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Asia-Pacific Technology | Asia Pacific

Taiwan Computex preview: NVIDIA's Vera CPU and Rubin GPU seen as the main show

Computex focus: Rubin/Vera rack designs and thermal/package updates. We see stronger TSMC CoWoS expansion. We remain positive on the NVDA supply chain, and raise our PT for AllRing.

Computex runs June 2–5, with the NVIDIA CEO keynote set for June 1. We expect demos of AI server and networking system designs, not limited to NVIDIA. Key focus:

- Rubin series sever rack designs:** We look forward to the combination of NVL (GPU rack Kyber with CPO scale-up connection), LPU rack, Vera CPU rack, BlueField rack, and NVSwitch rack - together targeting the lowest cost per token for a future AI Factory. We will see if AMD demonstrates Helios racks sharing token output data.
- The US\$20bn NVIDIA CPU opportunity:** Our US semi analyst Joe Moore expects NVIDIA to provide more details. Our supply chain checks suggest TSMC is allocating additional CoWoS-R capacity and 3nm wafers for the Vera CPU. Based on capacity, we think 1.5mn units of standalone CPUs is a reasonable assumption. End customers could be Microsoft, Meta, CoreWeave, and Oracle.
- What about the Rubin schedule and Rubin Ultra package design?** Investors wonder whether Rubin GPU can achieve its target TDP of 2.3kW. There is also some doubt that Rubin Ultra will be 4-die per package, as warpage issue still encountered. Our understanding is that Rubin was rolled back to the original chip thermal solution and achieved 1.8kW TDP; through server-system thermal collaboration, the 2.3kW TDP can still be achieved. For Rubin Ultra, NVIDIA needs new photomasks to adopt HBM4e in 2027, and it should stick with 2-die per package to maintain good chip yield.

We lift our TSMC 2027 CoWoS capacity assumption to 200kwpm from 170kwpm, and slightly trim our SoIC capacity build forecasts: Very strong AI GPU and CPU demand led TSMC to further expand CoWoS capacity in AP7. Our checks suggest TSMC is turning its Fab 15A 28nm/22nm space to 55nm interposer production. Hence UMC should receive order overflow from Sony's 28/22nm ISP in 2027; we remain OW on UMC. For SoIC, we still see production unchanged at 30/60kwpm in 2027/2028, while production build might be slightly delayed for three quarters; we therefore trim our capacity build assumptions to 40/70kwpm for 2027/2028, from 45/78kwpm, respectively. We remain OW on NVIDIA for its key supply chain for Rubin and Vera, including KYEC, ASE, Hon Precision and Winway, let alone TSMC in foundry. We lift AllRing's price target to NT\$1,580, from NT\$1,280, reflecting strong CoWoS capacity build, especially in 2027.

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WHAT'S CHANGED

AllRing Tech Co. (6187.TWO)	From	To
Price Target	NT\$1,280.00	NT\$1,580.00

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Global CoWoS Capacity Update

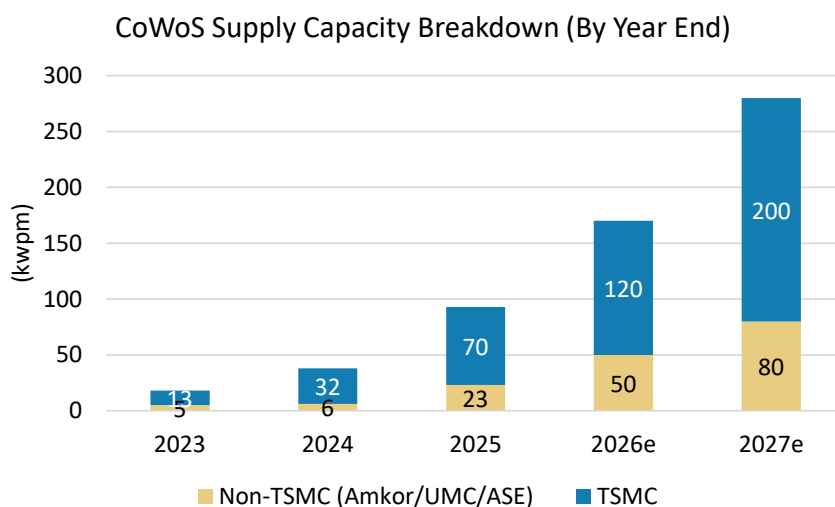
CoWoS capacity – update on capacity build

Driven by very strong demand coming from AI GPU and CPU and potential rising competition from other 2.5D packaging solutions, TSMC has decided to further expand its CoWoS capacity in AP7 at the expense of SolC's capacity expansion, which is less urgent.

We revise our 2027 CoWoS capacity estimate from 160-170kwpw to 200kwpw. TSMC has confirmed that it is turning its Fab 15A 28nm/22nm space to 55nm interposer production by adding around 10kwpw, which is further new expansion this year after just building 15kwpw of interposer capacity in Singapore and filling all interposer capacity in Fab 12 and Fab 14. Hence, we think UMC could receive the order overflow from Sony's 28nm/22nm ISP in 2027, and we reiterate OW on UMC.

For SolC, we still expect production of 30kwpw for 2027 and 60kwpw for 2028. The production build might be slightly delayed for 3 quarters, and hence we trim our capacity build assumptions from 45kwpw in 2027 and 78kwpw in 2028 to 40kwpw and 70kwpw, respectively.

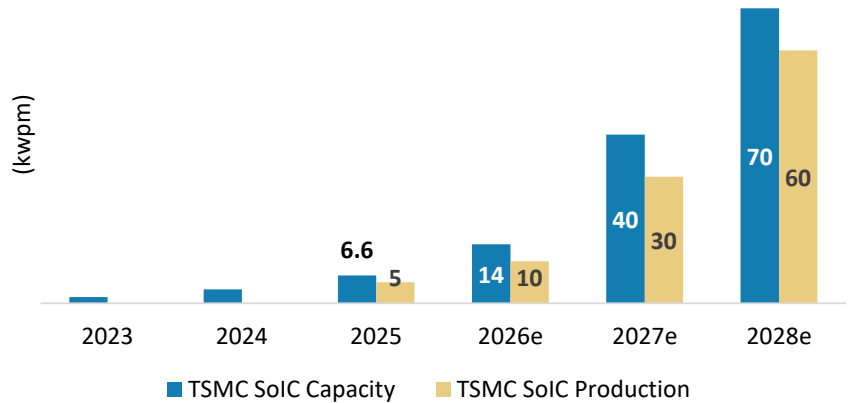
Exhibit 1: We expect TSMC's CoWoS capacity to reach 200kwpw vs. our prior expectation of 160-170kwpw



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

Exhibit 2: Although we make no changes in production, we trim our capacity build assumptions from 45kwpm and 78kwpm to 40kwpm and 70kwpm for 2027 and 2028, respectively

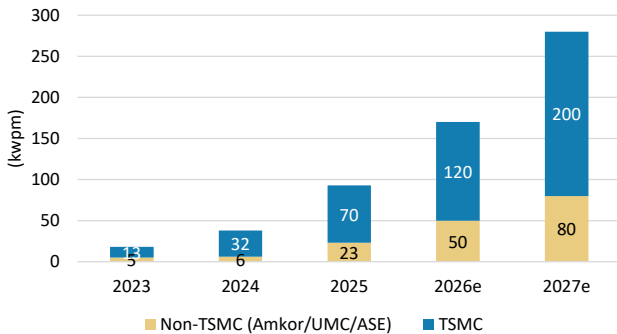
TSMC SoIC Supply Capacity Breakdown (By Year End)



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

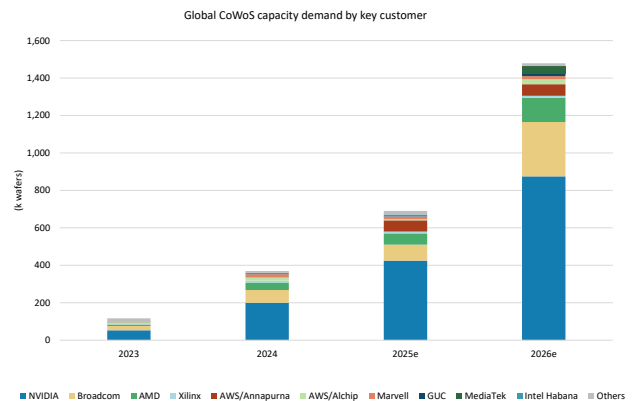
Exhibit 3: CoWoS capacity: TSMC and non-TSMC camp

CoWoS Supply Capacity Breakdown (By Year End)



Source: Company data, Morgan Stanley Research (e) estimates. Note: estimates are compiled using our Asian supply chain checks.

Exhibit 4: Global CoWoS consumption, by customer



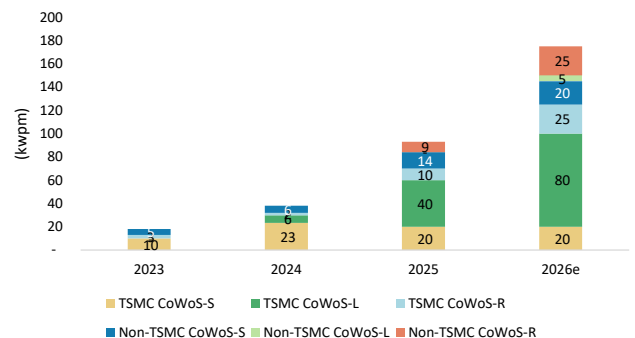
Source: Company data, Morgan Stanley Research (e) estimates. Note: estimates are compiled using our Asian supply chain checks.

Exhibit 5: Global CoWoS demand Y/Y growth profile

Y/Y	2023	2024	2025	2026e
NVIDIA	119%	280%	113%	106%
Broadcom	56%	191%	25%	241%
AMD	485%	470%	50%	117%
Xilinx	63%	242%	0%	0%
AWS/Annapurna				3%
AWS/Alchip		71%	(69%)	420%
Marvell	(22%)	1438%	(17%)	13%
GUC		(15%)	300%	600%
Others	23%	(49%)	90%	(21%)
Total demand	95%	216%	87%	114%

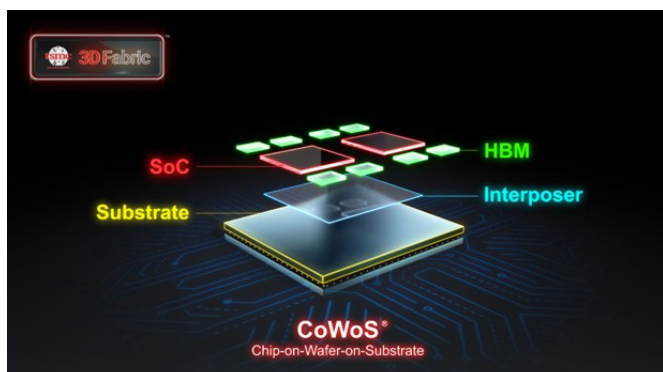
Source: Company data, Morgan Stanley Research (e) estimates. Note: estimates are compiled using our Asian supply chain checks.

Exhibit 6: CoWoS: Capacity breakdown



Source: Company data, Morgan Stanley Research (e) estimates. Note: estimates are compiled using our Asian supply chain checks.

Exhibit 7: CoWoS: Chip on wafer (interposer) on substrate



Source: TSMC

Exhibit 8:

TSMC's advanced packaging fab planning

Advanced Packaging Plant	Location	Focused Technology
AP1	Hsinchu	R&D
AP2	Tainan	Bumping
AP3	Taoyuan	InFO and WMCM
AP5	Taichung	CoWoS
AP6	Miaoli	SoIC
AP7	Chiayi	WMCM, CoWoS, SoIC, CoPoS
AP8	Tainan	CoWoS
AP9 and AP10	Arizona	SoIC/CoWoS/CoPoS/WMCM/R&D

Source: Company data, Morgan Stanley Research

Exhibit 9: AI HBM consumption: seen up to 33bn GB in 2026

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
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
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
Total		1,479								4,034,885
Total HBM demand (mn Gb)										32,279

Source: Company data, Morgan Stanley Research (e) estimates. Note: Estimates are compiled using our Asian supply chain checks.

Exhibit 10: AI wafer consumption: seen up to US\$27bn in 2026

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
AMD	H200	75	27	2,025	814	4nm	1	57	21,945	1,243
	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	886
AI ASIC (2026e)										
Google	TPU v7p (Ironwood; AVGO)	145	16	2,320	700	3nm	2	152	26,000	3,942
	TPU v8i (Sunfish; AVGO)	80	12	960	800	3nm	2	72	26,000	1,864
	TPU v8t (Zebrafish; MediaTek)	40	20	800	800	3nm	2	60	26,000	1,554
AWS	Trainium 3	100	17	1,700	700	3nm	2	91	26,000	2,357
Microsoft	Maia 200	4	29	116	700	3nm	1	3.0	26,000	79
	Maia 300	5	11	55	850	2nm	1	2.9	28,125	82
Total		1,479						1,117		27,019

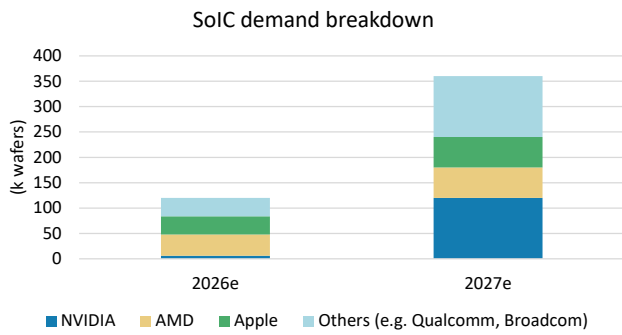
Source: Company data, Morgan Stanley Research (e) estimates. Note: Estimates are compiled using our Asian supply chain checks.

SoIC capacity and demand breakdown

Current customers adopting SoIC include:

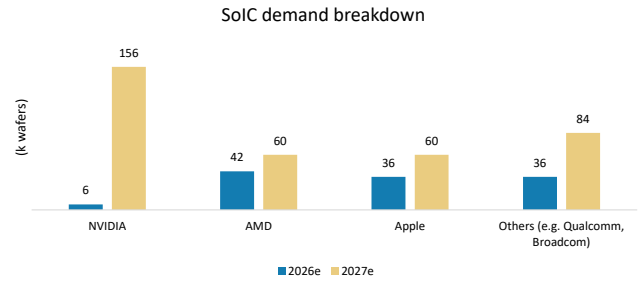
- **NVIDIA (covered by Joseph Moore):** We expect annual SoIC consumption of 6k in 2026, rising to 120k in 2027. This includes demand for CPO's COUPE. We see more clues from the Asian supply chain that NVIDIA's next-generation GPU Feynman could require 1-2GB of SRAM stacked on each die within the Feynman package. On the other hand, we also see NVIDIA studying GPU-to-GPU stacking, which should translate to SoIC demand.
- **AMD (covered by Joseph Moore):** AMD has adopted SoIC on its AI and gaming GPU and high-end CPU, and we do not rule out future adoption for its ASIC business. We expect AMD's SoIC consumption at 42k in 2026, increasing to 60k in 2027.
- **Apple (covered by Erik Woodring):** Apple's data center and Mac Pro chips rely on SoIC. We expect Apple's SoIC consumption at 36k in 2026, increasing to 60k in 2027.
- **Others:** Several customers are now trying TSMC's SoIC capacity, including Broadcom, Qualcomm (both covered by Joseph Moore), and AWS. We think this is in line with our understanding that Broadcom would start to introduce SoIC packaging for its networking chips and ASIC solutions. However, some appear to still be in the design and trial stage, and not yet finalized.

Exhibit 11: TSMC – SoIC demand breakdown



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

Exhibit 12: TSMC – SoIC demand breakdown by customer



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

AllRing: Bottom-up Analysis

We expect CoWoS-related revenue to account for 75% of AllRing's total revenue in 2026, with AllRing focusing on oS equipment supply to TSMC and ASE/SPIL. However, we see more non-TSMC 2.5 packaging solution vendors qualifying more Taiwanese CoWoS equipment vendors, creating a new TAM for AllRing, including FoPLP and Intel's EMIB. We expect AllRing's 2027 CoWoS revenue to rise 62% Y/Y (TSMC's CoWoS seen at 200kwpm for 2027), and see it beginning to prepare equipment for CoPoS (if the trial round goes smoothly in 2026) and its AP fab in Arizona (MP likely starting in 2028).

For CPO, AllRing has penetrated the CPO supply chain of NVIDIA for FAU-optical engine coupling and FAU AOI equipment. Our latest supply chain checks suggest that AllRing may have also won the dispensing step after insertion 3, where the optical engine will be mounted onto the CPO package substrate. We expect more clarity from the company on CPO-related revenue in 2H26, and expect it to account for 13%, 21%, and 28% of AllRing's total revenue in 2026, 2027, and 2028, respectively.

For SoIC, we expect 2026 SoIC capacity to reach 14kwpm. TSMC further expanding its CoWoS capacity in AP7 could cause slightly delays in equipment pull-in. Our latest supply chain checks suggest that TSMC has revised 2027e capacity to 40kwpm (from 45kwpm) and 2028e to 70kwpm (from 75kwpm). AllRing is the sole WoW dispenser supplier for SoIC, but we expect the delay in SoIC to be more than offset by the strong build in CoWoS. In the long run, we still expect it to be the key growth driver for AllRing. SoIC is one of the key advanced packaging nodes for TSMC in the coming years, as we see more and more customers adopting this technology to realize chiplet design, including AMD, NVIDIA, Apple, and Broadcom.

Exhibit 13: Bottom-up analysis of AllRing's revenue

(NT\$m)	2024	2025	2026e	2027e	2028e	2025 Y/Y	2026 Y/Y	2027 Y/Y	2028 Y/Y
CoWoS	3,530	4,771	6,255	10,110	10,110	35%	31%	62%	0%
CPO	0	150	1,050	3,000	4,500	NA	600%	186%	50%
Flip Chip	200	0	700	200	0	-100%	NA	-71%	-100%
SoIC		120	150	600	700		25%	300%	17%
Others	1,804	325	195	500	800	-82%	-40%	156%	60%
Total Revenue	5,535	5,366	8,350	14,410	16,110	-3%	56%	73%	12%

Revenue mix	2024	2025e	2026e	2027e	2028e
CoWoS	64%	89%	75%	70%	63%
CPO	0%	3%	13%	21%	28%
Flip Chip	4%	0%	8%	1%	0%
SoIC	0%	2%	2%	4%	4%
Others	33%	6%	2%	3%	5%
Total Revenue	100%	100%	100%	100%	100%

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

Exhibit 14: AllRing's solution in advanced packaging

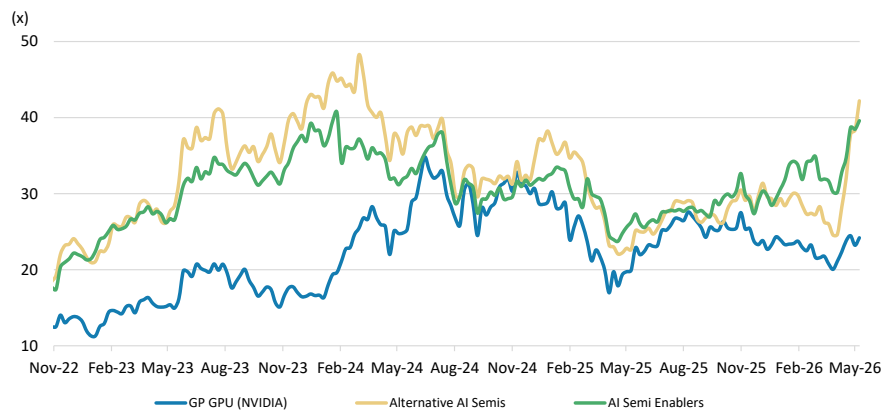
Advanced packaging	What equipment AllRing supplies
CoWoS	Attachment, Dispenser, Lid Attach, Hot Clamp, Automation and AOI (Optical inspection)
CoPoS	Attachment, Dispenser, Lid Attach, Hot Clamp, Automation and AOI (Optical inspection)
SoIC	WoW Dispenser
WMCM	Automation
CPO	Coupling, AOI and Dispenser
CoWoP	Attachment, Dispenser, Large Field Dispenser, Lid Attach, Hot Clamp, Automation and AOI (Optical inspection)
CoPoS	Attachment, Dispenser, Large Field Dispenser, Lid Attach, Hot Clamp, Automation and AOI (Optical inspection)

Source: Company data, Morgan Stanley Research

AI semis – stock implications, P/E multiples, revenue exposure

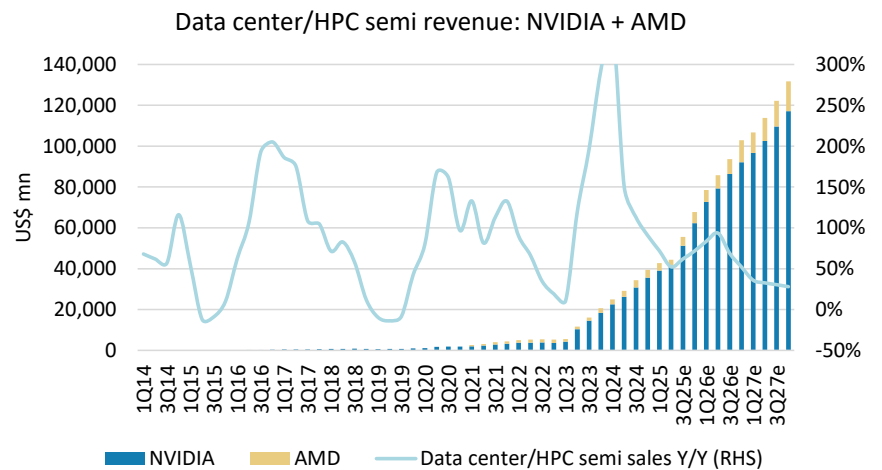
- In Asian semis, we are OW on TSMC, KYEC, ASE, Samsung (covered by Shawn Kim), and Aspeed.
- We are also positive on Asian ASIC design service providers Alchip and GUC, and CPO suppliers FOCI and Himax.

Exhibit 15: P/E multiple trend of AI semis



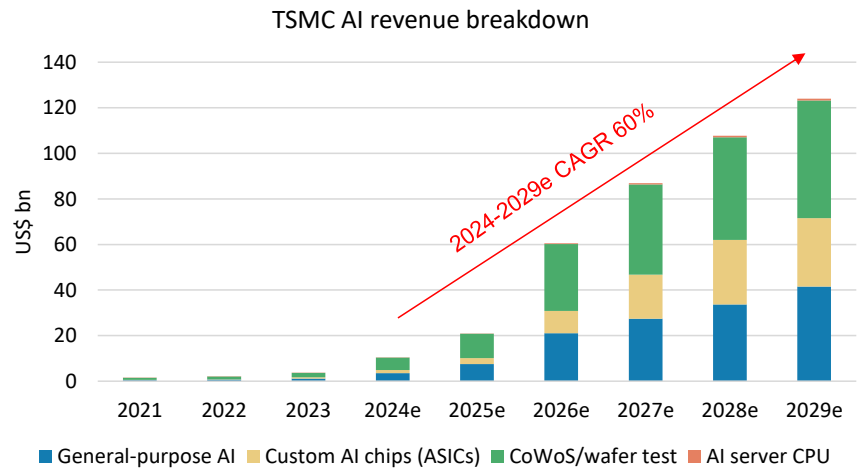
Note: Alternative AI semis group: AMD, Alchip, Andes, Marvell, Broadcom. AI semi enablers group: TSMC, Synopsys, Cadence, ASML, BESL, Ibiden, KYEC, Advantest. Source: Company data, Morgan Stanley Research.

Exhibit 16: We still expect AI chip revenue to rise QoQ



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

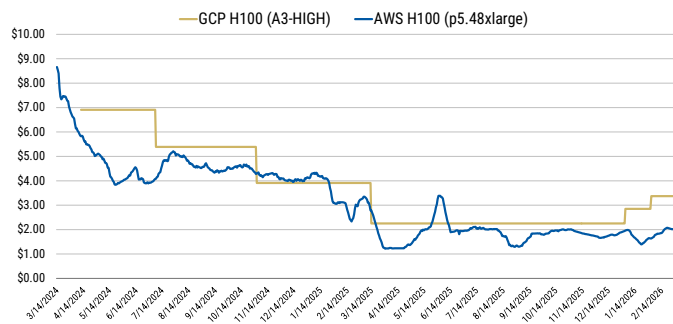
Exhibit 17: TSMC's AI-related revenue 2024-29 CAGR seen reaching 60%



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

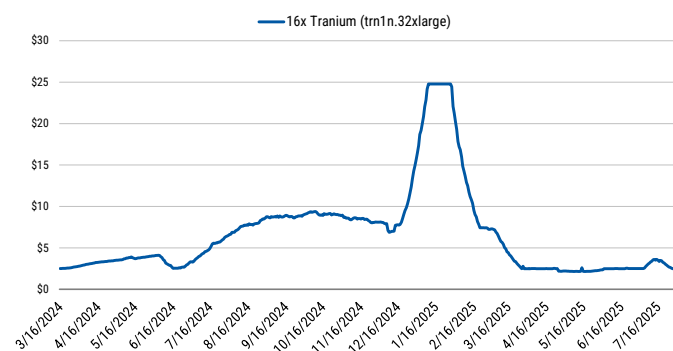
AI GPU and ASIC rental price tracker

Exhibit 18: AI GPU H100 per GPU per hour as of end-March



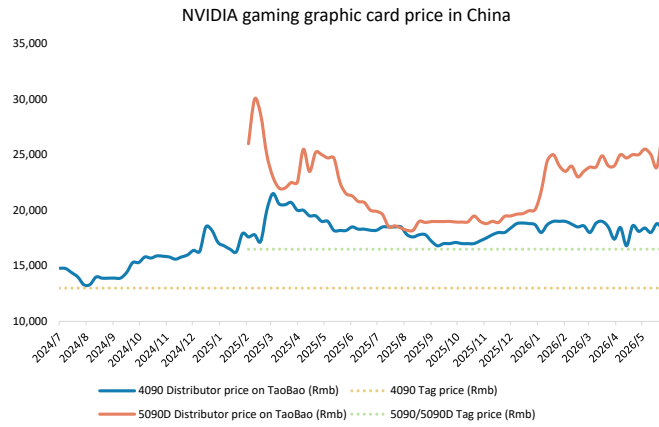
Source: Company data, Morgan Stanley Research

Exhibit 19: AI ASIC equivalent computing power – 16x Inferentia 2 per hour



Source: Company data, Morgan Stanley Research

Exhibit 20: NVIDIA 5090 graphic cards pricing rebounded recently, mainly due to market expectations for price hikes and strong AI inference demand from China



Source: TaoBao, Morgan Stanley Research, various media (e.g., Vice, Jan. 3, 2026)

Key Featured Reports on the AI Supply Chain

Asia-Pacific Technology: AI Supply Chain: Cloud Capex Strength; More CoWoS Allocation for TPU (7 May 2026)

Asia-Pacific Technology: AI Supply Chain: Addressing Questions on Nvidia GPU/LPU and Google TPU (9 Apr 2026)

Greater China Semiconductors: AI Supply Chain Tracker: Key Investor Feedback from GTC/OFC (23 Mar 2026)

Asia Technology: AI Supply Chain: CPO and ASIC Dynamic Update (3 Mar 2026)

Asia-Pacific Technology: AI Supply Chain: CES implications, ASIC production, China AI chips (6 Jan 2026)

Asia-Pacific Technology: AI Supply Chain: TSMC CoWoS Expansion; ASIC Dynamics; Asia Field Trip (1 Dec 2025)

Foundation

Technology: Rise of the AI Agent – Global Implications (19 Apr 2026)

Global Technology: Supply-chain Reorientation (24 Jul 2025)

Global Technology: China – AI: The Sleeping Giant Awakens (13 May 2025)

Global Technology: AI Cloud Capex in the Spotlight (26 Feb 2025)

Global Semiconductors: AI ASIC 2.0: Potential winners (15 Dec 2024)

Global Technology: Global Technology – Dawn of the AI Smartphone Era: Edge AI – Apple Intelligence Fuels Innovation – More Charts, Fewer Words (17 Jul 2024)

Global Technology: AI PCs To Usher In The Next Leg Of PC Market Growth (21 May, 2024)

Key Upstream AI supply chain companies

WinWay Technology Co Ltd: Aggressive Expansion Plans Support Strong Revenue Visibility; Stay OW (27 May 2026)

AP Memory Technology Corp: Too early to be concerned about Si-Cap competition; OW (21 May 2026)

Greater China Semiconductors: Semi Distributors: AI Continues to Drive a Stronger Outlook (19 May 2026)

Greater China Semiconductors: Correction: The Foundry Floorplan: All boats riding on the same tide – mature node up-cycle begins (19 May 2026)

Powerchip Semiconductor Manufacturing Co: Beneficiary of mature node up-cycle and EMIB supply chain (18 May 2026)

MPI Corporation: Riding a Wave of Multi-year Strong Growth; Reiterate OW (17 May 2026)

AllRing: Estimate Revisions

We increase our EPS estimates by 9% for 2026, 14% for 2027, and 24% for 2028. We factor in actual 1Q26 results. We lift our 2027 and 2028 revenue estimates to reflect increased TSMC's CoWoS capacity build. We expect AllRing to win more advanced packaging opportunities from the non-TSMC camp.

Exhibit 21: AllRing: Estimate Revisions

NTD mn	New '2026	Old '2026E	Diff.	New '2027e	Old '2027E	Diff.	New '2028e	Old '2028E	Diff.
Net sales	8,350	8,141	3%	14,410	11,270	28%	16,110	12,122	33%
Gross profit	4,329	4,309	0%	7,626	5,962	28%	8,686	6,533	33%
Operating profit	2,347	2,146	9%	4,310	3,762	15%	4,952	3,983	24%
Pretax Income	2,539	2,314	10%	4,486	3,930	14%	5,154	4,151	24%
Net income	2,125	1,944	9%	3,768	3,301	14%	4,329	3,487	24%
EPS for consensus	22.07	20.23	9%	39.13	34.37	14%	44.96	36.30	24%
Margins									
Gross margin	51.8%	52.9%		52.9%	52.9%		53.9%	53.9%	
Operating margin	28.1%	26.4%		29.9%	33.4%		30.7%	32.9%	
Pretax margin	30.4%	28.4%		31.1%	34.9%		32.0%	34.2%	
Net margin	25.5%	23.9%		26.1%	29.3%		26.9%	28.8%	
Opex %	23.7%	26.6%		23.0%	19.5%		23.2%	21.0%	

Source: Morgan Stanley Research (E) estimates

Exhibit 22: AllRing: Quarterly financials

(NTS mn)	1Q26E	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2024	2025E	2026E	2027E	2028E
Total revenues	1,411	2,165	2,486	2,288	2,620	3,271	3,962	4,557	5,535	5,966	8,350	14,410	16,110
Q/Q Change	59%	53%	15%	-8%	15%	25%	21%	15%	359%	-3%	56%	73%	12%
Y/Y Change	13%	42%	46%	158%	86%	51%	59%	99%	359%	-3%	56%	73%	12%
Cost of Sales	681	1,043	1,197	1,102	1,234	1,540	1,865	2,145	2,818	2,453	4,022	6,784	7,424
Percent of Revenues	48%	48%	48%	48%	47%	47%	47%	47%	51%	46%	48%	47%	46%
Gross Profit	731	1,123	1,289	1,186	1,386	1,731	2,107	2,412	2,717	2,913	4,329	7,626	8,686
Gross Margin	52%	52%	52%	52%	53%	53%	53%	53%	49%	54%	52%	53%	54%
Total Opex	403	502	557	519	619	760	836	901	1,284	1,304	1,982	3,316	3,734
Percent of Revenues	29%	23%	22%	23%	23%	23%	21%	20%	23%	24%	24%	23%	23%
R&D	192	200	210	200	400	400	400	400	775	767	802	1,600	1,640
Percent of Revenues	14%	9%	8%	9%	15%	12%	10%	9%	14%	14%	10%	11%	10%
General & Adm Exp.	112	172	198	182	210	196	238	273	276	275	664	917	1,128
Percent of Revenues	8%	8%	8%	8%	8%	6%	6%	6%	5%	5%	8%	6%	7%
Selling Expenses	99	130	149	137	210	164	198	228	233	262	515	799	967
Percent of Revenues	7%	6%	6%	6%	8%	5%	5%	5%	4%	5%	6%	6%	6%
Operating Income	327	620	732	667	567	971	1,261	1,511	1,433	1,610	2,347	4,310	4,952
Operating Margin	23%	29%	29%	29%	22%	30%	32%	33%	26%	30%	28%	30%	31%
Total Non-operating Income	-60	-44	-44	-44	-44	-44	-44	-44	-133	-12	-14	-14	0
Profit Before Taxes	387	664	776	711	611	1,015	1,305	1,555	1,566	1,813	2,539	4,486	5,154
Percent of Revenues	27%	31%	31%	31%	23%	31%	33%	34%	28%	34%	30%	31%	32%
Taxes	67	113	124	114	98	162	209	249	255	316	418	718	825
Tax Rate	17%	17%	16%	16%	16%	16%	16%	16%	16%	17%	16%	16%	16%
Total Net Income to Parent	320	551	652	597	513	852	1,096	1,306	1,311	1,495	2,125	3,768	4,329
Percent of Revenues	23%	25%	26%	26%	20%	29%	29%	29%	24%	28%	26%	26%	27%
EPS (NTS)	3.37	5.73	6.77	6.20	5.33	8.85	11.39	13.56	15.25	15.46	22.07	39.13	44.96
Change vs Year Ago	-6%	38%	55%	84%	58%	55%	68%	119%	794%	1%	43%	77%	15%
EPS for consensus (NTS)	3.37	5.73	6.77	6.20	5.33	8.85	11.39	13.56	15.25	15.46	22.07	39.13	44.96
Change vs Year Ago	-6%	38%	55%	84%	58%	55%	68%	119%	794%	1%	43%	77%	15%

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

AllRing: Valuation Methodology

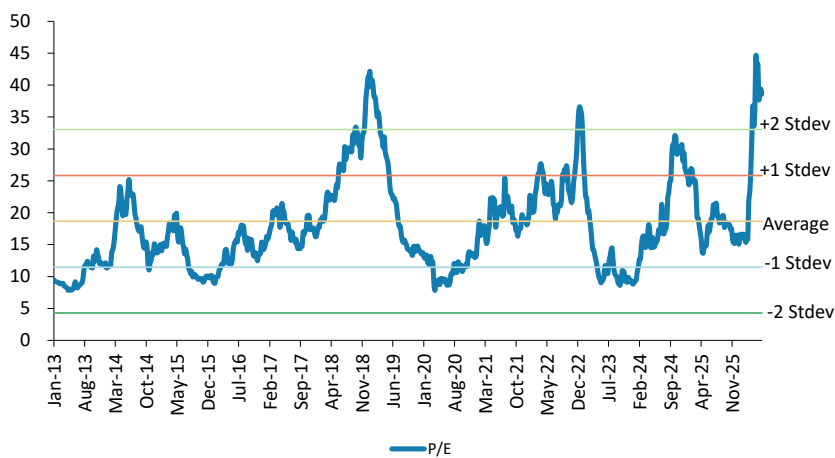
We lift our RI-based price target (base case scenario value) from NT\$1,280 to NT\$1,580: We factor in our estimate changes across 2026-28. Our other key assumptions are unchanged, including a cost of equity (CoE) at 8%, derived from a risk-free rate of 2.0%, beta of 1.0 and market risk premium of 6%, intermediate growth rate of 16% and terminal growth rate of 4.5%. Our bull and bear case values also rise, from NT\$1,800 and NT\$520 to NT\$2,200 and NT\$640, respectively, implying 56x and 16x our 2027 EPS estimate.

Exhibit 23: AllRing: RI model

NTS million	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034E	2035E	2036E	2037E
Total Equity	8,211	10,933	13,395	15,138	17,159	19,504	22,224	25,379	29,039	33,285	38,210	43,923
Net Profit	2,125	3,768	4,329	5,022	5,825	6,757	7,839	9,093	10,548	12,235	14,193	16,464
ROAE	27.1%	39.4%	35.6%	35.2%	36.1%	36.9%	37.6%	38.2%	38.8%	39.3%	39.7%	40.1%
Residual Income	1,428	2,575	3,016	3,644	4,250	4,952	5,767	6,712	7,808	9,079	10,552	12,262
Spread	19.1%	31.4%	27.6%	27.2%	28.1%	28.9%	29.6%	30.2%	30.8%	31.3%	31.7%	32.1%
Ending Equity Capital	8,211											
PV of Forecast Period	35,556											
PV of Continuing Value	108,332											
Equity Value	152,098											
No. of Shares	96											
Price Target	1,580											

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

Exhibit 24: AllRing: NTM P/E



Source: Company data, FactSet, Morgan Stanley Research estimates

Risk Reward – AllRing Tech Co. (6187.TWO)

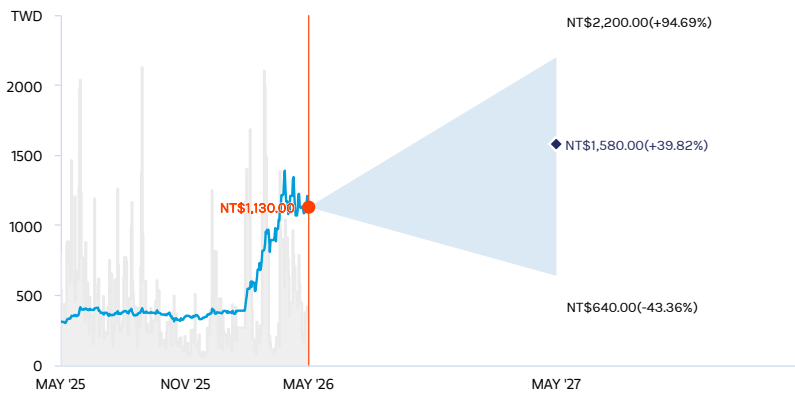
CPO, SolC, and CoPoS Help to Extend Revenue Momentum; OW

PRICE TARGET NT\$1,580.00

Base case, residual income model. Our key assumptions are:

- Cost of equity (CoE) of 8%, derived from a risk-free rate of 2.0%, beta of 1.0, and a market risk premium of 6.0%.
- Intermediate growth rate of 16%.
- Cash dividend payout of 65%
- Terminal growth rate of 4.5%.

RISK REWARD CHART



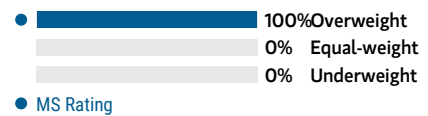
Key: — Historical Stock Performance ● Current Stock Price ◆ Price Target

Source: Refinitiv, Morgan Stanley Research

OVERWEIGHT THESIS

- NVIDIA's next-generation GPU Rubin will stick with graphene for heat sink attachment, reducing concerns about competition for Allring.
- We expect AllRing to be a key beneficiary of the multi-year advanced packaging trend, including CoPoS and SolC, but large-scale revenue contributions will likely take time.
- It is the sole WoW (Wafer-on-Wafer) dispenser supplier for SolC, which we expect to be the next growth driver, contributing at least 2% of total revenue in 2026 and 4% in 2027.
- Our implied 2027e target P/E is 40x, similar to its SolC peer and lower than CPO peers. We expect new advanced packaging opportunities including CPO, CoWoP, and CoPoS to benefit the company in the long run.

Consensus Rating Distribution



Source: Refinitiv, Morgan Stanley Research

Risk Reward Themes

- Secular Growth: Positive
- Technology Diffusion: Positive

View descriptions of Risk Rewards Themes [here](#)

BULL CASE

NT\$2,200.00

56x 2027e EPS

We assume: 1) 60% revenue CAGR over 2025-28, thanks to stronger-than-expected capacity expansion plans for TSMC's CoWoS, CPO and SolC; 2) gross margin expands to more than 55% in 2025-28, due to stronger-than-expected operating leverage resulting from the equipment production outsourcing strategy; 3) new product launches exceed expectations and AllRing increases its market share in other processes such as "CoW".

BASE CASE

NT\$1,580.00

40x 2027e EPS

We expect: 1) 44% revenue CAGR in 2025-28e after strong CoWoS capacity expansion for TSMC in 2024-25; 2) gross margin to be maintained at 48-53% from 2024-28 vs. 48% in 2022 thanks to high operating leverage resulting from the equipment production outsourcing strategy; and 3) with new equipment launches, we expect AllRing to expand its market share in other processes. CPO, SolC and other applications continue to bear fruit.

BEAR CASE

NT\$640.00

16x 2027e EPS

We assume: 1) -30% revenue CAGR in 2024-28, owing to slower-than-expected CoWoS capacity expansion plans by TSMC; 2) gross margin falls below 40% owing to the high bargaining power of its customers; 3) market share loss in "WoS" process amid rising peer competition.

Risk Reward – AllRing Tech Co. (6187.TWO)

KEY EARNINGS INPUTS

Drivers	2025	2026e	2027e	2028e
Semi revenue (NT\$, mn)	5,215	8,239	14,327	16,018
Passive revenue (NT\$, mn)	52	56	43	47

INVESTMENT DRIVERS

- CoWoS capacity expansion from TSMC
- New technology migration such as SoIC and silicon photonics
- Strong operating leverage, given equipment production outsourcing strategy

GLOBAL REVENUE EXPOSURE



Source: Morgan Stanley Research Estimate
View explanation of regional hierarchies [here](#)

RISKS TO PT/RATING

RISKS TO UPSIDE

- Stronger-than-expected CoWoS capacity expansion
- Faster-than-expected adoption of silicon photonics
- Market share gains from peers, led by continuous R&D and China's localization trend

RISKS TO DOWNSIDE

- Slowdown in CoWoS capacity expansion
- Allring's "WoS" market share declining
- Slowdown in technology migration such as SoIC and silicon photonics adoption

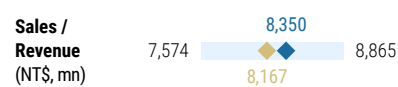
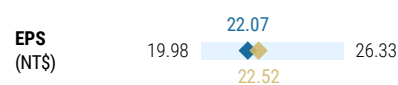
OWNERSHIP POSITIONING

Inst. Owners, % Active 68.9%

Source: Refinitiv, Morgan Stanley Research

MS ESTIMATES VS. CONSENSUS

FY Dec 2026e



◆ Mean ◆ Morgan Stanley Estimates

Source: Refinitiv, Morgan Stanley Research

AllRing: Financial Summary

Income Statement					
NT\$m (Years End Dec)	2024	2025	2026E	2027E	2028E
Net sales	5,535	5,366	8,350	14,410	16,110
COGS	2,818	2,453	4,022	6,784	7,424
Gross profit	2,717	2,913	4,329	7,626	8,686
Operating expenses	1,284	1,304	1,982	3,316	3,734
Operating income	1,433	1,610	2,347	4,310	4,952
Non-operating income	(133)	(203)	(191)	(176)	(202)
Pre-tax income	1,566	1,813	2,539	4,486	5,154
Income tax	255	316	418	718	825
Minority Interest	1,311	1,496	2,121	3,768	4,329
Reported net income	1,311	1,485	2,125	3,768	4,329
Adj. wtd. avg. shrs(m)	90	96	96	96	96
Reported EPS (NT\$)	15.25	15.46	22.07	39.13	44.96
EPS for consensus (NT\$)	15.25	15.46	22.07	39.13	44.96

Cash Flow Statement					
NT\$m (Years End Dec)	2024	2025	2026E	2027E	2028E
Cashflow from Operations	1,079	1,958	1,687	2,594	4,059
Net profits	1,311	1,485	2,125	3,768	4,329
Depreciation	47	59	59	59	59
Working Capital Change	(130)	476	(507)	(1,243)	(338)
Other adjustments	(157)	(71)	0	0	0
Cashflow from Investing	(359)	(666)	(98)	(151)	(151)
Capex	(372)	(581)	(100)	(100)	(100)
Change of LT Investment	(36)	36	0	0	0
Other adjustments	50	(68)	(51)	(51)	(51)
Cashflow from financing	1,851	(645)	(1,403)	(1,063)	(1,884)
Increase in L/T debt	(563)	49	0	0	0
Increase in S/T debt	0	0	0	0	0
Cash Dividend Paid	(131)	(980)	(1,403)	(1,063)	(1,884)
Net change in cash	2,601	646	169	1,380	2,024

Balance Sheet					
NT\$m (Years End Dec)	2024	2025	2026E	2027E	2028E
Cash	3,536	4,182	4,351	5,731	7,755
Mkt Securities	0	53	0	0	0
AR/INR	1,552	806	1,582	2,730	3,053
Inventory	949	1,114	1,449	2,444	2,674
Other	293	180	180	180	180
Current Assets	6,330	6,335	7,562	11,085	13,661
Long-term investments	36	0	0	0	0
Fixed assets	1,298	1,879	1,979	2,079	2,179
Deferred assets	50	76	76	76	76
Other assets	1,056	1,288	1,288	1,288	1,288
Total Assets	8,796	9,609	10,936	14,559	17,236
S/T borrowings	0	0	0	0	0
AP/INP	888	564	1,144	1,930	2,112
Other S/T liabilities	865	943	943	943	943
LT debt	290	339	339	339	339
Other LT liabilities	131	142	142	142	142
Total Liabilities	2,279	2,121	2,725	3,626	3,840
Common shares	969	971	971	971	971
Additional capital	2,919	3,017	3,017	3,017	3,017
Retained earning	2,347	2,941	3,663	6,369	8,814
Other shareholders' equity	282	559	559	576	593
Total Equity	6,517	7,488	8,211	10,933	13,395
Total Liab. & Shrhldr's Equity	8,796	9,609	10,936	14,559	17,235

Financial Ratios					
	2024	2025	2026E	2027E	2028E
Growth(%)					
Turnover	359.2	-3.0	55.6	72.6	11.8
Operating profits	1623.8	12.3	45.8	83.6	14.9
Pretax profits	873.5	15.8	40.0	76.7	14.9
Net profits	848.5	13.3	43.1	77.3	14.9
EPS	793.9	1.4	42.7	77.3	14.9
Margins (%)					
Gross Margin	49.1	54.3	51.8	52.9	53.9
Operating Margin	25.9	30.0	28.1	29.9	30.7
Pretax Margin	28.3	33.8	30.4	31.1	32.0
Net Profit	23.7	27.7	25.5	26.1	26.9
Return (%)					
ROAE	29.1	21.2	27.1	39.4	35.6
ROAA	19.7	16.1	20.7	29.6	27.2
Gearing (%)					
Net Debt/Equity	(49.8)	(51.3)	(48.9)	(49.3)	(55.4)
Liabilities/Equity	35.0	28.3	33.2	33.2	28.7
Ratios (X)					
Current ratio	3.6	4.2	3.6	3.9	4.5
Quick ratio	2.9	3.3	2.8	2.9	3.5
Others					
AR/INR Turnover (days)	180	69	69	69	69
Inventory Turnover (days)	563	131	131	131	131
AP Turnover (days)	337	104	104	104	104
Cash Conversion (days)	406	97	97	97	97

E = Morgan Stanley Research Estimates

Source: Morgan Stanley Research, Company Data

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Risk Reward Reference links

1. View explanation of Options Probabilities methodology - [Options_Probabilities_Exhibit_Link.pdf](#)
2. View descriptions of Risk Rewards Themes - [RR_Themes_Exhibit_Link.pdf](#)
3. View explanation of regional hierarchies - [GEG_Exhibit_Link.pdf](#)
4. View explanation of Theme/Exposure methodology - [ESG_Sustainable_Solutions_External_Link.pdf](#)
5. View explanation of HERS methodology - [ESG_HERS_External_Link.pdf](#)

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(as of April 30, 2026)

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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	1546	42%	467	51%	30%	709	44%
Equal-weight/Hold	1568	43%	358	39%	23%	715	44%
Not-Rated/Hold	4	0%	0	0%	0%	1	0%
Underweight/Sell	555	15%	84	9%	15%	202	12%
Total	3,673		909			1627	

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.

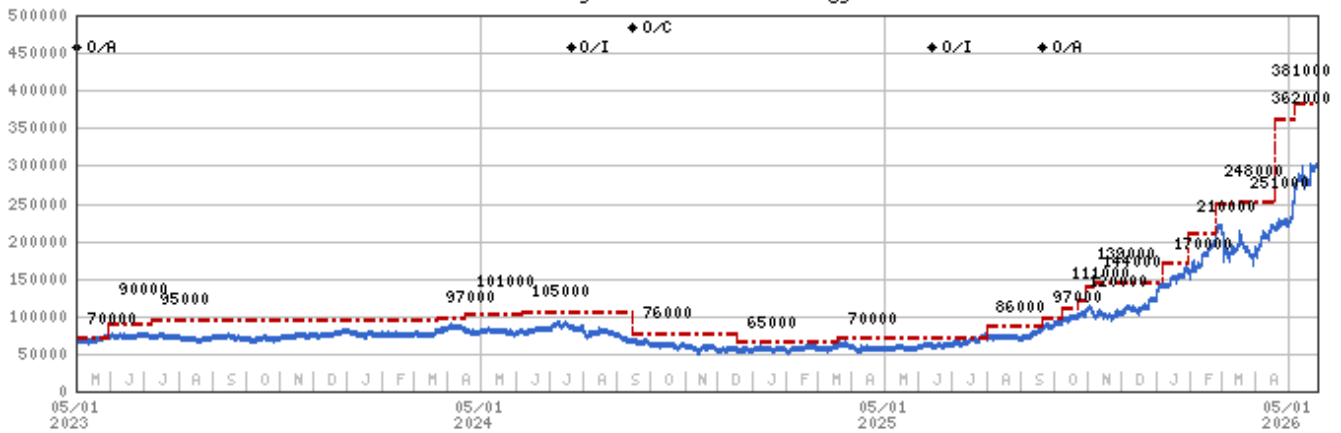
In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

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.

Stock Price, Price Target and Rating History (See Rating Definitions)

Samsung Electronics (005930.KS) - As of 05/27/26 GMT in KRW
Industry : S. Korea Technology



Stock Rating History: 5/1/21 : O/A; 7/19/21 : O/I; 8/12/21 : O/C; 10/4/22 : O/A; 7/21/24 : O/I; 9/15/24 : O/C; 6/13/25 : O/I; 9/21/25 : O/A

Price Target History: 2/25/21 : 115000; 5/18/21 : 93000; 6/8/21 : 98000; 8/12/21 : 89000; 9/15/21 : 95000; 12/3/21 : 97000; 3/18/22 : 95000; 4/28/22 : 85000; 6/10/22 : 80000; 7/5/22 : 75000; 7/22/22 : 70000; 9/17/22 : 68000; 3/21/23 : 70000; 5/30/23 : 90000; 7/7/23 : 95000; 3/22/24 : 97000; 4/16/24 : 101000; 6/6/24 : 105000; 9/15/24 : 76000; 12/18/24 : 65000; 3/19/25 : 70000; 8/1/25 : 86000; 9/21/25 : 97000; 10/8/25 : 111000; 10/23/25 : 120000; 10/30/25 : 139000; 11/5/25 : 144000; 1/8/26 : 170000; 1/30/26 : 210000; 2/24/26 : 248000; 3/18/26 : 251000; 4/19/26 : 362000; 5/6/26 : 381000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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INDUSTRY COVERAGE: S. Korea Technology

COMPANY (TICKER)	RATING (AS OF)	PRICE* (05/27/2026)
Ryan Kim		
Ecopro BM (247540.KQ)	U (03/20/2023)	W213,500
Fadu Inc (440110.KQ)	O (09/21/2025)	W116,900
Hanmi Semiconductor Co. Ltd. (042700.KS)	O (08/16/2024)	W319,000
HD Hyundai Electric Co Ltd (267260.KS)	O (03/25/2025)	W1,094,000
Isu Petasys Co. Ltd. (007660.KS)	O (02/03/2025)	W132,300
L&F Co Ltd (066970.KS)	E (04/03/2025)	W149,700
Leeno Industrial Inc. (058470.KQ)	O (04/03/2025)	W102,500
Lotte Energy Materials Corp (020150.KS)	U (04/03/2025)	W58,200
LS Electric (010120.KS)	O (01/22/2026)	W261,500
POSCO FUTURE M (003670.KS)	U (04/03/2025)	W229,000
SK IE Technology (361610.KS)	U (04/03/2025)	W19,190
SK Square Co Ltd. (402340.KS)	O (05/06/2026)	W1,276,000
Wonik IPS Co Ltd (240810.KQ)	O (08/08/2025)	W112,300
Shawn Kim		
LG Display (034220.KS)	E (06/11/2025)	W14,130
LG Electronics (066570.KS)	E (04/07/2025)	W235,000
LG Innotek (011070.KS)	E (03/12/2025)	W1,044,000
Samsung Electro-Mechanics (009150.KS)	O (07/31/2025)	W1,630,000
Samsung Electronics (005935.KS)	O (11/18/2019)	W192,000
Samsung Electronics (005930.KS)	O (11/18/2019)	W307,000
SK hynix (000660.KS)	O (09/21/2025)	W2,243,000

Stock Ratings are subject to change. Please see latest research for each company.

* Historical prices are not split adjusted.

INDUSTRY COVERAGE: Greater China Technology Semiconductors

COMPANY (TICKER)	RATING (AS OF)	PRICE* (05/27/2026)
Charlie Chan		
ACM Research Inc (ACMR.O)	O (03/07/2023)	US\$86.46
Advanced Micro-Fabrication Equipment Inc (688012.SS)	O (11/06/2023)	Rmb455.05
Advanced Wireless Semiconductor Co (8086.TWO)	U (07/14/2025)	NT\$173.50
Alchip Technologies Ltd (3661.TW)	O (05/14/2021)	NT\$4,500.00
ASE Technology Holding Co. Ltd. (3711.TW)	O (09/15/2024)	NT\$642.00
Cambricon Technology Corporation (688256.SS)	O (04/27/2026)	Rmb1,340.00
Global Unichip Corp (3443.TW)	O (07/27/2024)	NT\$5,100.00
GlobalWafers Co Ltd (6488.TWO)	E (05/19/2026)	NT\$930.00
Gudeng Precision (3680.TWO)	O (11/25/2025)	NT\$557.00
Hua Hong Semiconductor Ltd (1347.HK)	E (03/12/2026)	HK\$152.40
Iluvatar CoreX Semiconductor Co., Ltd. (9903.HK)	O (04/27/2026)	HK\$536.50
King Yuan Electronics Co Ltd (2449.TW)	O (03/03/2023)	NT\$315.50
Maxscend Microelectronics Co Ltd (300782.SZ)	U (01/11/2021)	Rmb116.97
MediaTek (2454.TW)	O (11/28/2025)	NT\$4,640.00
MetaX Integrated Circuits (688802.SS)	E (04/27/2026)	Rmb695.00
Nanya Technology Corp. (2408.TW)	E (03/20/2026)	NT\$312.00
NAURA Technology Group Co Ltd (002371.SZ)	O (11/06/2023)	Rmb654.77
OmniVision Integrated Circuits Group Inc (603501.SS)	E (11/17/2025)	Rmb104.96
Phison Electronics Corp (8299.TWO)	E (02/25/2026)	NT\$2,480.00
SG Micro Corp. (300661.SZ)	E (11/03/2025)	Rmb119.39
Silergy Corp. (6415.TW)	U (05/19/2026)	NT\$665.00
SMIC (0981.HK)	O (10/21/2025)	HK\$85.20
TSMC (2330.TW)	O (02/07/2022)	NT\$2,300.00
UMC (2303.TW)	O (05/19/2026)	NT\$143.50
Vanguard International Semiconductor (5347.TWO)	E (01/14/2026)	NT\$166.00
WIN Semiconductors Corp (3105.TWO)	U (07/14/2025)	NT\$560.00
Daisy Dai, CFA		
ASMPT Ltd (0522.HK)	O (07/24/2025)	HK\$203.80
China Resources Microelectronics Limited (688396.SS)	U (03/02/2026)	Rmb65.98
Elan Microelectronics Corp (2458.TW)	O (10/03/2025)	NT\$164.50
Empyrean Technology Co Ltd (301269.SZ)	E (01/17/2025)	Rmb127.42
Hangzhou Silan Microelectronics Co. Ltd. (600460.SS)	U (08/25/2025)	Rmb35.58
Innoscence (2577.HK)	E (10/13/2025)	HK\$80.30
JCET Group Co Ltd (600584.SS)	E (01/16/2026)	Rmb86.16
Shanghai Fudan Microelectronics (1385.HK)	O (03/07/2025)	HK\$36.94
SICC Co Ltd (688234.SS)	O (03/20/2026)	Rmb166.99
StarPower Semiconductor Ltd (603290.SS)	E (05/14/2026)	Rmb135.00
Unigroup Guoxin Microelectronics Co Ltd (002049.SZ)	U (01/10/2023)	Rmb85.06
Universal Scientific Ind. (Shanghai) (601231.SS)	O (11/05/2025)	Rmb43.43
Yangjie Technology (300373.SZ)	O (06/10/2022)	Rmb110.02
Daniel Yen, CFA		
AP Memory Technology Corp (6531.TW)	O (07/11/2025)	NT\$1,080.00
ASMedia Technology Inc (5269.TW)	U (10/03/2025)	NT\$1,495.00
Aspeed Technology (5274.TWO)	O (06/09/2025)	NT\$18,230.00
Egis Technology Inc (6462.TWO)	E (01/28/2026)	NT\$133.00
Espressif Systems (688018.SS)	O (05/15/2023)	Rmb181.08
GigaDevice Semiconductor Beijing Inc (603986.SS)	O (05/15/2025)	Rmb514.18
Macronix International Co Ltd (2337.TW)	O (09/18/2025)	NT\$155.50
Montage Technology Co Ltd (6809.HK)	O (03/18/2026)	HK\$469.00
Montage Technology Co Ltd (688008.SS)	O (03/18/2026)	Rmb265.50
Novatek (3034.TW)	U (02/04/2026)	NT\$485.00

Nuvoton Technology Corporation (4919.TW)	U (11/10/2025)	NT\$206.50
Parade Technologies Ltd (4966.TWO)	O (05/27/2026)	NT\$870.00
Powerchip Semiconductor Manufacturing Co (6770.TW)	O (10/27/2025)	NT\$74.80
Realtek Semiconductor (2379.TW)	E (01/30/2026)	NT\$605.00
Shenzhen Goodix Technology Co Ltd (603160.SS)	U (07/14/2025)	Rmb66.50
Winbond Electronics Corp (2344.TW)	E (03/20/2026)	NT\$155.00
WPG Holdings (3702.TW)	O (03/16/2026)	NT\$120.50
WT Microelectronics Co. Ltd. (3036.TW)	O (01/27/2026)	NT\$296.00
Duan Liu		
Dosilicon Co Ltd (688110.SS)	U (09/06/2024)	Rmb148.00
Shenzhen Longsys Electronics Co Ltd (301308.SZ)	E (02/25/2026)	Rmb551.59
Tiffany Yeh		
AllRing Tech Co. (6187.TWO)	O (09/23/2025)	NT\$1,130.00
FOCI Fiber Optic Communications Inc (3363.TWO)	O (01/15/2025)	NT\$847.00
Himax Technologies Inc (HIMX.O)	E (02/04/2026)	US\$21.43
Hon Precision (7769.TW)	O (04/17/2026)	NT\$7,800.00
MPI Corporation (6223.TWO)	O (04/17/2026)	NT\$6,390.00
Silicon Motion (SIMO.O)	O (05/06/2024)	US\$290.32
WinWay Technology Co Ltd (6515.TW)	O (04/17/2026)	NT\$9,795.00

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* Historical prices are not split adjusted.