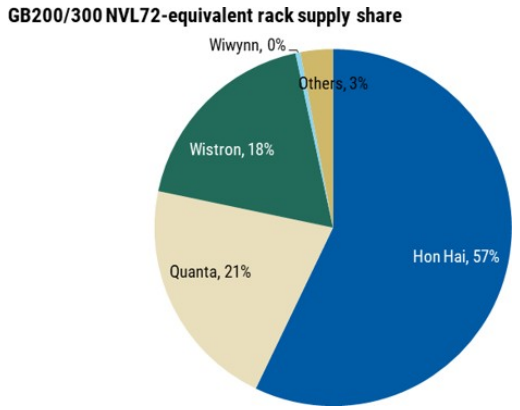
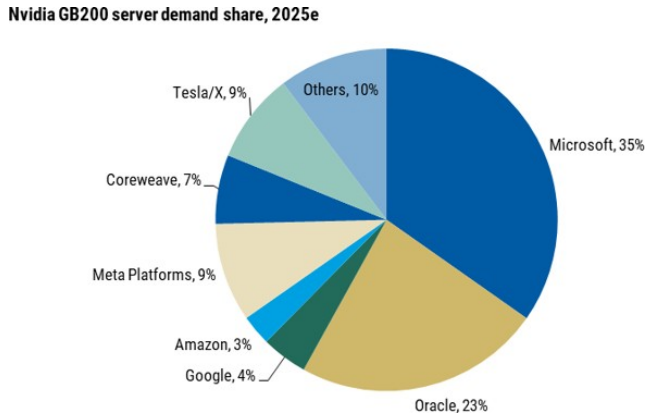
NVIDIA GB200/300 Server Racks Supply/Demand Assumptions

NVIDIA GB200/300 rack supply share (2025)



NVIDIA GB200/300 rack demand share (2025)



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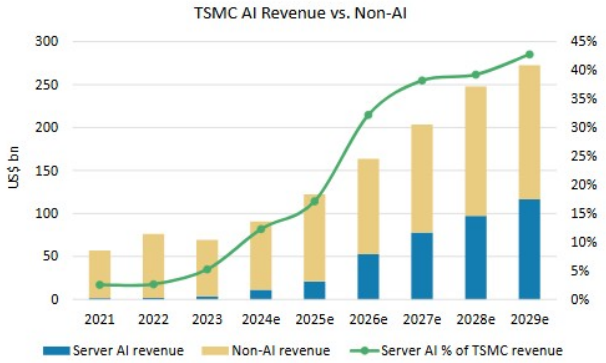
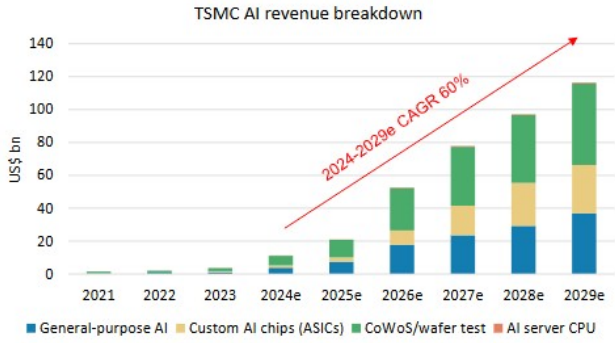
TSMC AI Semis Revenue Could Reach 60% from 2024 to 2029e

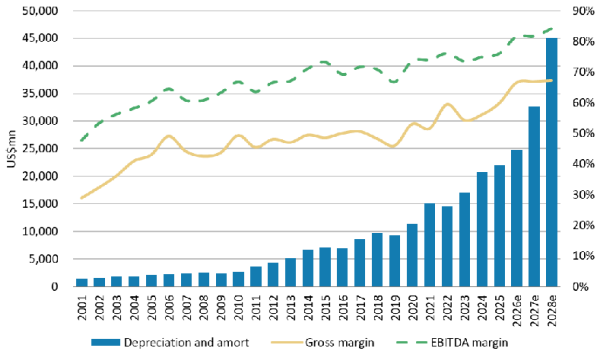
TSMC – AI semis revenue could account for >30% of 2026e revenue



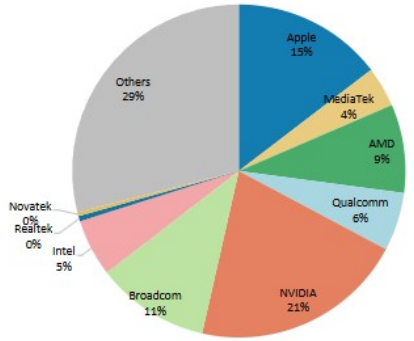
TSMC – AI semis revenue breakdown



TSMC – margin expansion



TSMC – 2026e revenue breakdown by customer



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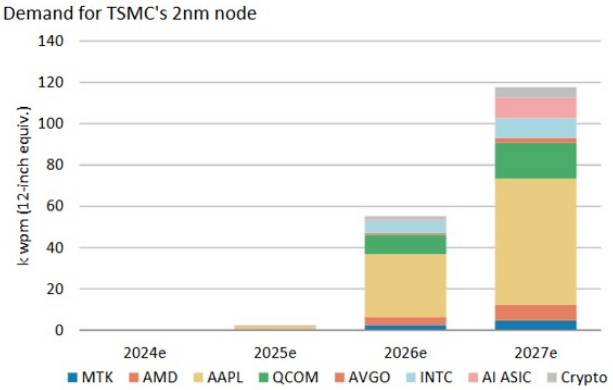
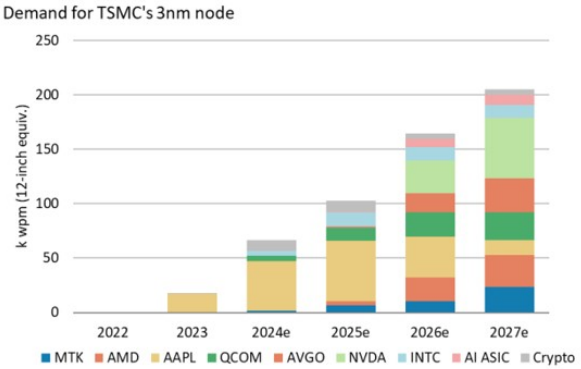
TSMC Leading-edge Wafer Demand Breakdown

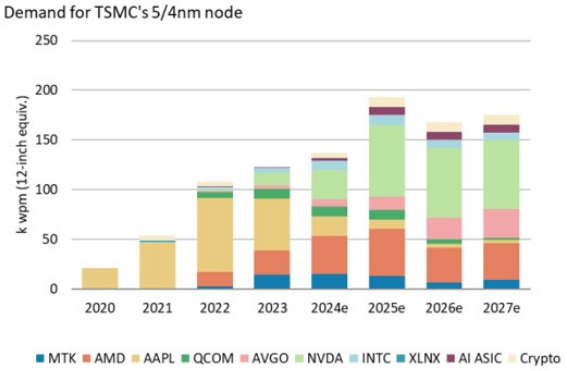
TSMC – 2nm customer demand breakdown



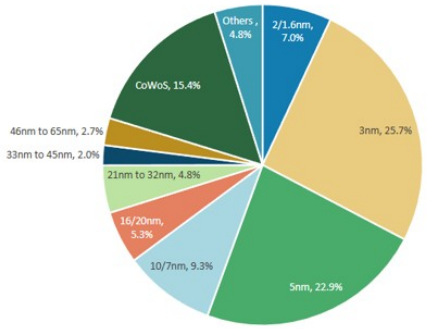
TSMC – 3nm customer demand breakdown



TSMC – 4/5nm customer demand breakdown



TSMC – 2026e revenue breakdown by nodes and CoWoS



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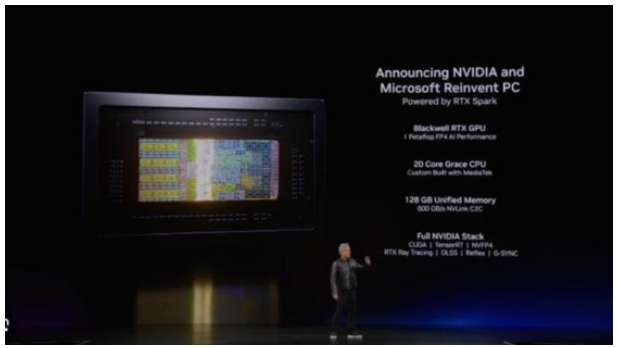
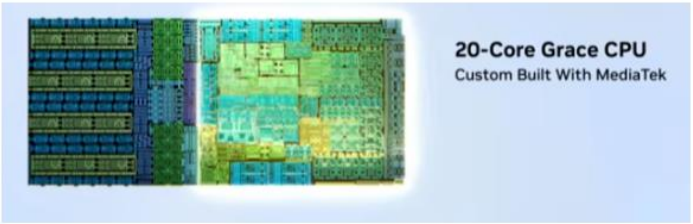
Nvidia/MediaTek New AI PC (RTX Spark) Could Trigger Potential Edge Device Replacement

New AI PC announced by Nvidia (N1X)



MediaTek provides 20-core customized Grace CPU for N1X



RTX Spark (N1X) provided by MSI (available in 3Q26)

RTX Spark (N1X) provided by ASUS (available in 3Q26)

Source: Nvidia, MSI, ASUS

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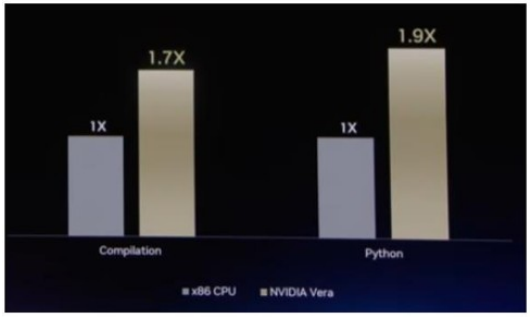
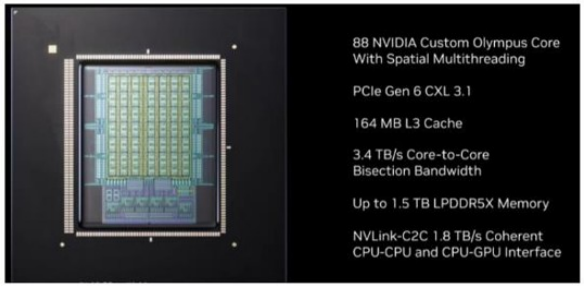
Nvidia's Latest Vera CPU Could Support Robust Agentic CPU Demand

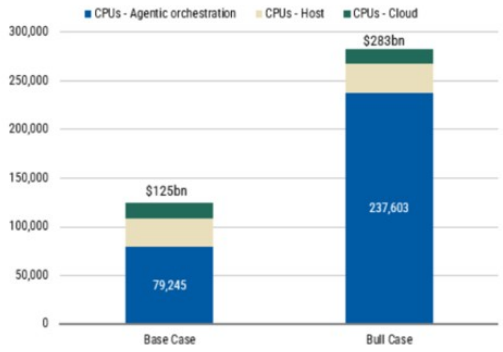
Vera performance could be 1.8x that of highest-performance x86 CPU



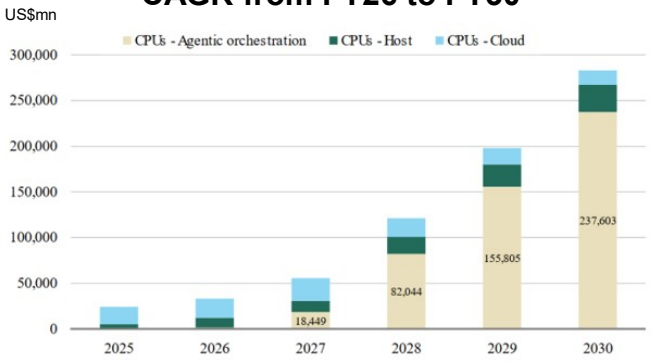
Vera CPU cores are not split across chiplets, enabling faster core-to-core connection



MS bull case implies a $238bn CPU orchestration TAM



In MS top-down model, we estimate the Agentic CPU TAM will grow at a 251% CAGR from FY26 to FY30



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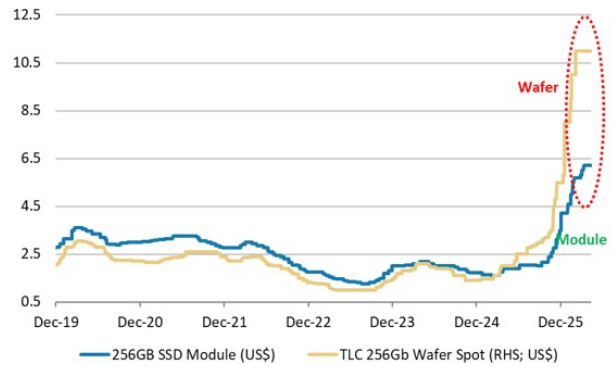
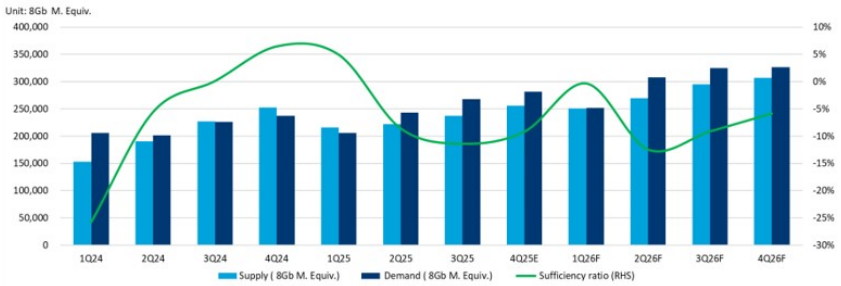
AI Storage Leads to NAND Shortage; We Also Expect NOR Flash Undersupply into 2026

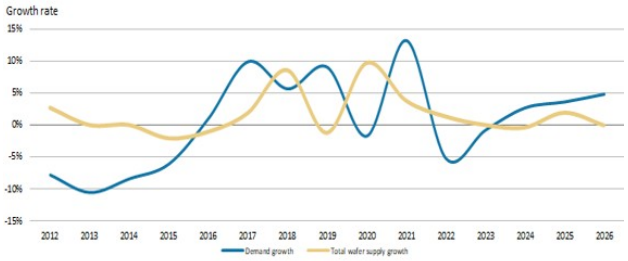
NAND wafer spot pricing and module prices



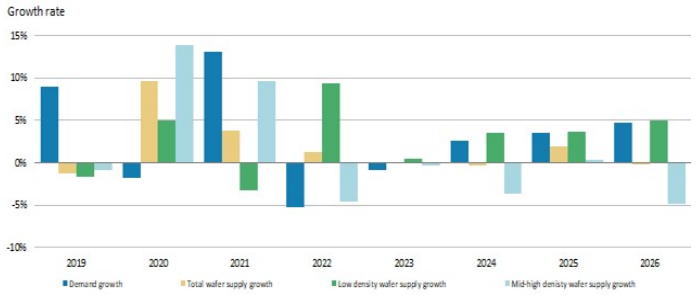
NAND supply and demand model



NOR flash demand and supply growth rates



NOR flash demand and supply growth rates



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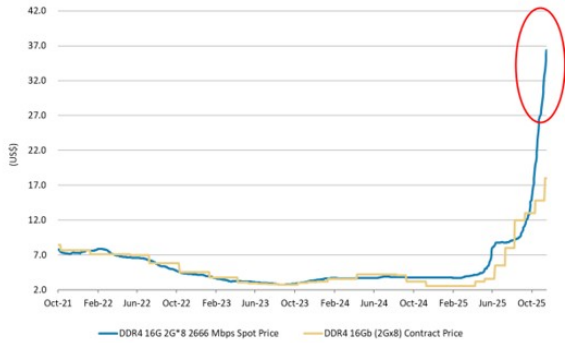
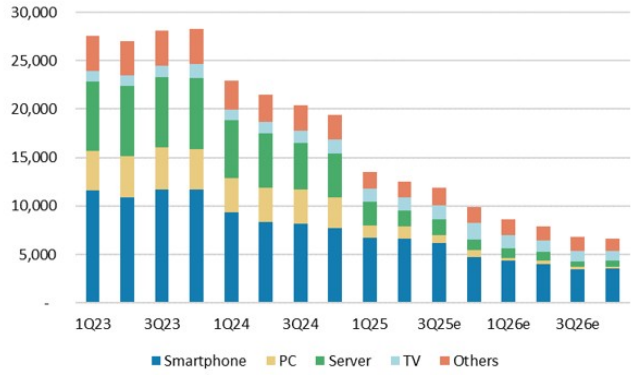
DDR4 Shortage to Persist into 2H26; Spot Price Capped

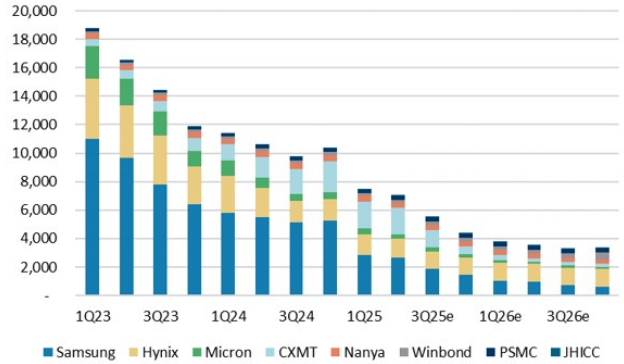
DDR4 16Gb spot vs. contract price



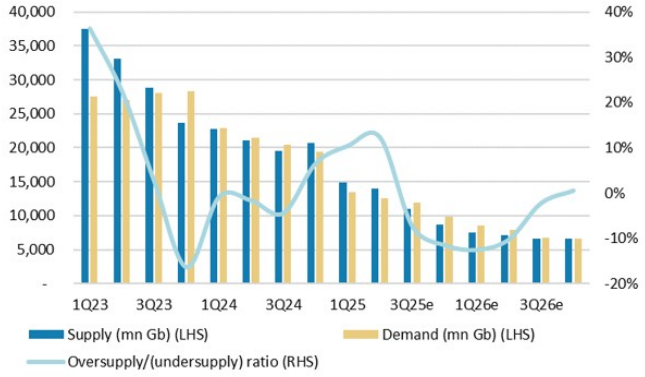
Quarterly demand breakdown, by product (mn Gb)



Quarterly supply breakdown (mn Gb)



Quarterly supply and demand summary



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AI ASIC, CPO, and Chip Testing

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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/ SoIC
    - 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

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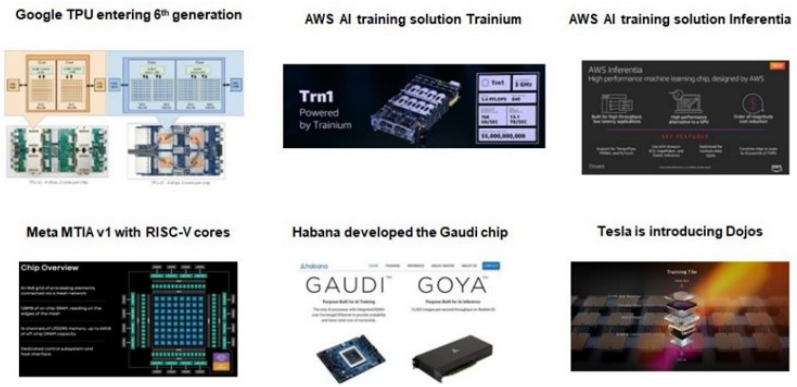
CSPs Still Need Custom Chips Even with NVIDIA Providing Powerful AI GPUs

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	1,520			
Trainium3			20	1,600	1,200	-
Trainium4					600	2,000
Total	**300**	**900**	**1,570**	**1,600**	**1,800**	**2,000**

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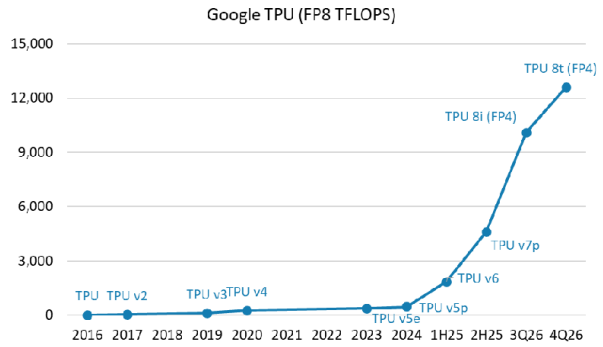
More ASIC Projects Are Coming, According to Each CSP Plan

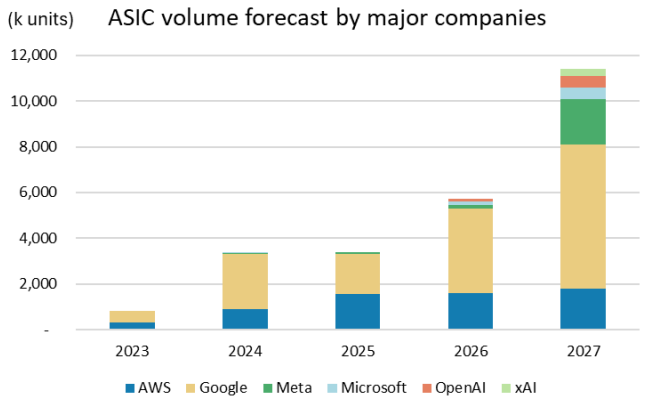
TPU Forecasts from MS Asia Research team

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	2,500
v8t (Zebrafish; 3nm, by MediaTek)				500	2,500	1,000
v9 (Humufish; 2nm, by MediaTek)					150	2,500
v9a (Merope; 2nm, by US design service)						unknown
v10 (Icefish; 1.4nm, by MediaTek)						unknown
Total	**500**	**2,400**	**1,750**	**3,700**	**6,150**	**>6000**

Google TPU performance is growing rapidly



ASIC volume forecast by major companies



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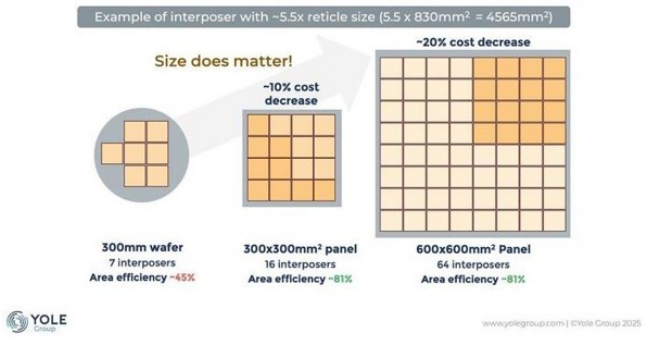
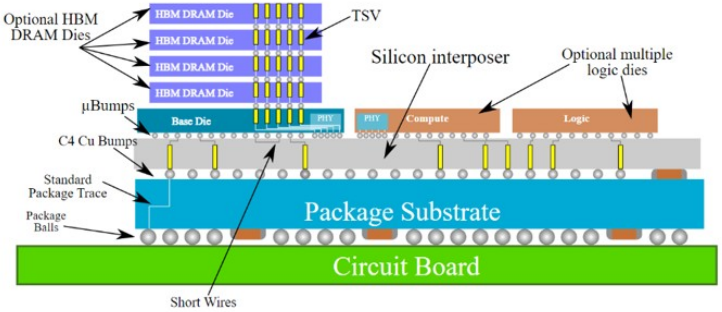
What About the Competition Between TSMC's CoWoS and Intel's EMIB?

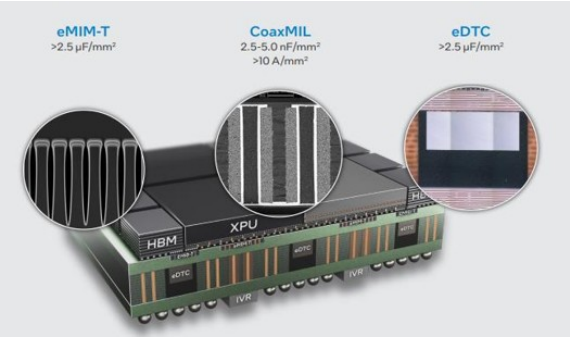
TSMC CoWoS can support up to 9.5x reticles, or four chips per wafer



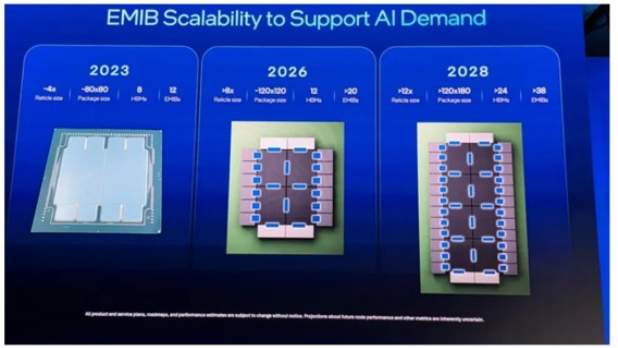
TSMC's CoWoS-S (silicon interposer) packaging architecture



Intel EMIB eDTC: APMemory's technology



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



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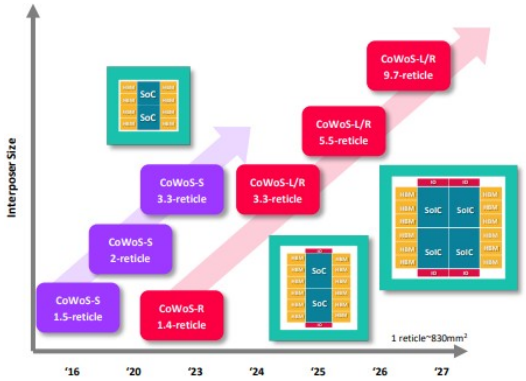
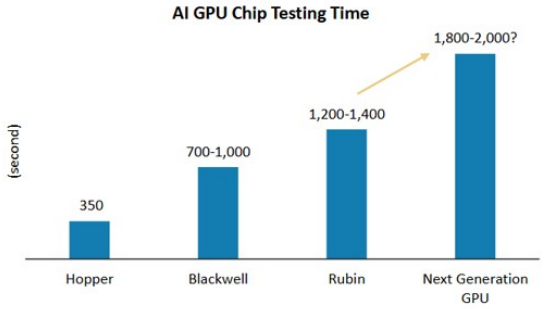
Larger Package Sizes Are Emerging as a Key Industry Trend

TSMC's roadmap for interposer size

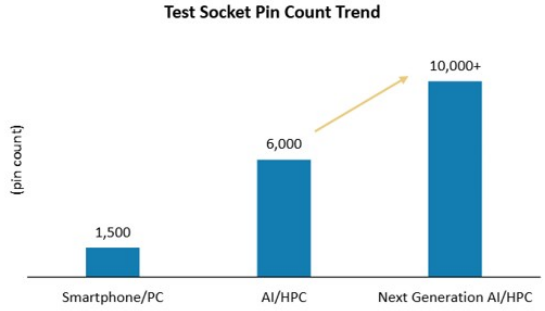


Chip testing time continuing to trend up



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

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



Source: Company data,

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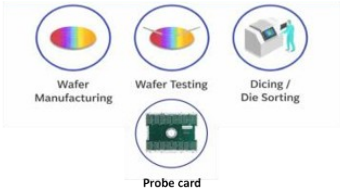
Mapping the Roles of Hon Precision, WinWay and MPI in the Semi Supply Chain

	Wafer Manufacturing	Wafer-level Packaging	Chip Testing		System Assembly/Module
			Burn-in and Final Test	SLT	
Testing surface					
Manufacture	TSMC	TSMC, OSAT (ASE, SPIL & Amkor)	OSAT (ASE, KYEC, PTI, Sigurd)	OSAT (ASE, KYEC, PTI, Sigurd)	Hon Hai, Winstron and Quanta
Equipment	Wet Etching: GPTC, Scientech Wafer Testing: TEL, TSK Dicing: E&R, Everprecision Die Sorting: GMM	GPM, GPTC, AllRing, APT	**Hon Precision**, Advantest, Teradyne	**Hon Precision**, Chroma	Cooling equipment: AVC, Auras
Material Kit/Jig	**Probe Card: MPI, Winway, Technoprobe**	PCB: GCE, WUS HDI substrate: Unimicron	**Socket: Winway**		

Source

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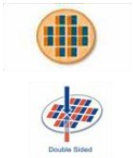
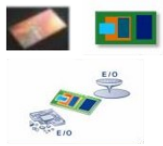
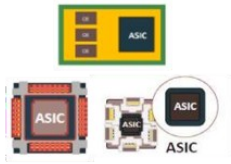
New Evolution for Testing Equipment and Components: CPO

Test Insertion	Insertion 1	Insertion 2	Insertion 3	Insertion 4		Insertion 5 (potential)
				Insertion 4O	Insertion 4E	
Test content	Electronic IC (EIC) & Photonic IC (PIC)	EIC die to PIC wafer (after SoIC)	Optical engine (die-to-die)	CPO package (ASIC+OE) Optical Testing	CPO package (ASIC+OE) Electrical Testing (2025-2026) Optical+Electrical Testing (starting 2027e)	CPO package (ASIC+OE) SLT?
Testing surface						
Key Product timeline	2025-2026 Scale-out CPO switch (Spectrum+Quantum) products 2027e onward: Scale-out CPO switch (Spectrum+Quantum) + Scale-up CPO switch products					
Testing details	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	Optical Light Transmission Testing, optical loopback	BER testing, signal testing	Full system functional validation
Testing service provider	Foundry (Wafer-level) TSMC	Foundry (Wafer-level) TSMC	OSAT (Die/chip level) SPIL (ASE Group)	OSAT (Die/package level) SPIL (ASE Group)	OSAT (Die/package level) SPIL (ASE Group)	OSAT (Die/package level) SPIL (ASE Group)
Equipment and Consumable Vendor	PIC ATE tester: 1) Advantest + TEL + Formfactor 2) Chroma (underqualification) EIC tester: 1) Teradyne + TEL EIC Probe card: FormFactor	Wafer level testing: 1)Ficontec +Formfactor +Teradyne 2) Advantest+ **MPI**	Die-to-die prober: 1. TEL 2. MPI Optical engine E/O tester+laser reliability test+ELS source test head: Chroma **Optical and Electrical Test Socket: Winway**	CPO switch tester: Chroma **Coaxial socket/Hypersocket: Winway**	ATE tester: 1) Advantest (under qualification) 2)Teradyne **FT Handler+ELS source test head+optical alignmnet stage : Hon Precision** **Coaxial socket/Hypersocket: Winway**	CPO SLT tester: Chroma (under qualification) **Coaxial socket/Hypersocket: Winway**

Source

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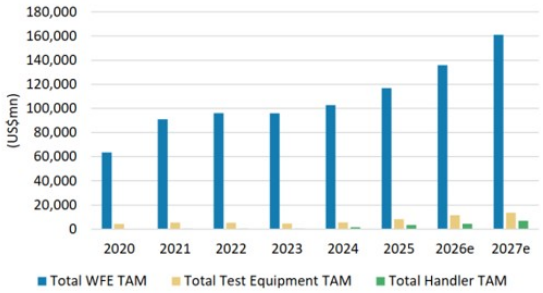
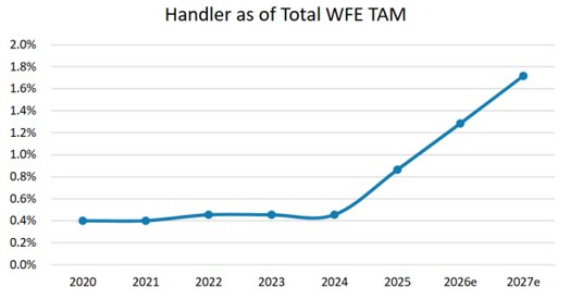
Hon Precision: Key Beneficiary of the Structural Trend Toward Longer Testing Times; OW

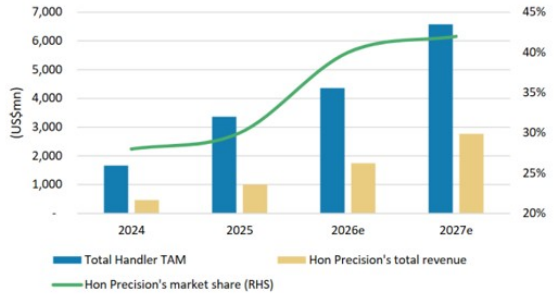
We expect the overall handler market to increase from US$436mn in 2023 to US$6.6bn in 2027e



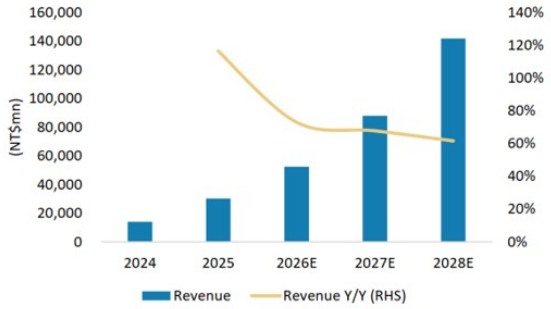
We expect handlers to account for 1.7% of global WFE TAM in 2027e, vs 0.4% in 2020



Hon Precision to lift 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,

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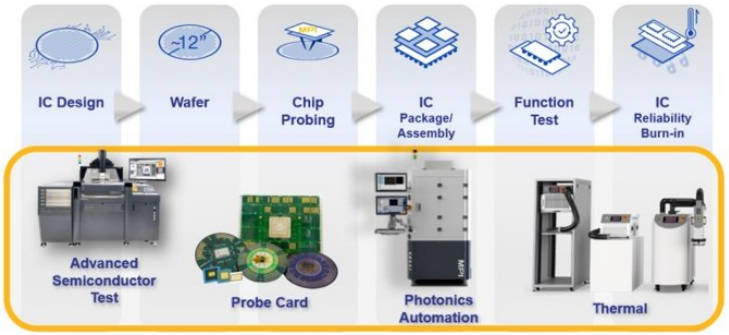
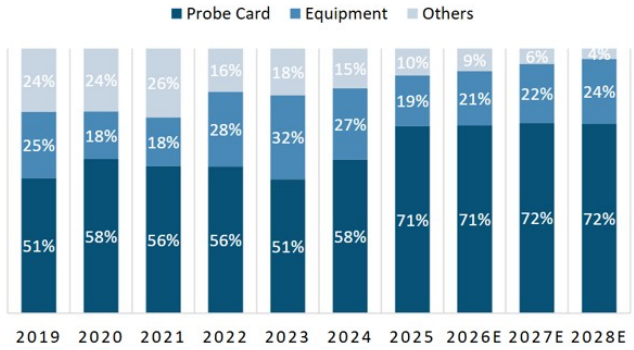
MPI: Probe Card Technology Leader with CPO Optionality; OW

MPI's product in chip manufacturing and test process

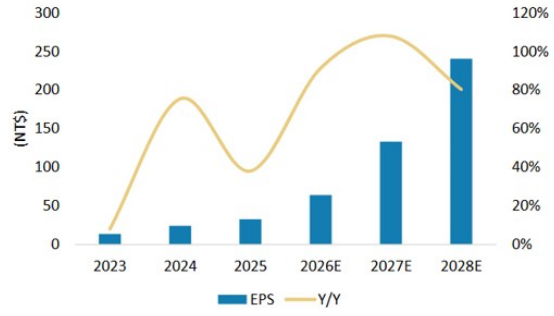


We expect MPI's probe card market share to grow from 8% in 2024 to 20% by 2028e

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



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



Source: Company data,

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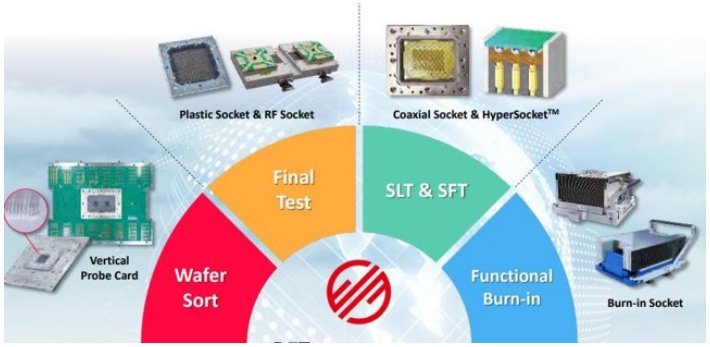
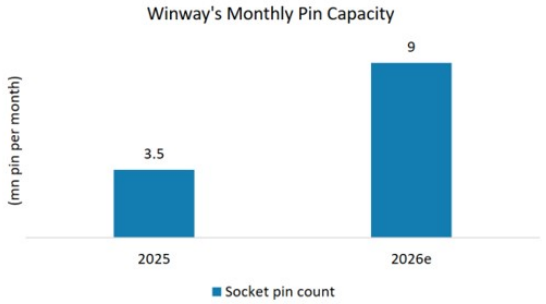
WinWay: Socket Leader Leveraging AI Packaging Complexity; OW

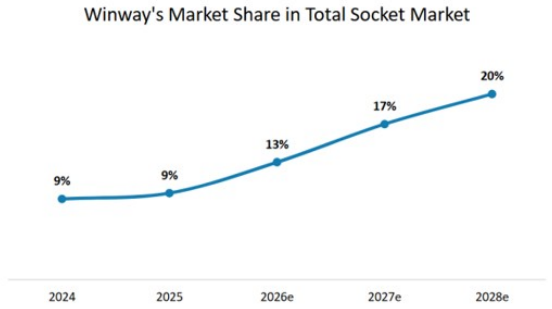
WinWay's total solution of probe card and socket enables vertical integration strategy



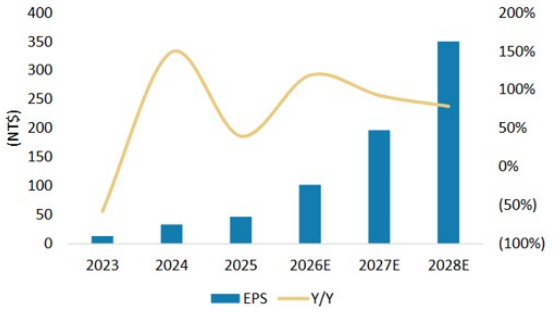
WinWay to expand its pin capacity from 3.5mn per month in 2025 to 9mn per month in 2026



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



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



Source: Company data,

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China Semis:

OSAT, Compound, MCU, and AI GPU

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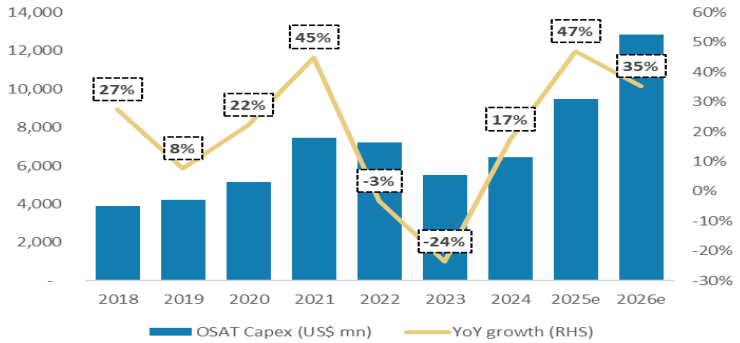
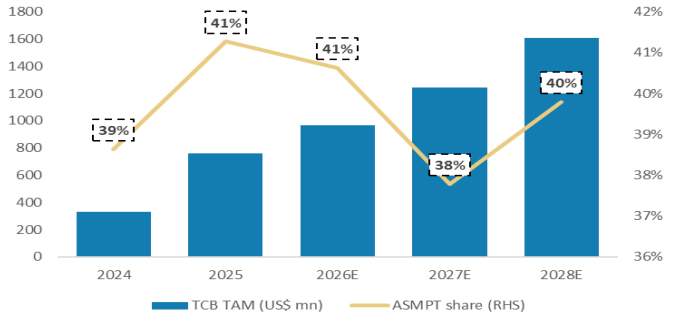
Positive on Back-end Equipment (ASMPT); Neutral on China OSAT

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



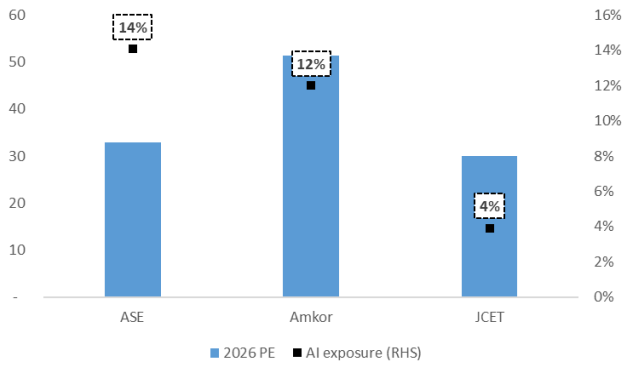
We expect ASMPT's share in TCB to be ~40% in 2028



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



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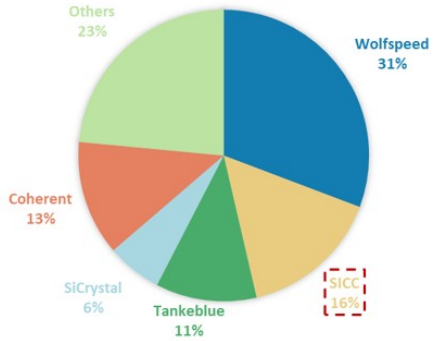
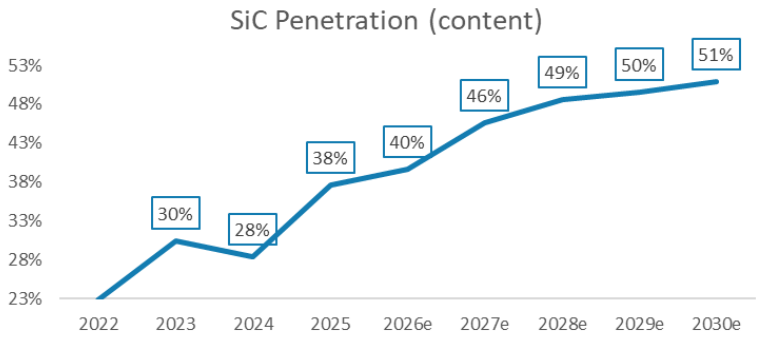
Prefer SiC over GaN: SICC (OW) and InnoScience (EW)

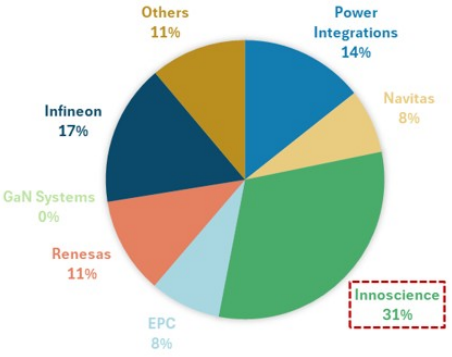
SICC market share rise in SiC substrate market (2025)



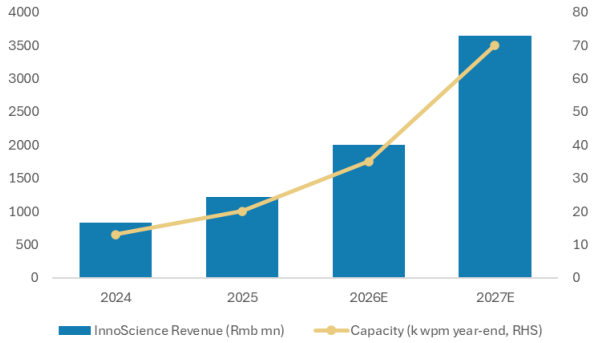
We expect SiC penetration to exceed 50% by 2030



InnoScience dominates the GaN market with TAM ~US$584mn in 2025



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



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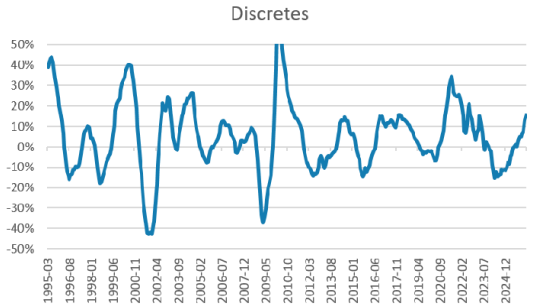
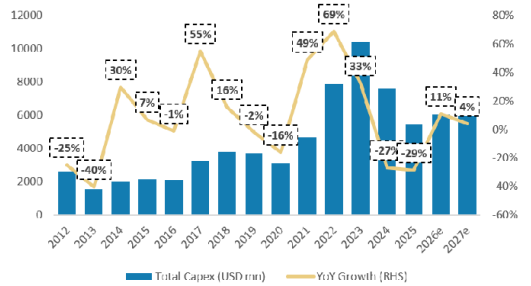
Power Semi: Supply-driven Up-cycle

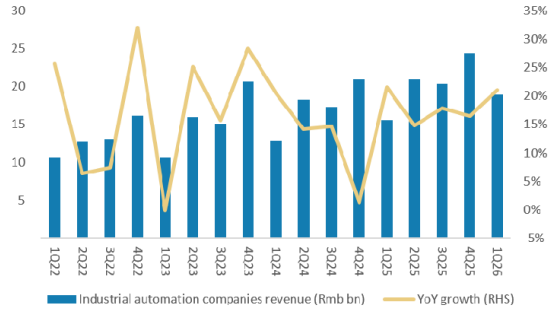
Total discrete revenue yoy growth turned positive since 4Q25



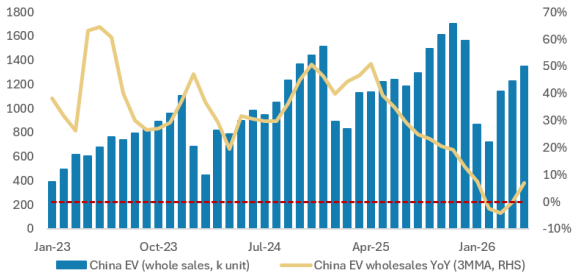
Global leading power semi companies' capex declined for two years



Industrial automation companies' revenue grew robustly at 21% YoY in 1Q26



China's EV wholesale growth is weak YTD but turning incrementally positive



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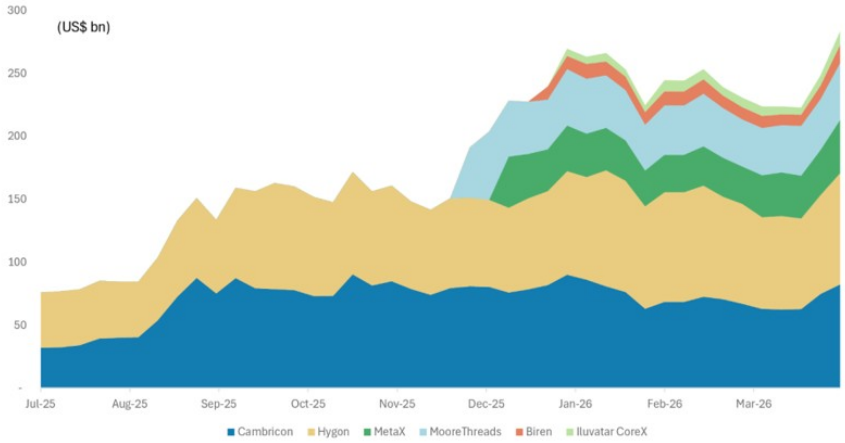
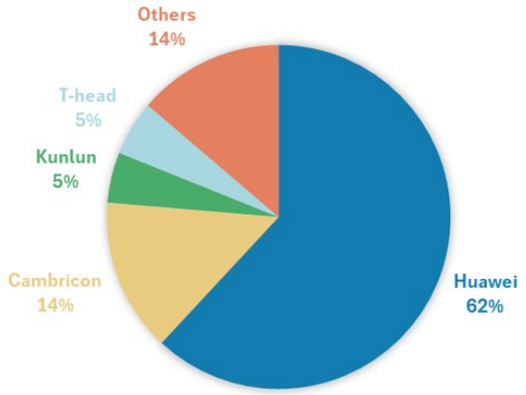
Growing Market Size and Share of Domestic AI Semis

China's AI GPU market cap is growing, with more IPOs to come



Domestic AI accelerator market share in 2026e



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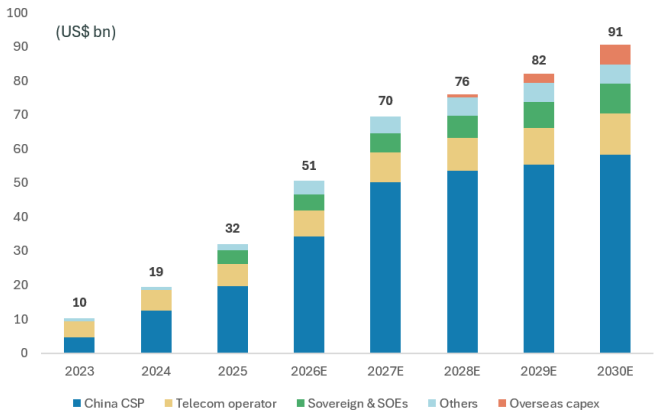
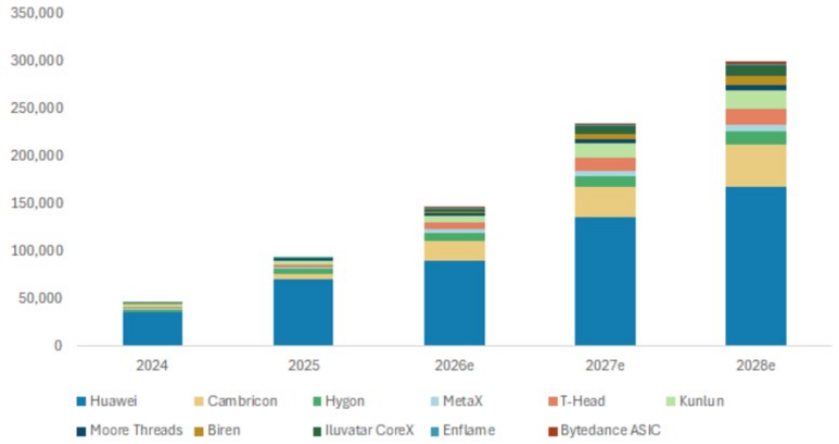
We Expect China's AI GPU TAM to Grow to US$91bn by 2030e

We expect China's AI chip TAM to grow to US$91bn by 2030



AI accelerators' revenue trend



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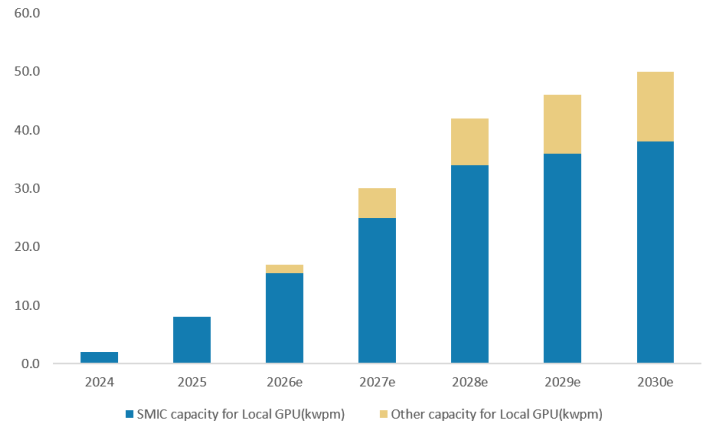
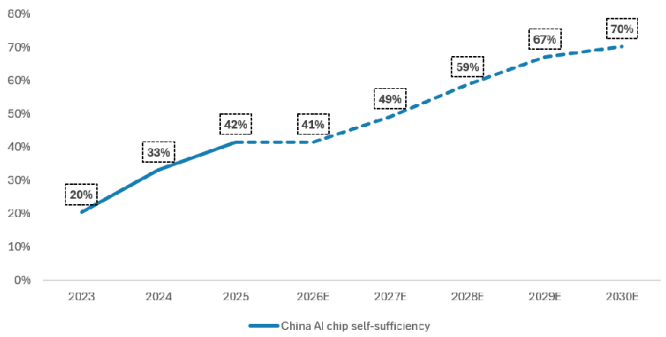
China's Advanced Node Capacity Expansion to Fulfill Local AI GPU Production Demand

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



We expect China's AI chip self-sufficiency to reach 70% in 2030e (US$60bn / US$85bn)



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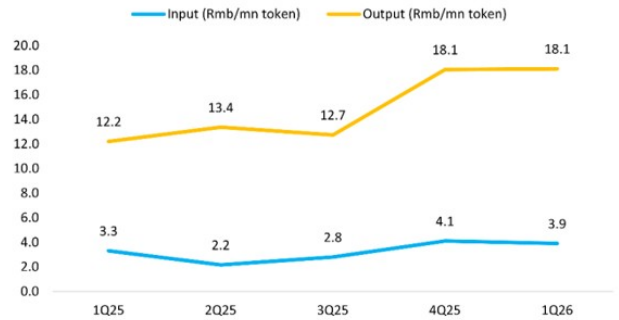
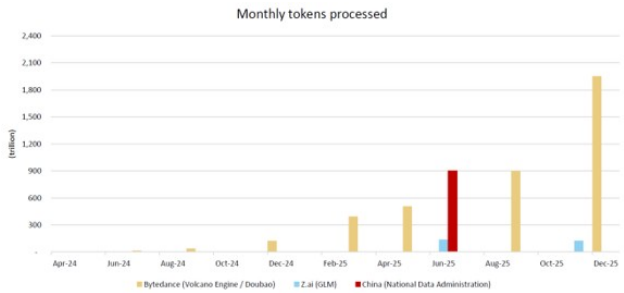
Near-term market tracker for China's AI GPU demand

Nvidia's 5090 price keeps rising in China

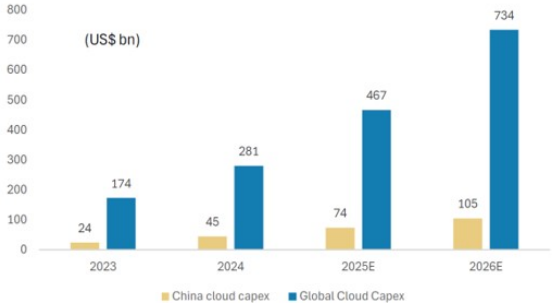
Average token price for China's mainstream AI LLMs



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



China vs. global – cloud capex trend



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AI Chip Value Chain – China vs. the US – A Decoupling of AI Computing

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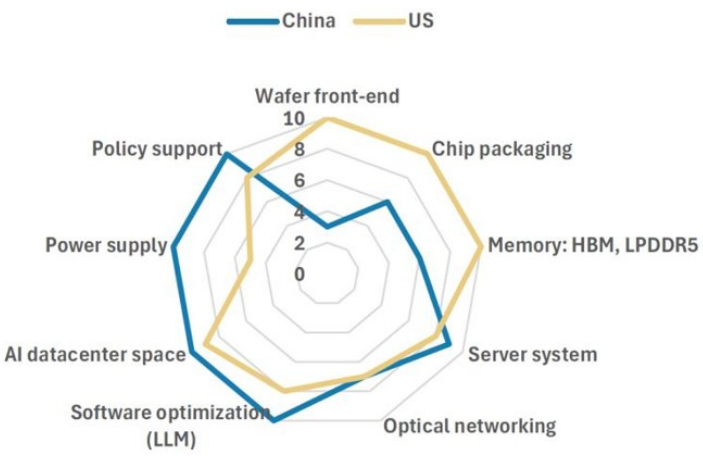
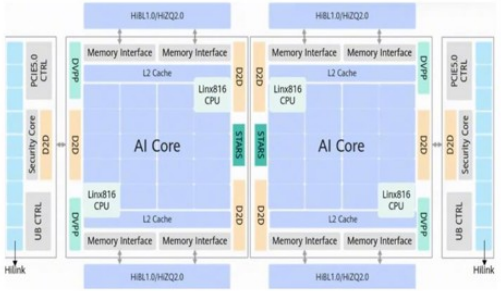
China's Infrastructure Strength Narrows Perceived Technology Gap

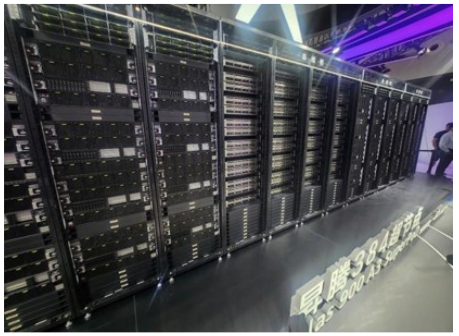
Nine factors comparison between US and China AI – Chip, System, Infrastructure



Die shot of Ascend 950



Huawei CloudMatrix 384 A3 SuperPod



Step 1: If one computing 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.

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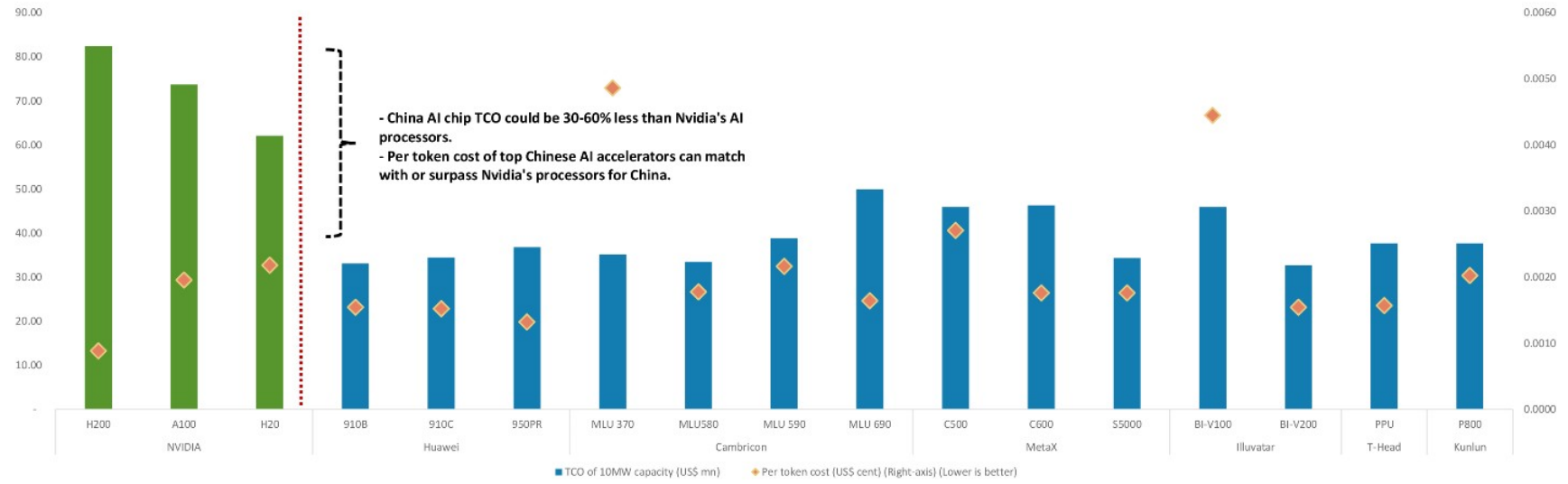
Inference Economics: TCO and Cost per Token

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



Source

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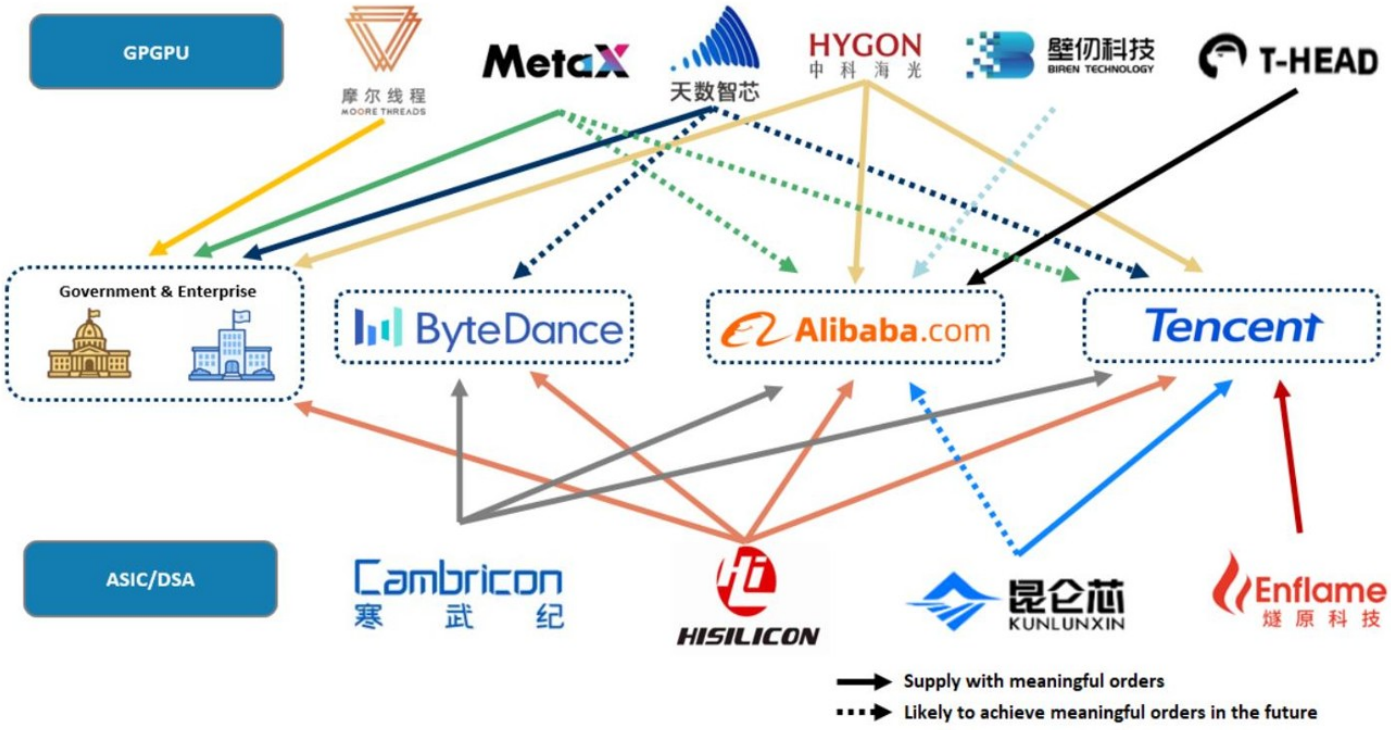
Order Placement and Potential Orders for Domestic AI Accelerator Developers



Source

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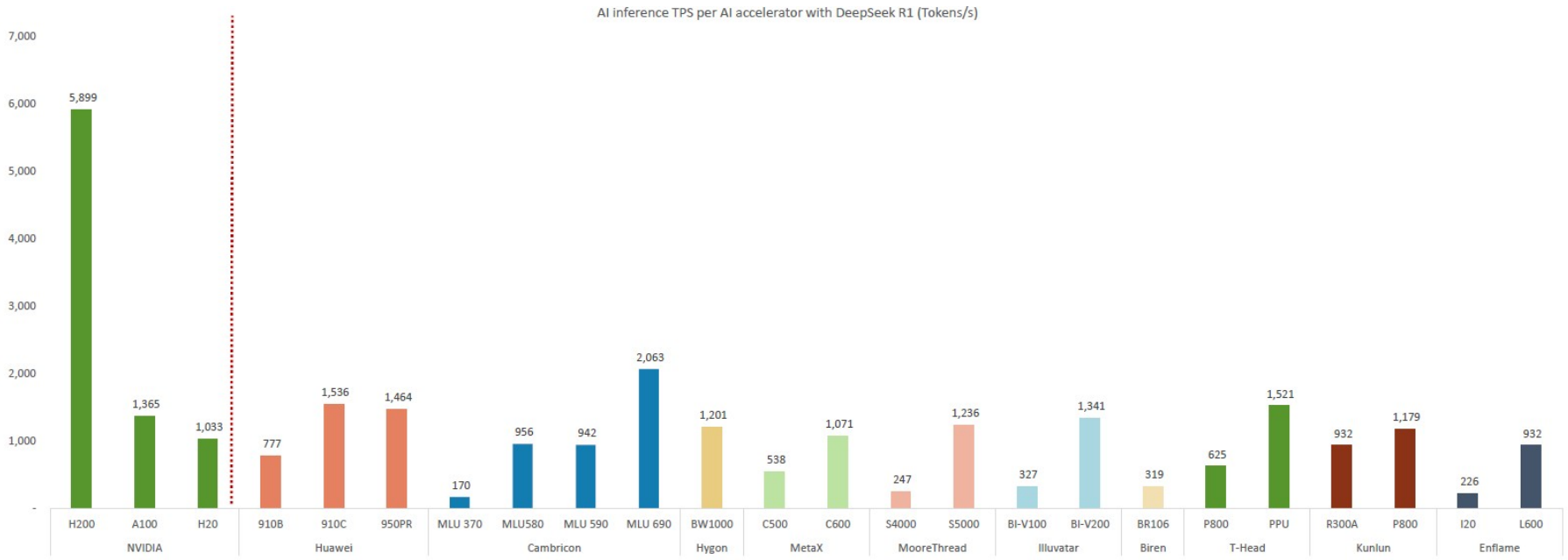
TPS (Tokens Output per Second) – Performance Analysis

TPS (tokens per second) analysis for China AI accelerators



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).

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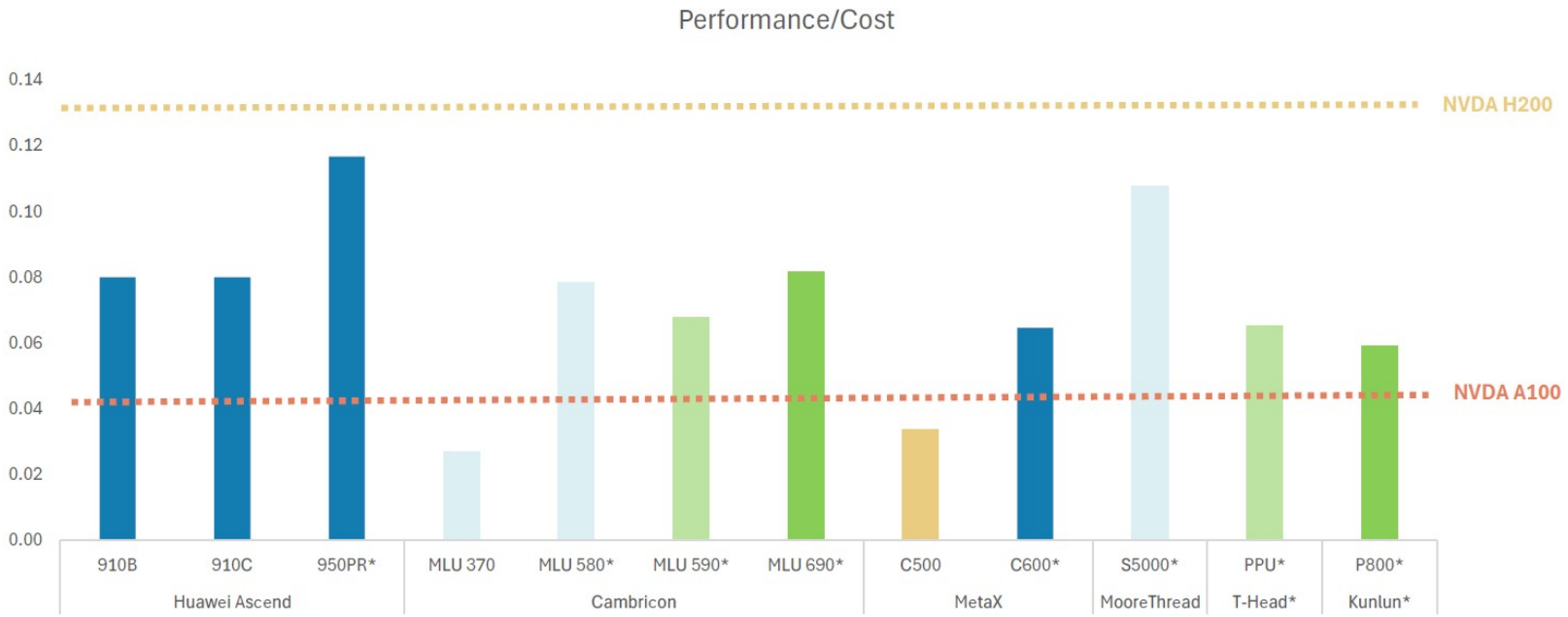
Domestic Chips Deliver Stronger Performance per Dollar Thanks to Materially Lower Pricing

Performance/cost comparison



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"10 Dragons" of Chinese AI GPGPU vendors. We Focus on Cambricon, MetaX, and 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	↗
Cambricon 寒武纪	688256-SS	MLU series	7nm	ASIC	✓	X	X	↗
HYGON	688041-SS	DCU	7nm	GPGPU	✓	✓	X	→
METAX 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	✓	→
Enflame 燧原科技	Currently under A-share listing counseling process	S60, I20, L600	12nm	ASIC	▲	X	✓	↘

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Comparison among Cambricon, MetaX, and Iluvatar

	Cambricon 寒武纪	MetaX 沐曦	天数智芯 Iluvatar CoreX
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	SMIC	SMIC	tsmc
Process node for latest products	7nm/N+2	12nm/N+1	7nm
Secured orders from major CSPs	✓	X	✓
Sovereign fund as major shareholder	X	✓	X
Per token cost performance	↑	→	→
2025 Revenue (Rmb mn)	CNY 6,497	CNY 1,644	CNY 1,034
Profitablity	✓	X	X

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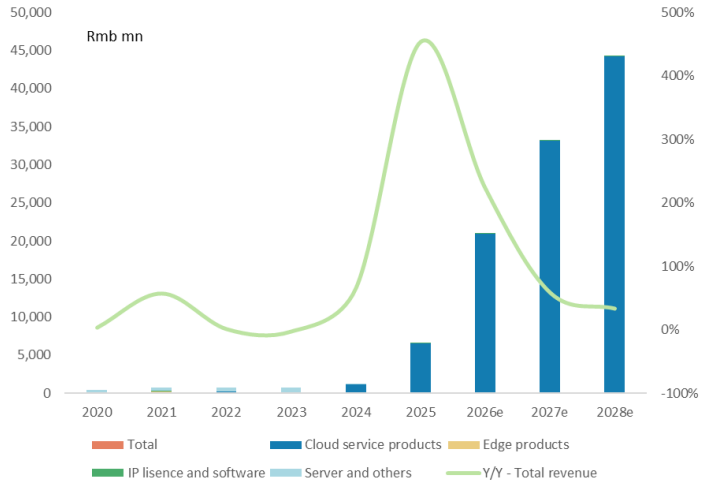
Cambricon: Leading in inference Performance and Customer Anchoring; OW

Cambricon's products and specs

	Product	Type	Manufacture	Node	Computing power (TFLOPS/TOPS) FP16 (TFLOPS)	FP8 (TFLOPS)	Int8 (TOPS)	Memory type	Memory size (GB)	Memory bandwidth (GB/s)	Chip-to-chip networking bandwidth (GB/s)	TDP (W)
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	16	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,

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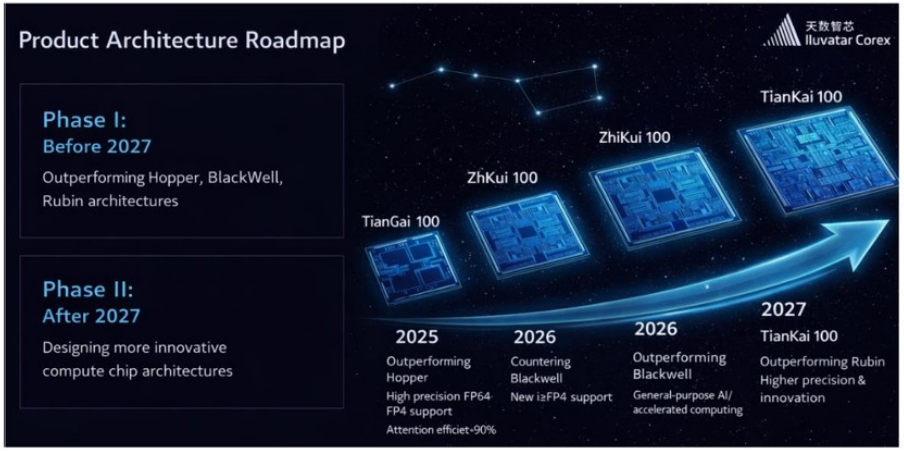
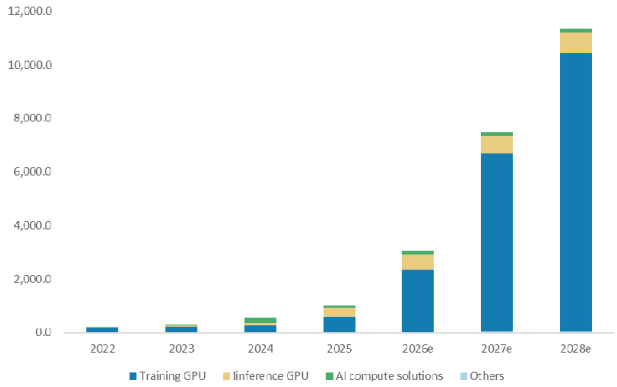
Iluvatar: Leveraging Supply Chain Resilience with Strong Order Visibility; OW

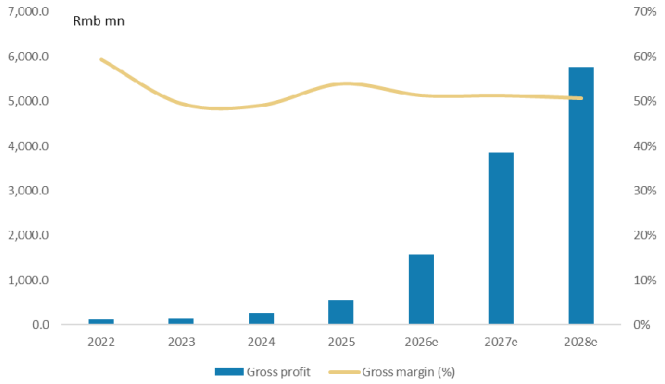
Aggressive product roadmap for Iluvatar



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



We expect Iluvatar's GM to be mild



Source: Company data,