

All Ring

Riding on the tide of accelerating leading edge semiconductor packaging expansion

Initiating Coverage: BUY | PO: 1,500 TWD | Price: 1,050 TWD

Initiate at Buy, PO of NT\$1,500 based on 36x 2027 P/E

We initiate coverage with Buy rating and NT\$1,500 PO on 36x 2027 P/E (vs. its 8-41x range) on All Ring, a leading back-end semiconductor equipment supplier with a focus on dispensing, thermal sink, AOI, and optical coupling for packaging upgrades/inspection. With its drivers tied to the strong advanced packaging capacity expansion (CoWoS, SolC, CPO, CoPoS), its track record delivering total solution across equipment and software to foundries/OSATs and strong on-field support, the company could grow its sales/earnings at 34%/42% CAGR from 2026-28E, lifting EPS to NT\$26.46/41.82/53.34 in 2026/27/28.

Diversifying catalysts from advanced packaging expansion

We model All Ring's semiconductor equipment business to grow at a 34% CAGR from 2026-28E, driven by 1) packaging and testing industry capex +46% CAGR led by TSMC CoWoS and ASE FoCoS expansion where All Ring has high share in chip level dispensing and heat sink, 2) rising TAM in diversifying advanced packaging technologies (FOPLP, SolC, CoPoS) from its Taiwan and US customers and 3) CPO optical coupling equipment surging to 29%/42% in '27/'28 (vs. 2% of sales in '26) as a 2nd leg to the advanced packaging opportunity, with the industry preparing capacity for commercialization.

Improving mix and scale lifting operating leverage

With its asset light business model outsourcing most of the tool production and focusing on system design, All Ring's growing revenue and resilient GMs at 50-55% backed by strong customer stickiness, flexibility on customization and favorable business mix upgrading with its customers could expand its OpMs from 29% in '26 to 34% in '28E.

40%+ earnings CAGR through '28 at compelling valuation

We think the shares appear attractive at 40x/25x '26/'27E P/E (vs. its peers 42x/26x) following pullback due to concerns on CPO delay and advanced packaging expansion moderation. Risks: 1) industry-wide AI investment slowdown, 2) Mis-execution in equipment development.

Estimates (Dec) (NT\$)	2024A	2025A	2026E	2027E	2028E
Net Income (Adjusted - mn)	1,311	1,485	2,549	4,028	5,137
EPS	14.57	15.46	26.46	41.82	53.34
EPS Change (YoY)	755.0%	6.1%	71.2%	58.0%	27.5%
Dividend / Share	10.19	11.79	18.00	30.00	35.00
Free Cash Flow / Share	7.82	15.04	1.29	34.30	36.12
Valuation (Dec)					
P/E	72.05x	67.92x	39.68x	25.11x	19.68x
Dividend Yield	0.970%	1.12%	1.71%	2.86%	3.33%
EV / EBITDA*	67.69x	59.78x	35.51x	22.03x	17.16x
Free Cash Flow Yield*	0.682%	1.40%	0.120%	3.20%	3.37%

* For full definitions of *IQmethod*SM measures, see page 29.

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Refer to important disclosures on page 30 to 32. Analyst Certification on page 27. Price Objective Basis/Risk on page 27.

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Stock Data

Price	1,050 TWD
Price Objective	1,500 TWD
Date Established	13-Jul-2026
Investment Opinion	C-1-7
52-Week Range	307.50 TWD-1,490 TWD
Mrkt Val / Shares Out (mn)	3,201 USD / 98.2
Market Value (mn)	103,103 TWD
Average Daily Value (mn)	86.84 USD
Free Float	80.4%
BofA Ticker / Exchange	XNQNF / TWO
Bloomberg / Reuters	6187 TT / 6187.TWO
ROE (2026E)	31.0%
Net Dbt to Eqty (Dec-2025A)	-52.8%

Glossary on Exhibit 52

iQprofileSM All Ring

Key Income Statement Data (Dec)	2024A	2025A	2026E	2027E	2028E
(NT\$ Millions)					
Sales	5,535	5,366	9,333	13,968	16,809
Gross Profit	2,717	2,913	4,940	7,499	9,100
Sell General & Admin Expense	(515)	(536)	(1,122)	(1,317)	(1,423)
Operating Profit	1,427	1,611	2,741	4,471	5,762
Net Interest & Other Income	139	202	285	311	331
Associates	NA	NA	NA	NA	NA
Pretax Income	1,566	1,813	3,026	4,782	6,093
Tax (expense) / Benefit	(255)	(316)	(476)	(749)	(950)
Net Income (Adjusted)	1,311	1,485	2,549	4,028	5,137
Average Fully Diluted Shares Outstanding	90	96	97	97	97

Key Cash Flow Statement Data

Net Income	1,311	1,485	2,549	4,028	5,137
Depreciation & Amortization	56	69	86	86	86
Change in Working Capital	(700)	256	(2,619)	(961)	(1,905)
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	413	148	780	784	784
Cash Flow from Operations	1,079	1,958	796	3,937	4,103
Capital Expenditure	(376)	(513)	(672)	(633)	(624)
(Acquisition) / Disposal of Investments	(201)	(241)	(161)	2	1
Other Cash Inflow / (Outflow)	218	88	117	(2)	1
Cash Flow from Investing	(359)	(666)	(716)	(634)	(623)
Shares Issue / (Repurchase)	1,394	0	0	0	0
Cost of Dividends Paid	(131)	(980)	(1,146)	(1,749)	(2,916)
Cash Flow from Financing	1,851	(645)	(1,143)	(1,741)	(2,908)
Free Cash Flow	704	1,445	124	3,303	3,478
Net Debt	(3,309)	(3,951)	(3,052)	(4,611)	(5,183)
Change in Net Debt	(2,008)	(503)	1,033	(1,561)	(572)

Key Balance Sheet Data

Property, Plant & Equipment	1,298	1,879	2,472	3,033	3,585
Other Non-Current Assets	1,168	1,396	1,544	1,539	1,538
Trade Receivables	1,552	806	2,456	3,055	4,311
Cash & Equivalents	3,599	4,297	3,267	4,826	5,398
Other Current Assets	1,179	1,232	4,029	5,040	6,791
Total Assets	8,796	9,609	13,768	17,493	21,623
Long-Term Debt	290	339	133	133	133
Other Non-Current Liabilities	131	142	144	144	144
Short-Term Debt	0	7	82	82	82
Other Current Liabilities	1,858	1,633	4,061	4,846	6,014
Total Liabilities	2,279	2,121	4,420	5,205	6,373
Total Equity	6,517	7,488	9,348	12,288	15,250
Total Equity & Liabilities	8,796	9,609	13,768	17,493	21,623

iQmethodSM - Bus Performance*

Return On Capital Employed	23.6%	18.4%	26.4%	34.0%	34.8%
Return On Equity	29.1%	21.5%	31.0%	37.9%	37.9%
Operating Margin	25.8%	30.0%	29.4%	32.0%	34.3%
EBITDA Margin	26.8%	31.3%	30.3%	32.6%	34.8%

iQmethodSM - Quality of Earnings*

Cash Realization Ratio	0.8x	1.3x	0.3x	1.0x	0.8x
Asset Replacement Ratio	8.0x	8.7x	9.3x	8.7x	8.6x
Tax Rate (Reported)	16.3%	17.5%	15.7%	15.7%	15.6%
Net Debt-to-Equity Ratio	-50.8%	-52.8%	-32.6%	-37.5%	-34.0%
Interest Cover	NM	NM	NM	NM	NM

Key Metrics

* For full definitions of iQmethodSM measures, see page 29.

Company Sector

Semiconductor Capital Equipment

Company Description

Founded in 1996, All Ring is a Taiwan-based semiconductor equipment supplier with core technologies spanning dispensing, attachment, AOI, optical coupling, and precision automation. Building on its initial expertise in passive component manufacturing equipment, the company has gradually expanded into the back-end semiconductor packaging market and established long-term partnerships with leading foundry and OSATs customers.

Investment Rationale

We have a Buy rating on All Ring, in view of its solid market position in the semiconductor advanced packaging equipment. We believe its long-standing relationships with leading foundry and OSATs, coupled with strong technology development capabilities, position the company well to capture the secular uptrend in AI-driven advanced packaging capacity expansion and rising equipment content.

Stock Data

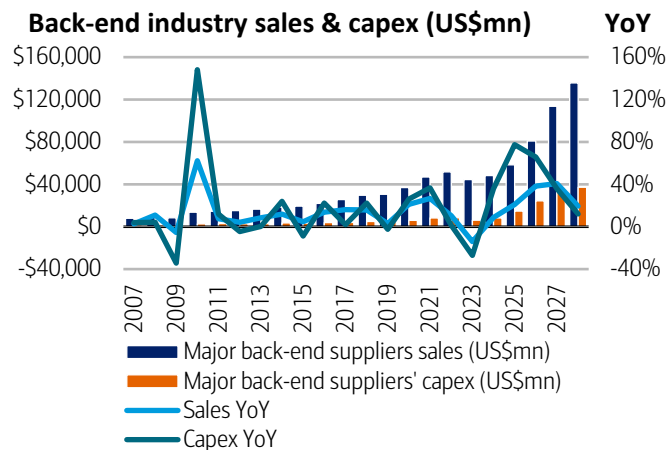
Price to Book Value

11.3x

Focus charts and tables

Exhibit 1: Semiconductor back-end sales, capex and growth trend

Back-end is now entering a new phase of expansion

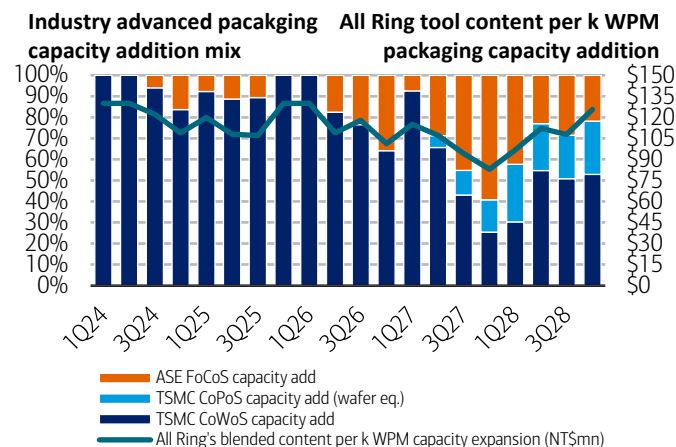


Source: BofA Global Research estimates

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Exhibit 3: All Ring's blended content vs. packaging capacity mix

Blended revenue will decline a bit in 2027 as FoCoS contribution ramps

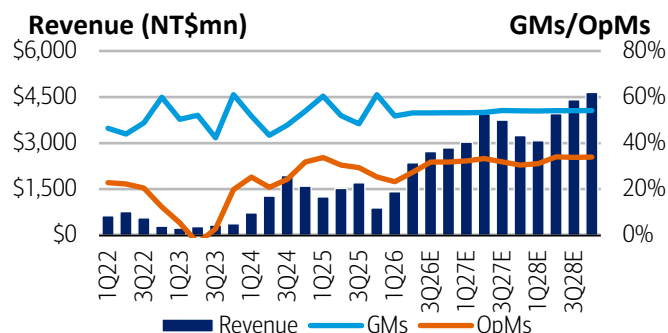


Source: BofA Global Research estimates

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Exhibit 5: All Ring quarterly revenue and GMs/OpMs

All Ring's sales should grow along with advanced packaging capacity expansion with resilient margins

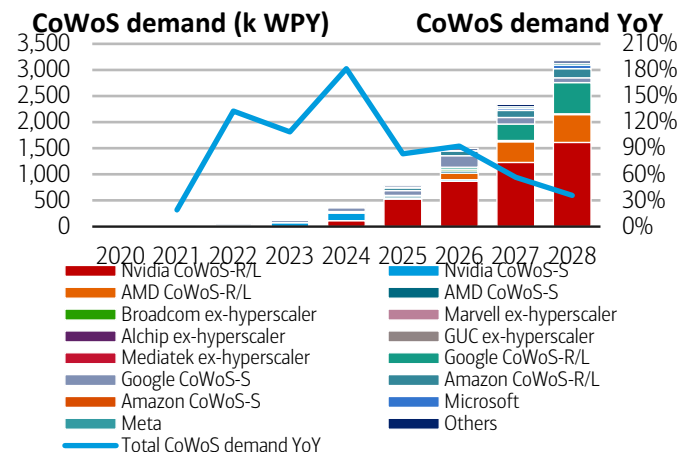


Source: BofA Global Research estimates, company data

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Exhibit 2: Industry CoWoS demand

CoWoS demand should remain strong through 2028

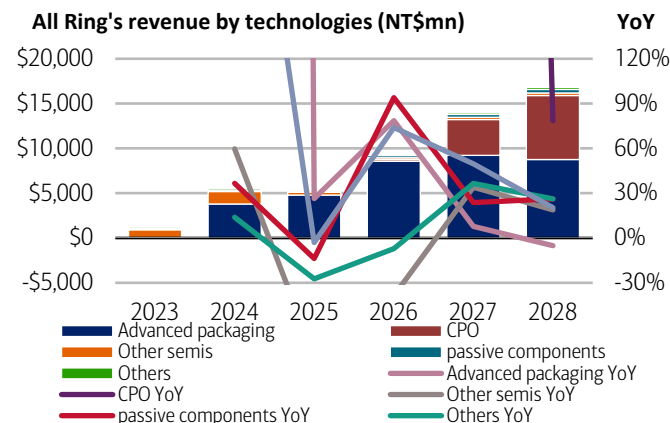


Source: BofA Global Research estimates

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Exhibit 4: All Ring's revenue by technologies

CPO should become another key growth engine from 2027

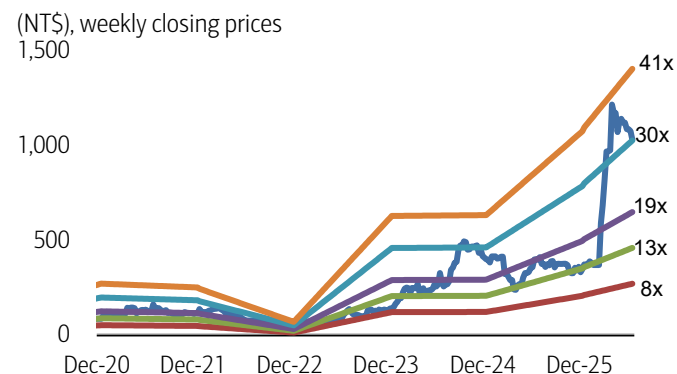


Source: BofA Global Research estimates

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Exhibit 6: All Ring's P/E valuation band

All Ring's P/E of 36x is at the upper band of its range

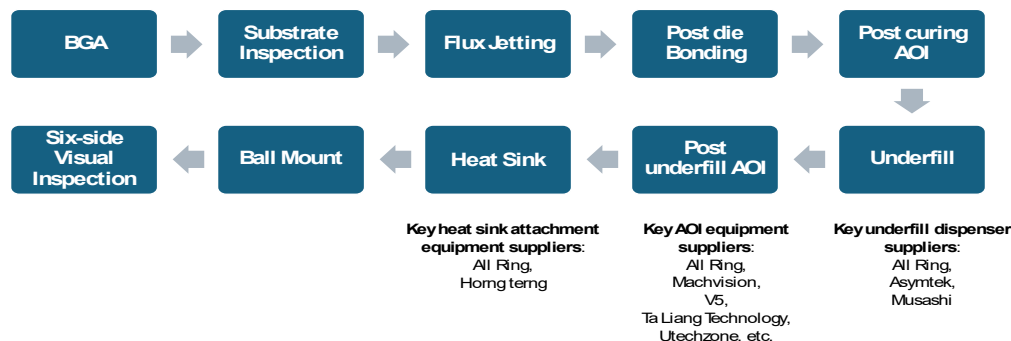


Source: BofA Global Research estimates

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Exhibit 7: Key oS process related to All Ring's equipment portfolio and All Ring's major competitors

All Ring mainly provides equipment for underfill, heat sink attachment, and AOI process



Source: BofA Global Research

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Exhibit 8: Peer valuation - All Ring vs. its equipment competitors

All Ring's valuation is still at a discount to its peers average

Ticker	Company	Share price (LC)	Rating	Mkt cap (US\$m)	PER (X)		EPS CAGR	ROE (%)		EV/EBITDA		Div. yield (%)	
					2026E	2027E		2026E	2027E	2026E	2027E	2026E	2027E
6187 TT	All Ring	1,050.0	BUY	3,203	39.7	25.1	42%	31.0	37.9	32.3	20.0	1.7	2.9
7751 TT	Horng Terng	1,295.0	NC	1,082	28.4	12.4	129%	47.2	124.7	n.a.	n.a.	2.0	4.1
NDSN US	Nordson	286.4	NC	15,956	24.7	22.8	8%	18.5	18.1	18.3	16.9	1.2	1.2
3563 TT	MACHVISION	721.0	NC	1,433	30.9	19.1	56%	22.5	34.7	23.4	13.2	2.9	n.a.
7822 TT	V5	998.0	NC	1,413	70.6	25.6	74%	27.4	24.4	46.2	32.3	1.3	2.1
6640 TT	Gallant Micro Machining	995.0	NC	882	36.9	21.8	70%	36.1	57.7	n.a.	n.a.	2.3	3.7
2467 TT	C Sun	556.0	NC	2,708	40.4	28.8	40%	30.9	34.0	30.4	21.2	1.7	2.4
3131 TT	GPTC	3,305.0	BUY	3,000	47.0	28.2	52%	41.5	56.8	42.6	22.4	1.5	2.5
3583 TT	Sciencetech	817.0	NC	2,039	40.9	27.8	44%	23.5	27.7	25.2	16.6	1.2	1.7
BESI NA	BE Semiconductor	254.8	BUY	23,662	59.1	35.4	57%	69.4	84.6	44.9	28.2	1.6	2.7
042700 KS	Hanmi Semiconductor	223,000.0	BUY	14,053	70.7	36.9	83%	37.3	49.8	53.9	26.9	0.5	0.9
6590 JP	Shibaura (N.A.)	5,930.0	NC	2,560	23.7	20.7	28%	23.7	25.8	n.a.	n.a.	1.5	2.0
KLIC US	Kulicke & Soffa	111.4	NC	5,829	33.2	26.3	15%	20.9	23.9	n.a.	n.a.	0.7	0.7
Taiwan peers average					42.1	23.4	67%	32.7	51.4	33.6	21.1	1.8	2.7
Overseas peers average					42.3	28.4	38%	33.9	40.4	39.1	24.0	1.1	1.5
Global peers average					42.2	25.5	55%	33.2	46.8	35.6	22.2	1.5	2.2

Source: BofA Global Research estimates, Bloomberg

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Exhibit 9: All Ring's 2026-2028 estimates – BofA vs. Street

BofA estimates for 2028 are 5% behind consensus on more realistic capacity expansion and new technology ramp assumptions

	2025				2026E				2027E				2028E			
	Actual	BofAe	Street	vs. street	BofAe	Street	vs. street	BofAe	Street	vs. street	BofAe	Street	vs. street	BofAe	Street	vs. street
Sales (NT\$m)	\$5,366	\$9,333	\$8,671	8%	\$13,968	\$13,954	0%	\$16,809	\$18,272	-8%						
Sales QoQ / YoY (%)		73.9%	61.6%		49.7%	60.9%		20.3%	30.9%							
Gross profit (NT\$m)	\$2,913	\$4,940	\$4,608	7%	\$7,499	\$7,426	1%	\$9,100	\$10,050	-9%						
GMs (%)	54.3%	52.9%	53.2%	0%	53.7%	53.2%	0%	54.1%	55.0%	-1%						
Operating profit (NT\$m)	\$1,611	\$2,741	\$2,723	1%	\$4,471	\$4,805	-7%	\$5,762	\$6,419	-10%						
OpMs (%)	30.0%	29.4%	31.4%	-2%	32.0%	34.4%	-2%	34.3%	35.1%	-1%						
Pretax profit (NT\$m)	\$1,813	\$3,026	\$2,846	6%	\$4,782	\$4,920	-3%	\$6,093	\$6,573	-7%						
Pretax margins (%)	33.8%	32.4%	32.8%	0%	34.2%	35.3%	-1%	36.2%	36.0%	0%						
Tax expense (NT\$m)	-\$328	-\$478	-\$506	-5%	-\$755	-\$890	-15%	-\$956	-\$1,192	-20%						
Tax rate (%)	18.1%	15.8%	17.8%	-2%	15.8%	18.1%	-2%	15.7%	18.1%	-2%						
Net profit (NT\$m)	\$1,485	\$2,549	\$2,341	9%	\$4,028	\$4,030	0%	\$5,137	\$5,382	-5%						
Net margins (%)	27.7%	27.3%	27.0%	0%	28.8%	28.9%	0%	30.6%	29.5%	1%						
EPS (NT\$)	\$15.46	\$26.46	\$26.75	-1%	\$41.82	\$41.47	1%	\$53.34	\$55.89	-5%						

Source: BofA Global research estimates, Bloomberg

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Ride on advanced packaging uptrend with solid market position

All Ring was founded in 1996 headquartered in Kaohsiung and listed on the Taiwan Exchange in 2002. It started business from supplying the passive component automation equipment in early 2000 during the industry supply tightness and growing trend of import substitution with limited domestic tool available at that time. However, with the MLCC industry supply consolidated through the cycles and emerging China competitors, the company diversified its R&D focus to LED process equipment in 2008 and more importantly the semiconductor back-end equipment development since early 2010s. The early stage business transformation shifted its sales exposure from heavily relying on passive equipment from 2000-10 to 40% passives, 30% semis and 30% LCD/LED in '13.

Exhibit 10: All Ring's key development milestone

All Ring was reorganized as a semiconductor tool provider since 2016

Year	Milestone
1996	All Ring was established and mainly developed passive component automation equipment
2002	Listed on Taipei Exchange
2008	Developed LED process equipment
2013	Developed SiP process equipment
2015	Developed PSA attachment equipment
2016-2017	Developed ACF/OCA attachment, AOI for advanced packaging, underfill dispenser, etc.
2020-2021	Developed AOI six-sided inspection equipment, wafer inspection equipment, etc.
2022	Developed heat sink attachment equipment for film TIM
2023	Developed heat sink attachment equipment for metal TIM, dual-valve underfill dispenser, etc.
	Sales accelerated along with TSMC CoWoS capacity expansion

Source: BofA Global Research, Company data

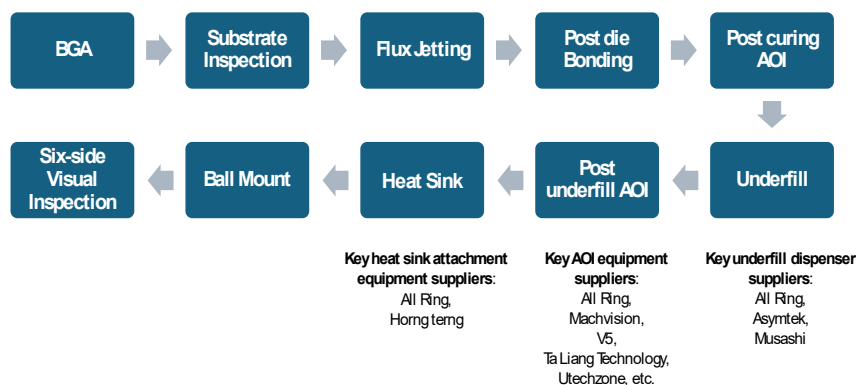
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A more important milestone for the company happened in mid-2010s when its semiconductor packaging equipment solutions saw more customer traction more than offsetting the headwind it faced in the LCD/LED business seeing oversupply and China competition. All Ring was reorganized as a semiconductor tool provider since 2016 through accelerating its equipment roadmap and localizing its R&D/service teams next to the back-end clusters. Specifically, it rebuilds its R&D capability around software strength, with 60% of its R&D headcount in software engineers. Based on our estimate, the company generated 95% revenue from its semiconductor business in 2025, followed by 2% from passive component equipment sales and 3% from the rest of the business.

Asset light model: focusing on hardware and software design while outsourcing the equipment production

Exhibit 11: Key oS process related to All Ring's equipment portfolio and All Ring's major competitors

All Ring mainly provides equipment for underfill, heat sink attachment, and AOI process



Source: BofA Global Research

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Instead of owning its production lines, All Ring runs the asset-light design-assembly-integration model by outsourcing the majority of the equipment production to its subcontracting partners. In the meantime, it sources the critical components including precision stages, vision systems and dispense valve while focuses on proprietary design work including the recipe buildup, optics integration, and control code.

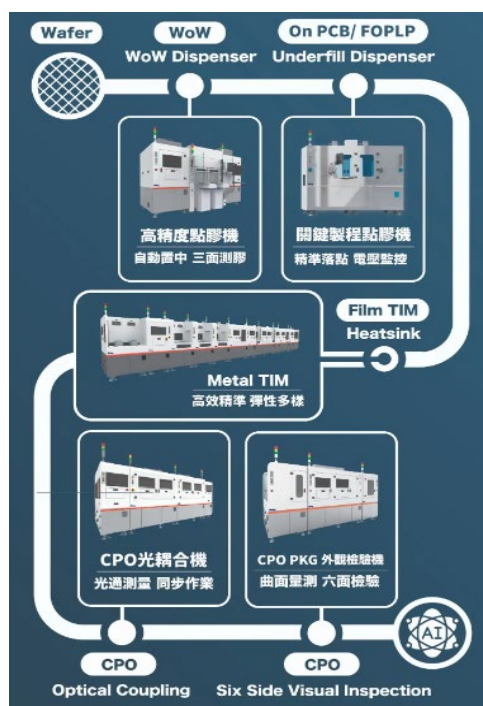
The effort on getting qualified by the foundry and OSAT customers and re-building itself as an integrated equipment supplier for advanced packaging started bearing fruit in 2023 when AI capex accelerated, with its sales up by 360% YoY in 2024 along with TSMC's CoWoS capacity expansion dominated All Ring's sales. In addition, it won itself the recognition by its major foundry and OSAT partners including TSMC's innovation supplier awards in 2025 and ASE's supplier award.

A comprehensive back-end equipment portfolio provides its customers with one stop shopping solution

All Ring's equipment catalog maps directly to the steps becoming more challenging as AI semiconductor packaging technology migrates from conventional flip chip to CoWoS, SoIC, CPO, panel level packaging and higher power thermal modules. The technology upgrade requires higher level of precision material dispensing, heterogenous bonding, thermal interface control, in-line inspection, optical coupling and full line automation. We profile the company's major products including dispensing, AOI, bonding, optical coupling and precision automation as below:

Exhibit 12: All Ring's major equipment offerings

All Ring has solutions across underfill dispensing, TIM, CPO coupling and automation

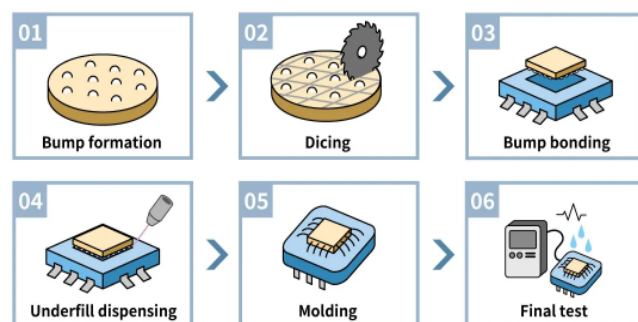


Source: BofA Global Research, Company data

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Exhibit 13: Major back-end process steps

Semis back-end process typically includes bonding, bumping, dicing, underfill dispensing, molding and testing



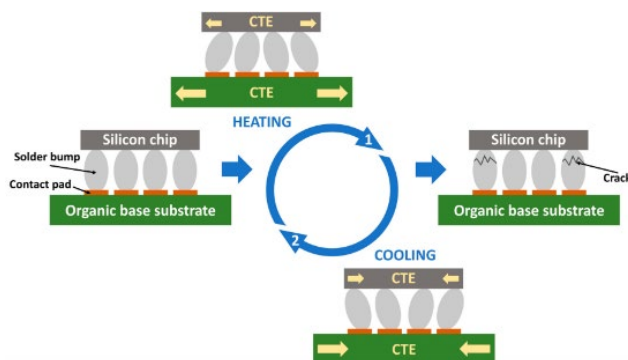
Source: Rapidus, BofA Global Research

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- 1. Dispensing:** All Ring's most important product as it sits at the intersection of yield, reliability and package scaling. In advanced packaging, dispense tools are used for underfill, dam-and-fill, flux spray, adhesive coating and encapsulation-adjacent steps in the increasing large-area wafer/panel-level processes.

Exhibit 14: Chipset with underfill protection prevents malfunction through heating/cooling cycles

CTE mismatch between the chip and organic substrate under thermal cycling could lead to mechanism failure easily without underfill



Source: MDPI, "Underfill: A Review of Reliability Improvement Methods in Electronics Production"
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Dispensing is critical as it requires void-free flow around tens of thousands of micro-bumps to improve the chipset reliability across the interposers which are getting larger as the technology migrates, with TSMC's CoWoS capable of 5.5x reticle chipset package now and targeted to support up to 9x/14x reticle size package in 2027/28 amid more complex chipset design.

All Ring's dispense portfolio covers several material-delivery categories including piezo dispensing platform for micro volume and high-speed dispensing with nano-liter level control, screw-pump platform addresses high viscosity materials (e.g. silver/thermal paste) and spray dispensing designed for non-contact, large area thin layer coating including under-fill like materials.

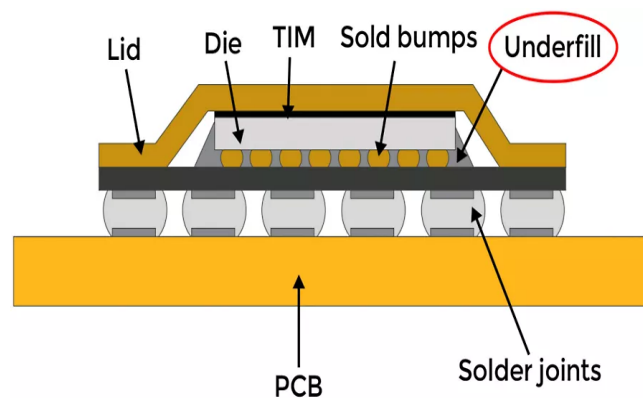
Importantly, All Ring's knowledge in dispensing compounds through its process recipes and customer qualification over the past decade rather than hardware itself. It has also been developing the dispensing valve in house, making the platforms highly customizable to customers' process specs with real time inspection, auto-calibration and cross machine automation, further strengthening the yield control on the advanced packaging processes.

While competing with its global peers including Asymtek in the US and Musashi Engineering in Japan, the key strength All Ring has is it has been co-developing with TSMC on the recipes for CoWoS which was subsequently used by ASE for further capacity expansion as the business outflows, allowing the company to gain meaningful share along with the industry growth. We believe All Ring as a qualified local supplier with strong track record at its foundry and OSAT customers should be in a solid position to capture further share beyond its currently leading position in the WoS dispensing equipment supply.

2. **Thermal/heat-sink attach.** The thermal interface between the logic die, package lid, heat spreader and system cooling solutions becomes more critical to device reliability control, especially with AI and HPC packages moving to higher power density. For All Ring, it has process solutions across film TIM, metal TIM and paste TIM, providing micron-level thickness control, high uniformity coating / bonding, void control and process repeatability. In addition, the company offers thermal compression solutions which can reduce interfacial voids, improve bonding uniformity and enhance thermal conductivity, suitable for high-power and high-density packages widely adopted in AI applications.

Exhibit 15: Flip chip underfill diagram

Underfill enhances the reliability of chipset in different environment



Source: Ansys

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Exhibit 16: Common types of TIMs used in semiconductor

Major TIMs include thermal grease, gap filler pads, thermal tapes/films, cured dispensed gap fillers and phase change materials



Source: Thermtest Instruments

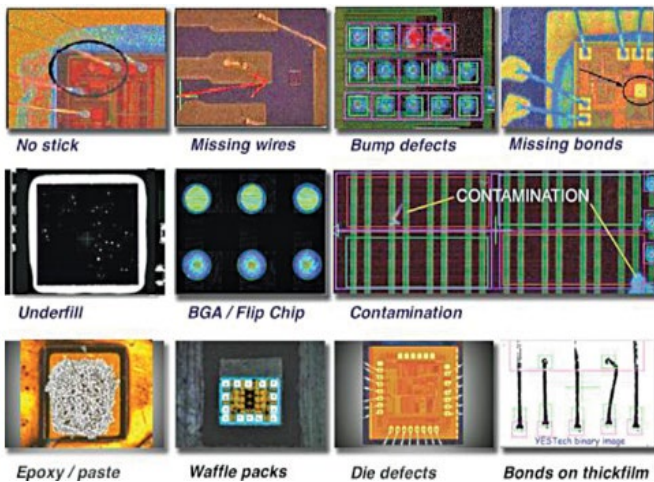
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Similar to underfill equipment supply for CoWoS capacity, while All Ring is competing with major back-end equipment suppliers (e.g. Shibaura, ASM Pacific), each heat sink requires customization but at low pricing, reducing the risk for 1st tier competitors to prioritize the business.

3. **AOI and optical inspection.** AOI is a yield protection and process feedback process across traditional and advanced packaging. All Ring's AOI platform features high precision positioning at the 20um level, multi-light source configurations and integration with loaders, unloaders and robotic handling and covers the functions including die-attach inspection, post dispensing inspection, solder-ball inspection and six-sided final inspection.

Exhibit 18: The defects AOI equipment checks

AOI checks components during manufacturing and ensures they meet the required design criteria



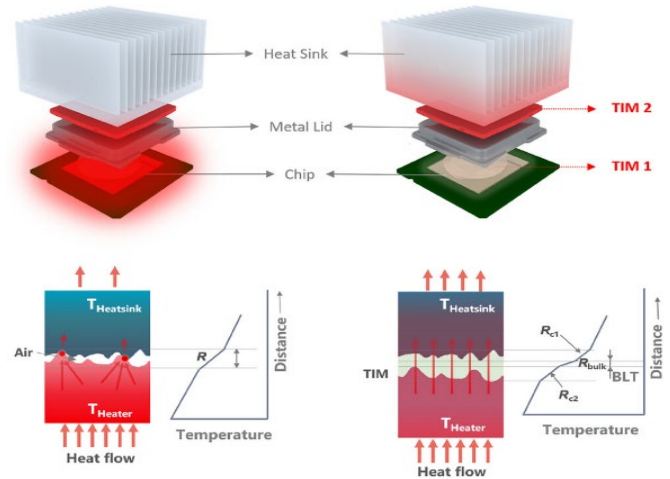
Source: Nordson YESTECH

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The business is growing its importance in the advanced packaging as the failure cost gets higher, with one undetected defect in a multi-die AI package scrapping the value of expensive logic tile, HBM and substrate. This is especially the case the stacking becomes more complex across 2.5D/3D packaging technologies.

Exhibit 17: Heat sink, metal lid, and TIM for chips

Thermal interface becomes more critical to device reliability control

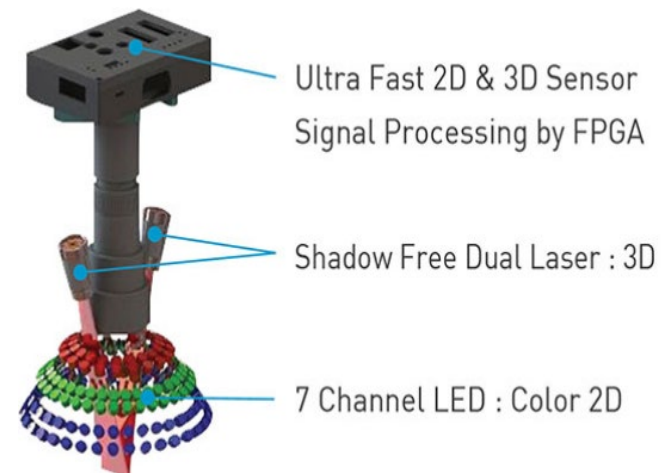


Source: SusMat "Thermal interface materials: From fundamental research to applications"

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Exhibit 19: The major components for 2D/3D AOI inspection

AOI system typically includes lighting system, inspection camera, conveyor system and software algorithm specifically designed for AOI



Source: Accelonix

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4. **CPO / optical coupling.** All Ring's optical coupling platform is designed for photonics integration, where the critical challenge is not placing components but aligning optical paths with sufficiently low insertion loss. To support the CPO development, the company developed a six-axis motion platform with real-time optical power feedback, passive/active alignment, 2.5um positioning accuracy, 5nL dispensing accuracy, UV curing compensation and immediate optical verification through power measurement and insertion loss testing.

While the sales contribution is limited at this stage, the business is strategically important as CPO manufacturing combines several of All Ring's existing competencies including precision alignment, adhesive dispense, curing compensation, optical verification, fragile material handling and automation. We would note the company at Semicon West in 2025 already demonstrated its optical coupling and precision dispensing system featuring an optical coupling platform for CoWoS chipset and FAU along with a 600mm x 600mm panel underfill dispenser for large size substrate packaging.

5. **Bonding/lamination and automation.** All Ring's bonding, lamination and automation business provides value add on the heterogeneous integration focusing on bonding-critical capabilities including micron-level alignment, multi-axis motion control, precise bonding force control and material compatibility. It is also important to note the company's strength on process tuning, data feedback and yield control, and shipping the full line/multi-process solutions to its customers rather than discrete equipment increases the customers' stickiness and lift the content it could capture per project.
6. **Legacy passive component and LED equipment.** All Ring provides cutting, coil winding, resistor stacking and LED sorters to its customers though the business has been declining to low single digit of its revenue with limited growth opportunity.

Expanding service network to support TSMC's manufacturing footprint expansion

With All Ring's business highly skewed toward advanced packaging in recent years, the company's customer mix is also led by ASE/SPIL at 44%/34% on the back of TSMC's continued outsourcing of the WoS business, followed by TSMC at 11%. Amkor following its Arizona facility readiness in 2H27 should also grow meaningfully to the company.

Notably, All Rings Board approved in 1Q26 to enlarge its US and Japan subsidiaries which we believe the main goal is to support TSMC's Arizona and Kumamoto advanced packaging ecosystem. With the company's proven track record and willingness to provide local R&D and real time service support, we expect it to be considered as the first batch of back-end equipment suppliers as TSMC grows its overseas capacity.

Solid sales backed by the accelerated advanced packaging expansion

The back-end packaging and testing industry has operated with more modest capex than front-end manufacturing with a lower level of technology complexity. This is evident from much lower capital intensity historically at 15-20% range. However, the slower technology migration and more affordable equipment have also attracted more competition, leading to a more fragmented supply landscape, and a higher level of cyclicity of the industry capex trend vs. foundries.

Historically, the industry would correct their capex every 1-2 years before another round of investment acceleration. However, in the current cycle, amid strong high-performance computing demand, the major back-end suppliers have been revising up their capex budget since 2H23. Following a 36% YoY capex growth in 2024, the back-end supply chain grew the capex by another 77% YoY to US\$15bn in 2025 and is on track to rise by



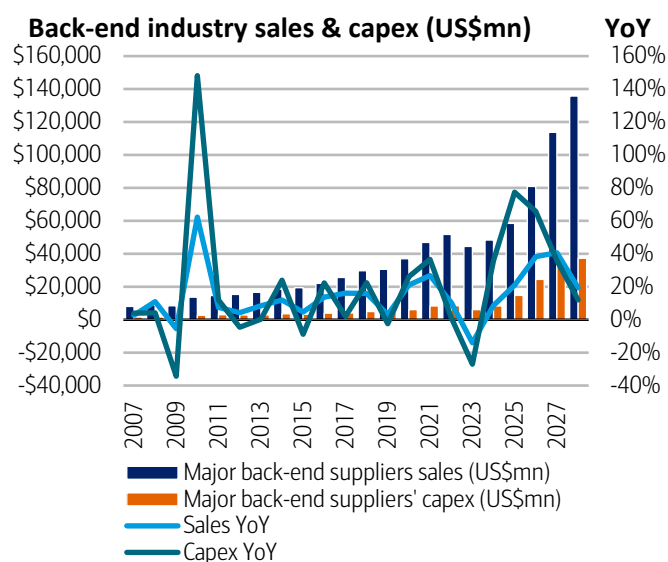
another 60% YoY US\$24bn in 2026. While the growth could be more moderate in 2027-28 at 40% CAGR off a high base, we believe the severe undersupply, the shift in competitive landscape with Intel ramping its own solutions along with the capacity builds for new technology ramp could drive the investment upside vs. our base case.

Specifically, based on our estimate, TSMC's back-end capex could grow by another 100% YoY in 2026, representing 31% of the industry back-end investment (vs. 24% in 2025), backed by its technology leadership in the advanced packaging solutions.

On top of TSMC's aggressiveness, ASE and Amkor's target to gain more exposure to capture the AI spillover orders in Taiwan and US will also drive the growth, supplemented by a modest acceleration of capital spending from Powertech for its panel level packaging deployment. Amid accelerating investment, the capital intensity for the back-end industry could rebound to 25-30%, the upper half of its long-term range, through the next few years until supply finally catches up with demand.

Exhibit 20: Semiconductor back-end sales, capex and growth trend

Back-end is now entering a new phase of expansion

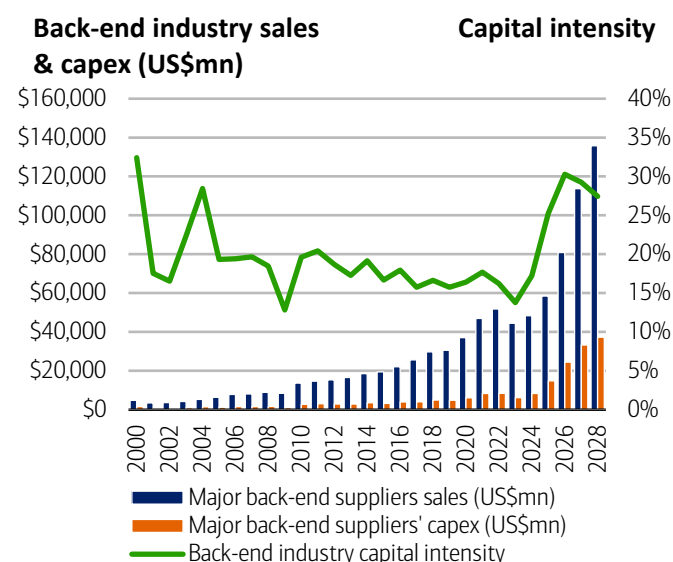


Source: BofA Global Research estimates

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Exhibit 21: Semiconductor back-end sales, capex and capital intensity

Back-end capital intensity rising from 2024-26 on advanced investment



Source: BofA Global Research estimates

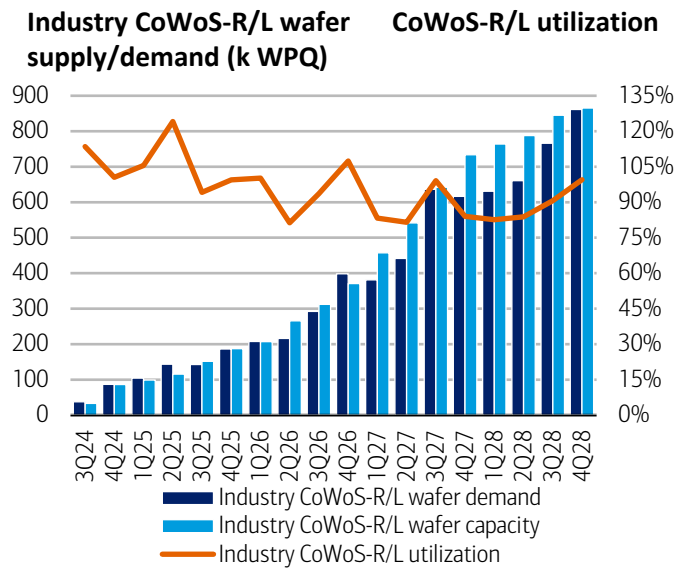
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From the capacity perspective, while TSMC is leading on the packaging technology innovation, the insufficient supply is driving more business outflow from the company. ASE and Amkor set to accelerate their CoWoS-like solutions, FoCoS and SWIFT, respectively from 2026-28 to accommodate more outsourcing demand from TSMC and direct orders from their fabless and system house customers.

With surging server CPU demand on top of the already strong order backlog for GPUs and ASICs, we estimate the industry's CoWoS supply will need to grow by 52% CAGR from 2026-28. TSMC will still lead the capacity expansion from 120k WPM in 4Q26 to 180k WPM in 4Q27, while the OSATs will also grow their portion of the supply with ASE and Amkor adding capacity to 70-75k WPM (vs. 30-35k in 4Q26) and 25-30k WPM (vs. 15-20k by 4Q26) in 4Q27 respectively. Specifically, while TSMC will still lead the supply for complex GPU and ASIC packaging, ASE grows as a major 2nd source with its capacity share growing from 14% of the industry in '26 to 23% in '27 and proven track record as the major CoWoS full process server provider for AMD's Venice server CPU.

Exhibit 22: Industry CoWoS-R/L supply/demand

CoWoS-R/L utilization should stay at high levels

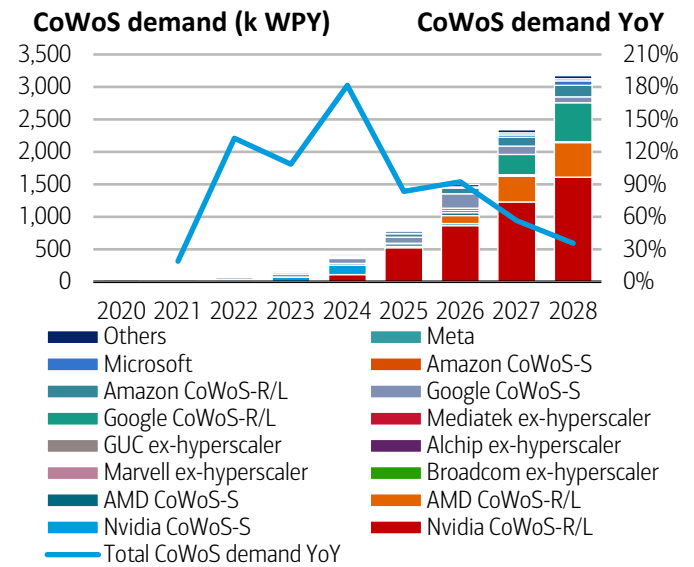


Source: BofA Global Research estimates

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Exhibit 23: Industry CoWoS demand

CoWoS demand should remain strong through 2028



Source: BofA Global Research estimates

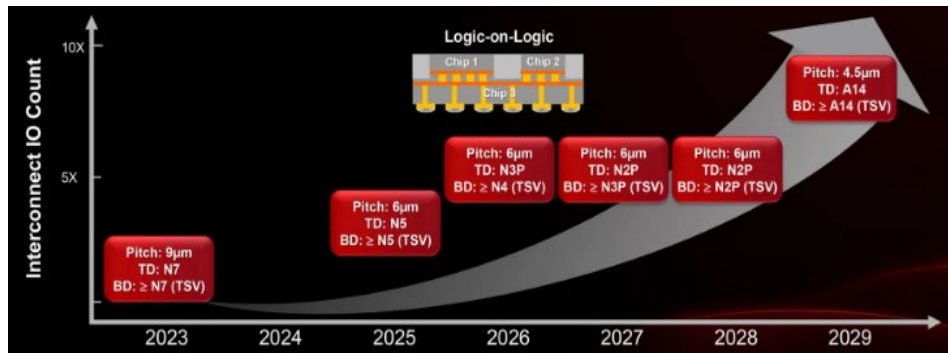
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Hybrid bonding the next frontier for performance boost

Beyond 2.5D packaging technology roadmap, the most critical inflection in high-end AI chipset packaging is the migration to direct copper to copper (Cu-Cu) hybrid bonding. Despite current challenges in thermal management, yield, bonding precision and test complexity, the much shorter interconnect distance and potentially higher bandwidth density 3D packaging could further enhance the chipset performance.

Exhibit 24: TSMC SoIC roadmap

3D hybrid bonding could achieve shorter interconnect distance and finer pitches



Source: TSMC

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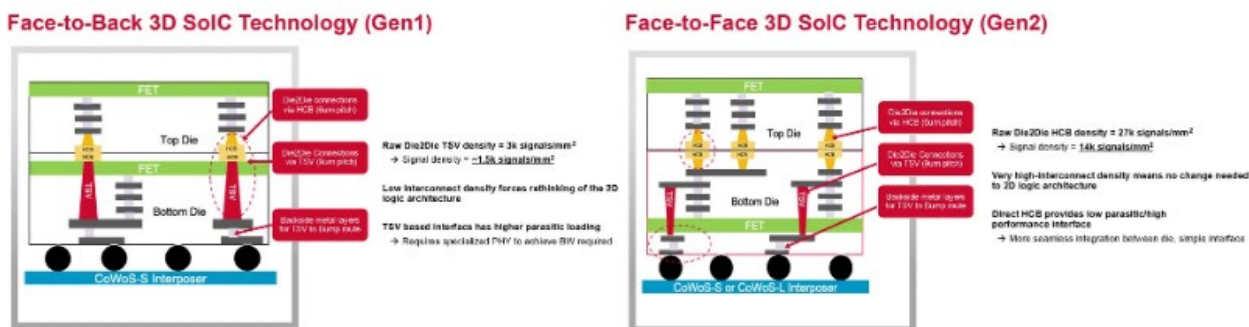
By abandoning legacy solder microbumps, 3D hybrid bonding achieves sub-10mm interconnect pitches, enabling vertical cache and logic stacking with low latency penalties. AMD has validated the roadmap with its 3D V-Cache and is accelerating its use in server CPUs, with its 6th generation EPYC Venice processors scaling up to 256 Zen 6 cores on TSMC's 2nm and leveraging a combination of TSMC's SoIC-X and CoWoS-L to manage the extreme compute density.

We expect Nvidia to leverage the solution for its Feynman GPU in 2028 for its LPU integration. The technology is also gaining more traction for the hyperscalers' CPUs to stack the compute tile with SRAM to enable wider memory bandwidth for faster data transmission, with Google in early engagement on developing its own server CPUs for multiple dies stacking based on the supply chain feedback.

Notably, Broadcom has also been working with Fujitsu to build the company's Monaka supercomputer CPU, a general-purpose data center processor featuring 4 computing tiles (36 ARMv9 cores per tile) on TSMC's 2nm set to ramp production in 2027. The computing tiles would be stacked face-to-face (F2F) with the SRAM chiplets built on 5nm through hybrid copper bonding (HCB), equipped with a large I/O die integrating DDR5 memory controllers and PCIe 6.0 connectivity with CXL 3.0 support. By stacking compute tiles with the SRAM tiles, the chipset could add meaningfully more cache to Armv9 cores to maximize their single-thread performance.

Exhibit 25: 3D SoIC technology

Face-to-Back and Face-to-Face 3D packaging technology comparison



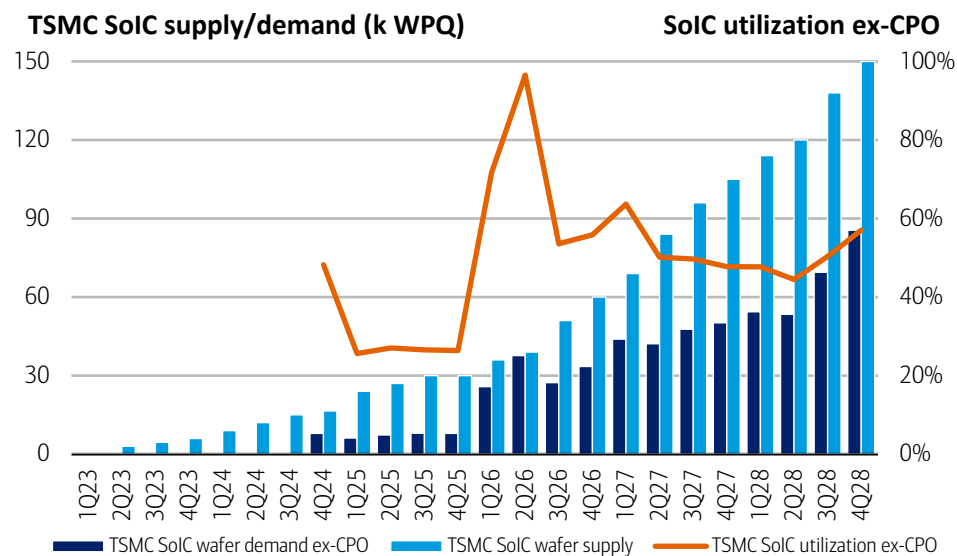
Source: TSMC

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We estimate TSMC's SoIC capacity will reach 20k WPM by 4Q26 and will need to grow to 35k WPM by 4Q27 and further to 50k WPM by 4Q28 with the applications proliferating from AMD's GPUs to Apple's M-series CPUs in 2026, hyperscalers' customized ARM based server CPUs in 2027 and adoption by Nvidia for its Feynman GPU along with the inflection of CPO penetration in 2028.

Exhibit 26: TSMC SoIC supply/demand trend

TSMC's SoIC capacity will reach 20k WPM by 4Q26 and will need to grow to 35k WPM by 4Q27



Source: BofA Global Research estimates

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Similar to CoWoS, the SoIC technology could be even more important for TSMC going forward and the capacity ramp could be steep given much faster data transmission

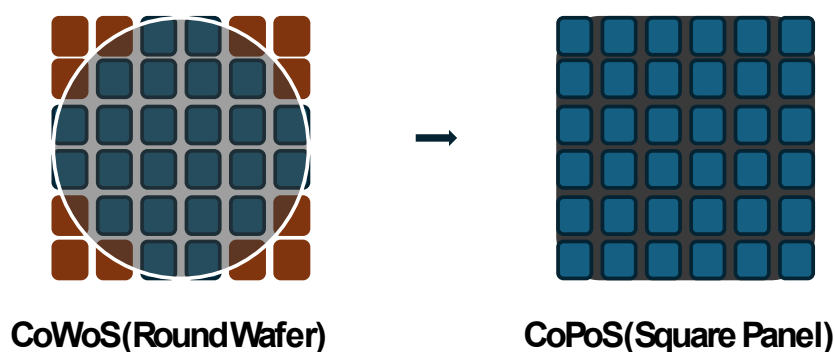
required for the HPC chipsets across CPUs, GPUs, AI accelerators and networking switches. At full utilization, we estimate SolC could contribute US\$2516mn annually to TSMC in 2028 (1% of the company's total sales)

CoPoS trial run in progress, providing another leg up in '27-28

Beyond CoWoS and SolC, the panel level packaging is also growing more customer traction for better yield control and cost efficiency vs. wafer level packaging as the package size for AI chipsets gets bigger. TSMC's CoPoS pilot line started tool deliveries for R&D purpose in late 1Q26 and pilot production line is set to be ready around mid-'26. TSMC is standardizing the 310 x 310 mm panel format to validate its equipment and material supply chain in 2026-27 before moving the technology to mass production in late 2028. It also has the goal to deliver 510 x 515mm panel technology for better economics of scale though the ramp schedule could be further beyond.

Exhibit 27: CoWoS vs. CoPoS

CoPoS provides better production efficiency than CoWoS



Source: BofA Global Research

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For All Ring, the company has announced its 600mm x 600mm panel dispenser in 2025 for underfill, designed for large format substrate packaging with multi-valve synchronized dispensing, closed loop flow control and temperature uniformity management to improve process stability and yield for panel level packaging applications. In addition, the company developed a fan out panel level packaging dispenser supporting the packaging applications across CoPoS, CoWoS, SolC, CPO, IPD and InFO, with quad-pump architecture and in line automation integration.

While CoPoS technology may not be commercially ready until late 2028, we believe the milestone of the equipment qualification by TSMC would be critical in the next few quarters as the company could start pulling in equipment for the capacity ramp from 2H27 to support a fast capacity ramp in 2028-29 depending on the technology availability and customers' demand, lifting the addressable market for All Ring similar to the 1st wave of the CoWoS capacity build acceleration in 2023-24.

Dispensing content grows as advanced packaging technology migrates

Along with the industry's capacity expansion on the CoWoS and SolC and spec upgrade in these technologies, we believe the importance of dispensing will grow as the underfill protects microbumps, redistributes mechanical stress, fills tiny gaps, suppresses voids and improve thermal-cycle reliability. Notably, on the wafer level, the capillary underfill volume would scale with interposer area and bump count while the dispense time will ramp with flow length and pass count as large multi-die packages require more

controlled material flow, better void suppression and more repeatable dispensing recipes. TSMC also stated RDL layer and C4 /underfill layers provide a buffer against CTE mismatch and reduce strain energy density in the C4 bump area.

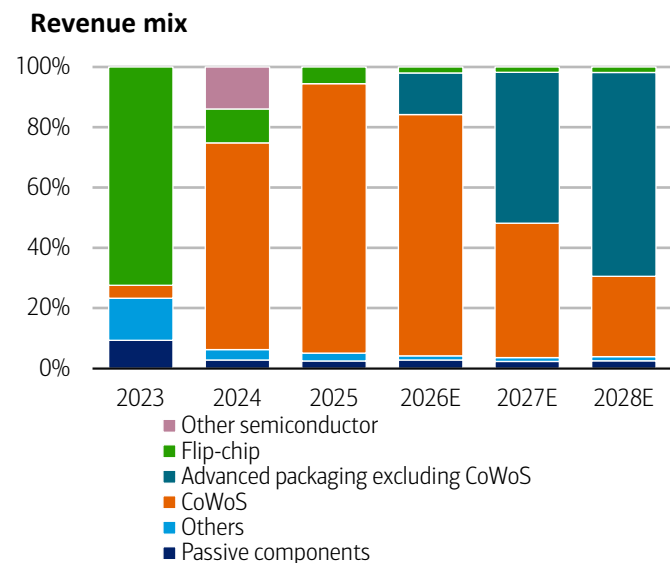
From the technology perspective, moving from 3.3x reticle package to 5.5x implies 67% interposer area growth and would be 4.2x the area when further moving to 14x reticle size CoWoS packaging when TSMC commercializes the solution in 2028. In addition, more compute tiles and HBM stacks in larger reticle size CoWoS means more die edges, microbump fields, dispense keep-out zones, leading to higher chance for voids / flow defects. The multi-layer local silicon interface in CoWoS-L vs. single silicon interposer for CoWoS-S also drives another layer of package design variation, favoring recipe-intensive dispensing suppliers who can customize their solutions for their customers.

For instance, a 4x reticle Rubin GPU interposer carries 3x the area of a Hopper GPU package, driving more dispense passes, longer flow and cure cycles and tighter void-control windows and lifting the number of dispenser demand per 1k WPM. On top of longer dispensing process, the migration from CoWoS-S for Hopper GPU packaging to CoWoS-L adds bridge level underfill and encapsulation insertions.

At this stage, while All Ring at this stage mostly supplies its dispensing solutions for the chipset level on-substrate process of the CoWoS technology and is seeing limited benefit from the higher level of complexity in the wafer process, we believe the fast growing unit demand of the semiconductor chipsets should still allow the company to grow along with industry capacity growth. Notably, ASE already kicked off 15 greenfield facility construction for its plan to accelerate capacity expansion across advanced packaging and testing though 2030.

Exhibit 28: All Ring revenue mix by technologies

CoWoS revenue ramped up meaningfully from 2024

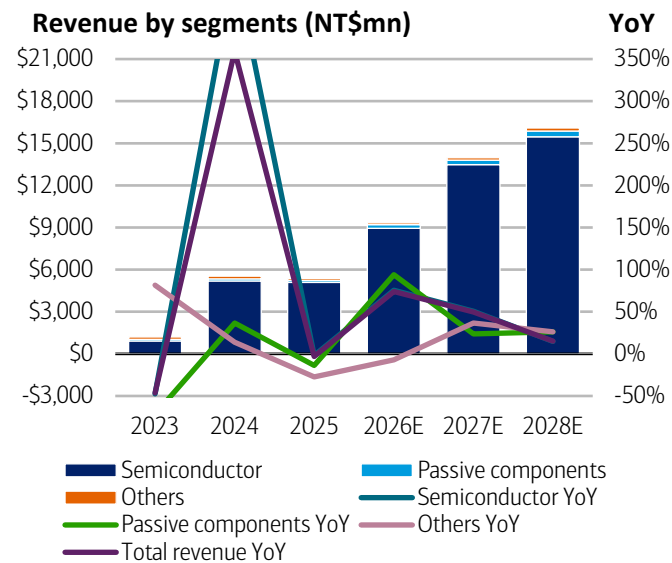


Source: BofA Global research estimates

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Exhibit 29: All Ring revenue by segments

Semiconductor segment is the main sales driver



Source: BofA Global research estimates

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Comprehensive TIM offerings lift bar for competition

AI/HPC chipset power density grows as compute silicon gets bigger and more HBM and die to die functions are integrated, forcing the thermal path to handle a much larger heat flux over a larger and more mechanically fragile package. The lid/heat-spreader area also grows with package area, resulting a higher requirement of TIM thickness uniformity. In addition, the die height difference in a package would lead to higher thermal resistance while underfill/TIM voids can create another layer of reliability and hot-spot issues.

Beyond the physical challenges, the material mix to form TIM becomes complicated as each solution (e.g. paste TIM, metal TIM and film TIM) is not interchangeable. High-end AI packages may need different TIM material systems depending on customer power target, lid design, reliability requirement and module architecture.

All Ring's platform supports different TIM solutions to fit customers' requirements while its integrated thermal process solutions emphasize multi-process integration, lower manual intervention, reduced alignment errors, stable cycle time and better reliability. The capability is more valuable as package size grows, with induced warpage and alignment variation meaningfully impacting production yield. As one of the few qualified suppliers for TIM attach in the CoWoS flow and even more limited competition providing total solutions, we believe All Ring's business should drive significant content opportunity at an accretive margin.

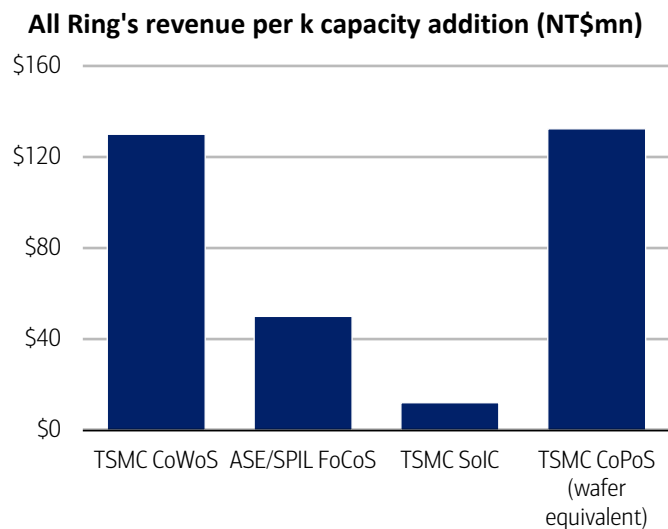
Industry capacity growth and content gains supporting business visibility at resilient margins

We believe All Ring should maintain its high share in the dispensing equipment supply in the CoWoS and the upcoming CoPoS solutions through its strong technology capability in meeting the requirements from its foundry and OSAT customers across dispensing recipes, thermal process conditions, bonding parameters and inspection thresholds. In addition, compared with its global peers, the company has higher flexibility to provide highly customized solutions.

As packages become larger and more expensive, customers tend to prefer the equipment supply chain with track record rather than switching aggressively for cost savings. More importantly, the heat sink/TIM business should become a second growth engine for All Ring on more demand for TIM thickness control, heat spreader attach, bonding force control and void inspection. Along with its strength in dispensing, inspection and automation, this should drive higher level of customer stickiness.

Exhibit 30: All Ring's revenue per k capacity addition by technologies

CoWoS / CoPoS have higher content per k capacity on more TIM value



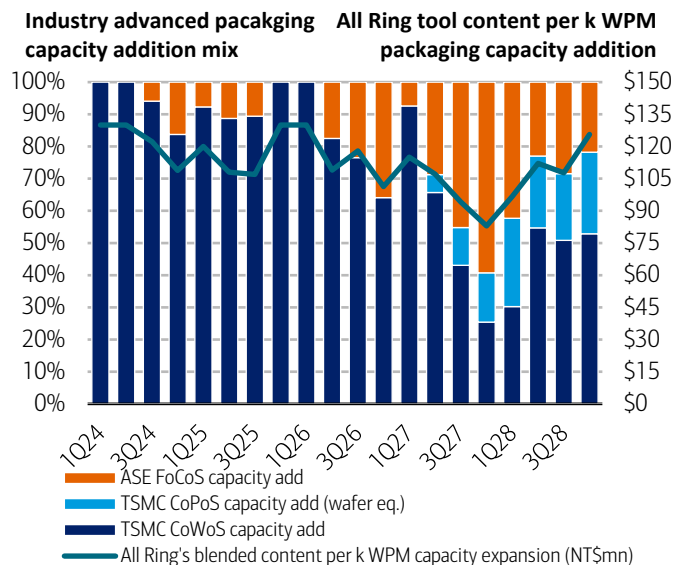
Source: BofA Global research estimates

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Based on our estimate of NT\$130mn revenue contribution per 1k WPM CoWoS capacity addition (slightly lower content for OSAT including ASE's FoCoS given different process flows), our bottom up analysis on the CoWoS capacity expansion, the content gain from throughput change for different technology and the consideration for lead time between equipment shipment vs. revenue recognition, we expect All Ring's advanced packaging related revenue in dispensing equipment and heat sink/TIM to grow from NT\$8.8bn in 2026 to NT\$15.9bn in 2028 at a CAGR of 35%.

Exhibit 31: All Ring's blended content vs. packaging capacity mix

Blended revenue will decline a bit in 2027 as FoCoS contribution ramps

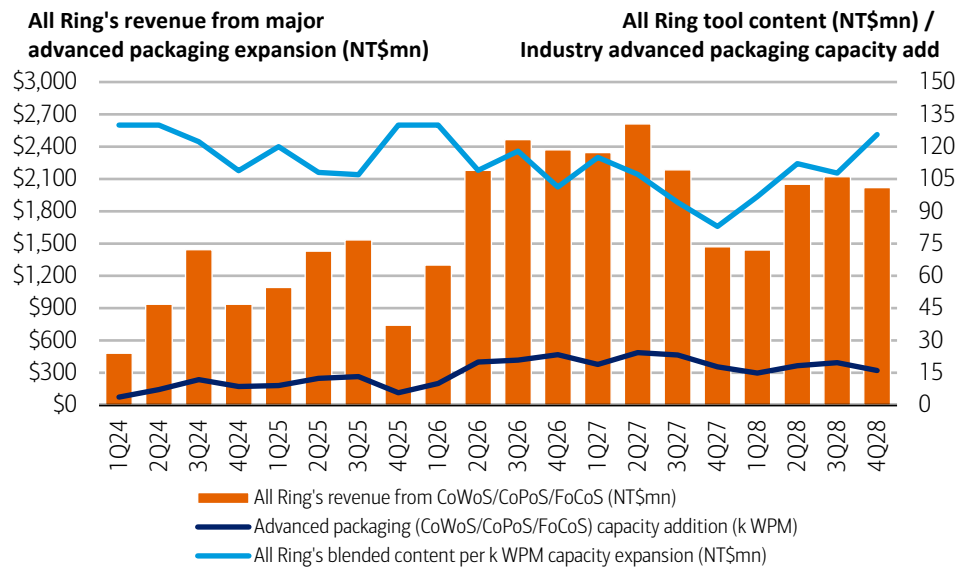


Source: BofA Global research estimates

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Exhibit 32: All Ring's advanced packaging business trend - unit, dollar content and revenue

All Ring's advanced packaging equipment revenue could see meaningful ramp from 2H26-2027



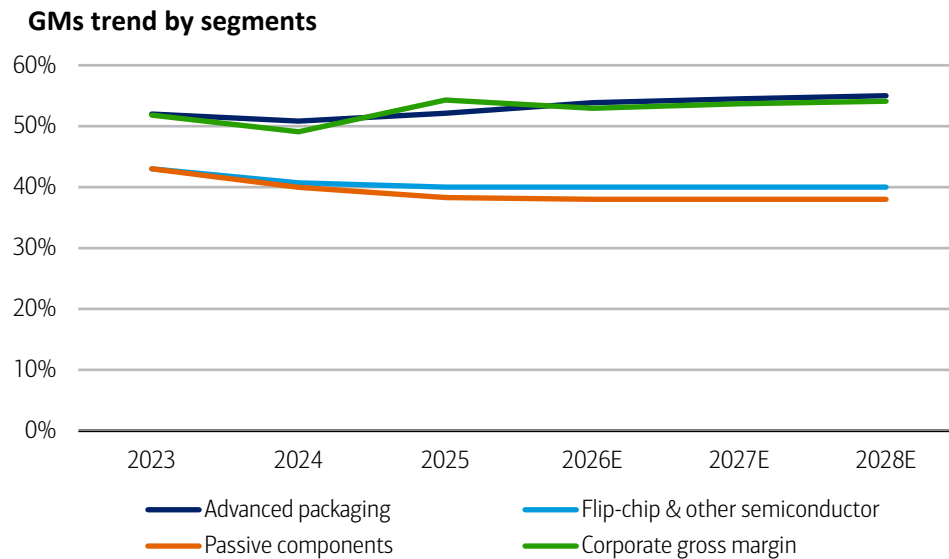
Source: BofA Global Research estimates

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With All Ring's GMs for advanced packaging and flip-chip/passive components sustaining at 54-55% and 38-40% respectively in the next few years, we believe its asset-light business model outsourcing the equipment production and focus on the hardware + software solution design could drive significant operating leverage in the next few years.

Exhibit 33: All Ring GMs trend by segments

GMs for advanced packaging equipment are higher than flip-chip/passive components



Source: BofA Global research estimates

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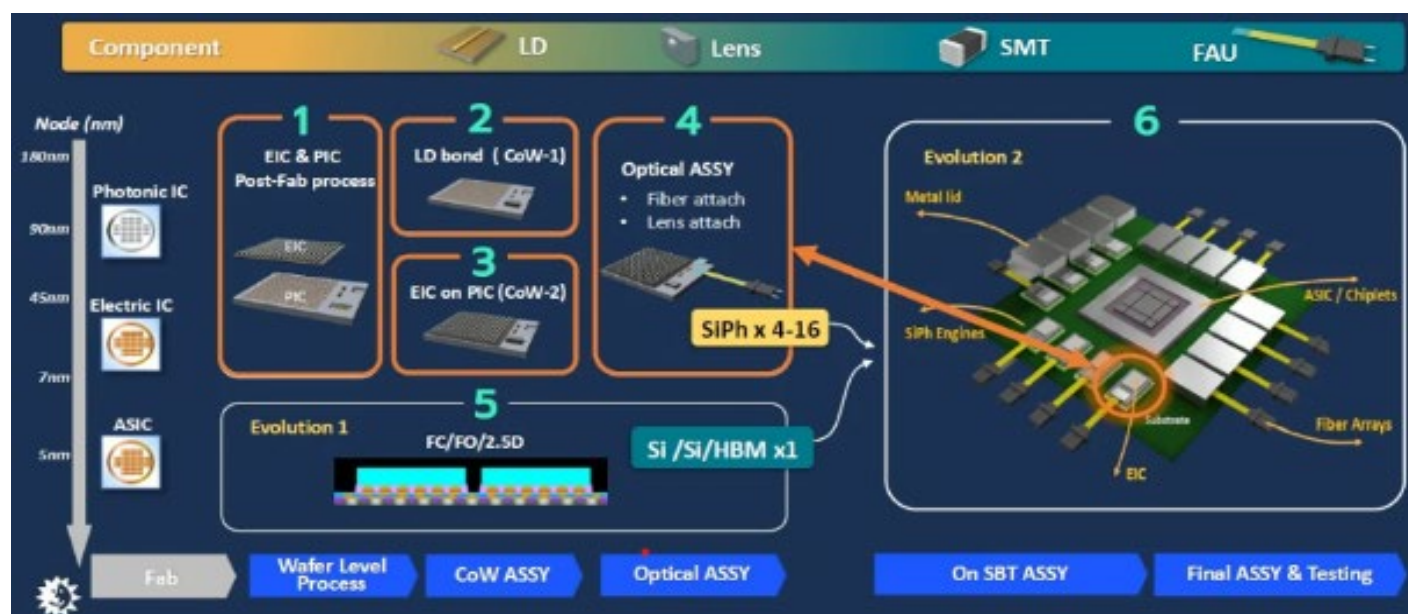
CPO as a 2nd growth leg inflecting in 2027

As we highlighted earlier, co-packaged optics (CPO) is moving toward measured adoption, with the supply chain indicating the foundries and OSATs are pulling in the first batch of the equipment for CPO pilot production from late 2Q26. With fast growing interconnect power control becoming important, we expect the initial ramp of the technology to kick off from 2027 for selected scale-out domains before a more meaningful adoption in 2028 for high-end scale-up networking switches. To support a

smooth and fast commercialization of the technology, the requirement for the equipment to deliver higher level of precision and productivity at efficient cost structure gets more stringent.

Exhibit 34: Process steps for co-packaged fabrication and assembly

The optical assembly between optical engine and fiber array unit requires high precision, leading to lower throughput



Source: ASE

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We believe All Ring should be well positioned in the equipment supply for CPO and silicon photonics as the one stop shopping solutions it provides in Taiwan across optical coupling along with its existing strength in dispensing, AOI, bonding, thermal and automation integration allows its customers to improve the production efficiency and access to the real time engineering support. Specifically, the company's CPO content is concentrated in four process modules including FAU optical-engine coupling, post attach AOI, integrated SiPh inspection/test cells and thermal attach solutions.

The company's strength is the FAU coupling cell which combines an in-house six-axis arm, machine-vision recognition, alignment search algorithm, epoxy dispensing and UV cure in one offering. This addresses the highest value bottleneck in the CPO flow across active optical alignment where sub-micro multi-channel tolerance, coupling loss and post-cure shift determine the yield and value of the tool. The key advantage is vertical control of the arm, vision and software stack which allows All Ring to improve cycle time internally rather than relying on 3rd party subsystems.

Another competitive edge All Ring has is the heat sink attach solutions as OE switch packages are sensitive to temperature and stress, making the attach force, warpage control and bond-line uniformity more demanding than in conventional lid attach. The company's existing TIM attach process knowledge should therefore be relevant, with graphene thermal sheet lamination representing potential upside.

With All Ring's proven track record in advanced packaging across precision motion, machine vision, dispense/cure control and inline inspection, The fast-growing equipment demand to enable CPO adoption gives the company and opportunity to diversify from its dominating sales exposure in the advanced packaging. Given the demanding requirement for the alignment between FAU and the OE engine with tight loss budgets, the barrier for the tool design and manufacturing is high as it needs to power the optical path, search the optimal position across six degrees of freedom, dispense UV epoxy, cure without excessive drift and re-verify insertion loss before the engine proceeds to AOI.

Exhibit 35: CPO networking switch shipment and wafer demand opportunity for TSMC

TSMC could see 3% sales contribution from CPO networking switches by '30 using its front-end and back-end solutions

	2024	2025	2026	2027	2028	2029	2030
25.6T switching ASIC	0	1	0	0	0	0	0
51.2T switching ASIC	0	1	0	0	0	2	5
102T switching ASIC	0	0	0	0	1	17	37
204T switching ASIC	0	0	0	0	25	125	313
57.6T IB switching ASIC	0	3	13	23	27	20	12
115.2T IB switching ASIC	0	0	0	0	3	10	20
Scale-out CPO Switches ('000 units)	0	4	13	23	56	174	386
NVLink switching ASIC 200G	0	0	1	27	94	125	157
NVLink switching ASIC 400G	0	0	0	1	22	320	717
Non-NVLink switching ASIC 200G	0	0	0	1	17	66	182
Non-NVLink switching ASIC 400G	0	0	0	0	0	0	0
Scale-up CPO Switches ('000 units)	0	0	1	29	134	511	1,056
Blended number of OE per switch (1.6T equivalent)	23	33	35	36	79	106	115
	2024	2025	2026	2027	2028	2029	2030
Wafer demand for scale-out switch ASIC	7	69	257	448	1,101	3,400	7,560
Wafer demand for scale-out optical engine	6	79	366	725	4,366	18,175	43,463
Wafer demand for scale-up switch ASIC	0	0	16	565	2,623	10,014	20,674
Wafer demand for scale-up optical engine	0	0	23	915	10,402	53,528	118,851
Total wafer demand for networking switch ASIC (units)	7	69	274	1,013	3,725	13,415	28,234
Total wafer demand for optical engine (units)	6	79	390	1,640	14,768	71,703	162,314

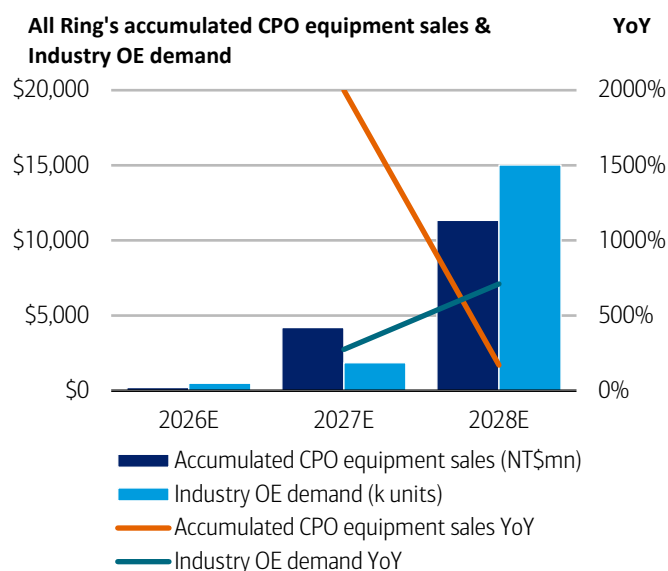
Source: BofA Global Research estimates

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Our top down model shows the total unit demand of CPO networking switch will grow at a CAGR of 219% from '26-30 to 1.4mn units (10% share of 51.2T+ switch), with scale-out +133% CAGR and scale-up +498% CAGR. Factoring the front/back-end production yield, the annual wafer consumption by switch ASICs and OEs could grow to 28k and 162k units respectively by '30.

Exhibit 36: All Ring's CPO sales and industry OE demand

All Ring's accumulated CPO sales ramps with industry OE shipment

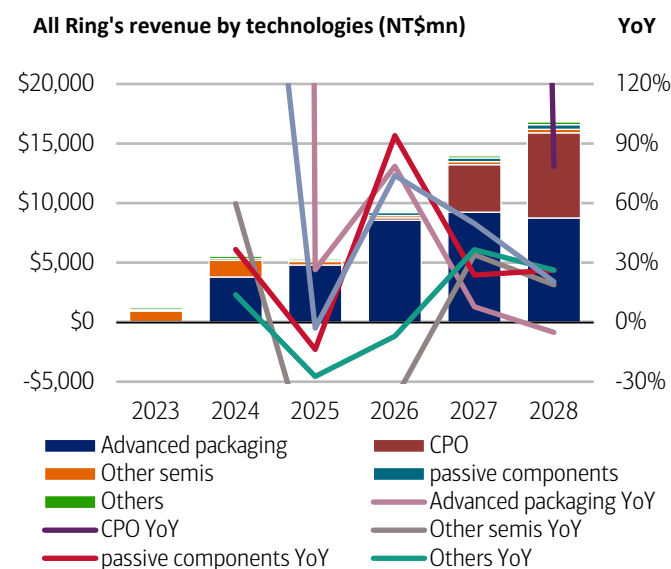


Source: BofA Global research estimates

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Exhibit 37: All Ring's revenue by technologies

CPO should become another key growth engine from 2027



Source: BofA Global research estimates, Advanced packaging includes CoWoS, CoPoS, FoCoS, FoPLP, SolC, etc.

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Along with fast growing demand for CPO switch, we expect CPO optical coupling equipment to start generating sales for All Ring from late-2026, with more meaningful shipment ramp-up in 2027/28. CPO would contribute 29%/42% of All Ring's total revenue in 2027/28 (up from only 2% in 2026) on higher equipment dollar content and larger scale of equipment installed base to satisfy customers' expected throughput.

Financial analysis: multiple growth catalysts drive OpMs expansion in '27-28

Exhibit 38: All Ring's Q26-4Q26 estimates – BofA vs. Street

BofA estimates for 2Q26/3Q26/4Q26 are 12%/3%/28% ahead of consensus

	1Q26	2Q26E				3Q26E			4Q26E	
	Actual	BofAe	Street	vs. street		BofAe	Street	vs. street	BofAe	Street
Sales (NT\$m)	\$1,411	\$2,355	\$2,076	13%		\$2,723	\$2,580	6%	\$2,844	\$2,362
Sales QoQ / YoY (%)		66.8%	47.1%			15.6%	24.3%		4.4%	-8.4%
Gross profit (NT\$m)	\$731	\$1,250	\$1,111	13%		\$1,447	\$1,377	5%	\$1,512	\$1,249
GMs (%)	51.8%	53.1%	53.5%	0%		53.1%	53.4%	0%	53.2%	52.9%
Operating profit (NT\$m)	\$328	\$644	\$639	1%		\$866	\$929	-7%	\$904	\$795
OpMs (%)	23.2%	27.3%	30.8%	-3%		31.8%	36.0%	-4%	31.8%	33.6%
Pretax profit (NT\$m)	\$387	\$711	\$624	14%		\$938	\$906	4%	\$990	\$760
Pretax margins (%)	27.4%	30.2%	30.1%	0%		34.5%	35.1%	-1%	34.8%	32.2%
Tax expense (NT\$m)	-\$63	-\$120	-\$118	1%		-\$148	-\$172	-14%	-\$148	-\$143
Tax rate (%)	16.2%	16.9%	19.0%	-2%		15.7%	18.9%	-3%	14.9%	18.8%
Net profit (NT\$m)	\$325	\$591	\$506	17%		\$791	\$735	8%	\$842	\$617
Net margins (%)	23.0%	25.1%	24.4%	1%		29.0%	28.5%	1%	29.6%	26.1%
EPS (NT\$)	\$3.37	\$6.14	\$5.50	12%		\$8.21	\$7.94	3%	\$8.74	\$6.82

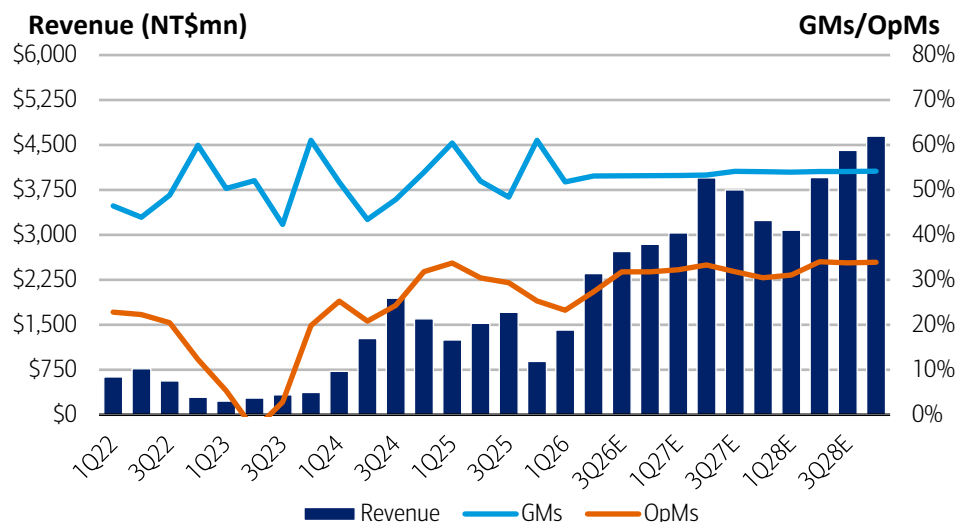
Source: BofA Global research estimates, Bloomberg

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All Ring's 2Q26 sales rose 67% QoQ, following a decent +59% QoQ in 1Q26, driven by rapid expansion of CoWoS capacity across its foundry and OSAT customers as advanced packaging remains one of the key bottlenecks with supply still undergrowing demand for AI chipset manufacturing. We expect 2Q26 GMs/OpMs to increase by 130bps/410bps QoQ to 53.1%/27.3% on growing revenue contribution from CoWoS-related equipment.

Exhibit 39: All Ring quarterly revenue and GMs/OpMs

All Ring's sales should grow along with advanced packaging capacity expansion with resilient margins



Source: BofA Global research estimates

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Off a high base in 2Q26, we model its sales to further grow by 16% QoQ in 3Q26 and another 4% QoQ growth in 4Q26 as we see its order visibility extending through 1Q27 underpinned by foundry/OSATs' aggressive plan for advanced packaging capacity ramp to catch up demand from their AI GPU, ASIC and CPU customers.

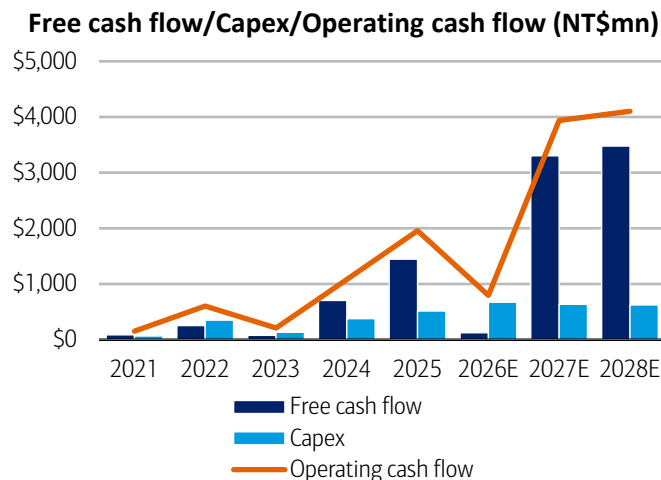
Looking into the outlook for 2026/2027, we model All Ring's revenue to rise 74%/50% YoY respectively, backed by the strength in CoWoS-related equipment orders, along with increasing contribution from OSAT partner's CoWoS-like capacity build and next generation advanced packaging technologies ramp.



On the other hand, traditional flip-chip packaging related equipment and passive component related equipment would remain stable due to limited growth catalyst. The improving mix shift toward advanced semiconductor packaging should lift its GMs mildly to 52.9%/53.7% in 2026/27 but more importantly its higher revenue scale could drive OpMs expansion to 32% in 2027.

Exhibit 40: All Ring's cash flow/ Capex trend

Free cash flow will continue to trend positively on a YoY basis

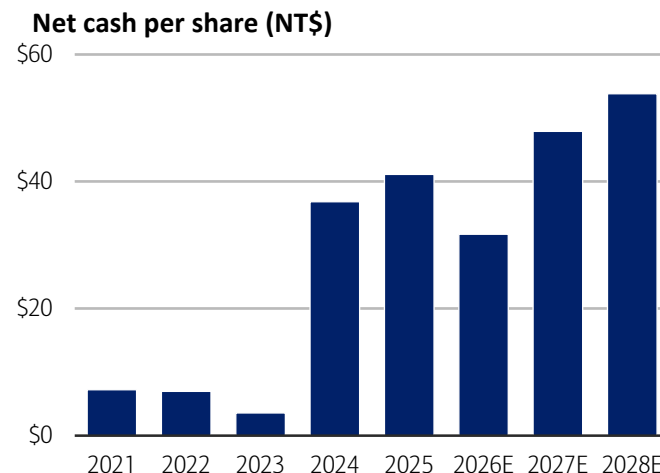


Source: BofA Global research estimates

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Exhibit 41: All Ring's net cash position

All Ring's net cash position per share will stay at over NT\$30 level



Source: BofA Global research estimates

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BofAe below consensus for '28 earnings on realistic expectations of packaging expansion and CPO adoption

When compared with consensus for 2027-28E EPS, our estimates are largely in line with the Street in 2027, while behind the Street by 5% in 2028. We believe our estimate adequately captures the multi-year capacity expansion cycle in advanced packaging industry on AI-related demand boom and increasing equipment dollar content on stringent packaging technology requirements. The Street may have overly positive assumption on industry SoIC/CoPoS capacity build and CPO equipment shipments.

Exhibit 42: All Ring's 2026-2028 estimates – BofA vs. Street

BofA estimates for 2028 are 5% behind consensus on more realistic capacity expansion and new technology ramp assumptions

	2025				2026E				2027E				2028E			
	Actual	BofAe	Street	vs. street	BofAe	Street	vs. street		BofAe	Street	vs. street		BofAe	Street	vs. street	
Sales (NT\$m)	\$5,366	\$9,333	\$8,671	8%	\$13,968	\$13,954	0%		\$16,809	\$18,272	-8%		\$16,809	\$18,272	-8%	
Sales QoQ / YoY (%)		73.9%	61.6%		49.7%	60.9%			20.3%	30.9%			20.3%	30.9%		
Gross profit (NT\$m)	\$2,913	\$4,940	\$4,608	7%	\$7,499	\$7,426	1%		\$9,100	\$10,050	-9%		\$9,100	\$10,050	-9%	
GMs (%)	54.3%	52.9%	53.2%	0%	53.7%	53.2%	0%		54.1%	55.0%	-1%		54.1%	55.0%	-1%	
Operating profit (NT\$m)	\$1,611	\$2,741	\$2,723	1%	\$4,471	\$4,805	-7%		\$5,762	\$6,419	-10%		\$5,762	\$6,419	-10%	
OpMs (%)	30.0%	29.4%	31.4%	-2%	32.0%	34.4%	-2%		34.3%	35.1%	-1%		34.3%	35.1%	-1%	
Pretax profit (NT\$m)	\$1,813	\$3,026	\$2,846	6%	\$4,782	\$4,920	-3%		\$6,093	\$6,573	-7%		\$6,093	\$6,573	-7%	
Pretax margins (%)	33.8%	32.4%	32.8%	0%	34.2%	35.3%	-1%		36.2%	36.0%	0%		36.2%	36.0%	0%	
Tax expense (NT\$m)	-\$328	-\$478	-\$506	-5%	-\$755	-\$890	-15%		-\$956	-\$1,192	-20%		-\$956	-\$1,192	-20%	
Tax rate (%)	18.1%	15.8%	17.8%	-2%	15.8%	18.1%	-2%		15.7%	18.1%	-2%		15.7%	18.1%	-2%	
Net profit (NT\$m)	\$1,485	\$2,549	\$2,341	9%	\$4,028	\$4,030	0%		\$5,137	\$5,382	-5%		\$5,137	\$5,382	-5%	
Net margins (%)	27.7%	27.3%	27.0%	0%	28.8%	28.9%	0%		30.6%	29.5%	1%		30.6%	29.5%	1%	
EPS (NT\$)	\$15.46	\$26.46	\$26.75	-1%	\$41.82	\$41.47	1%		\$53.34	\$55.89	-5%		\$53.34	\$55.89	-5%	

Source: BofA Global research estimates, Bloomberg

BofA GLOBAL RESEARCH

We see clear uptrend for All Ring's earnings trajectory through 2028, factoring 32% sales CAGR from advanced packaging over 2026-28E. Increasing complexity in new advanced packaging technologies, coupled with tighter technology migration timeline lead to stricter equipment qualifications and higher supplier switching costs. We believe this will strengthen customer stickiness to established suppliers, like All Ring, with proven product quality and capability to keep pace with packaging technology transition.

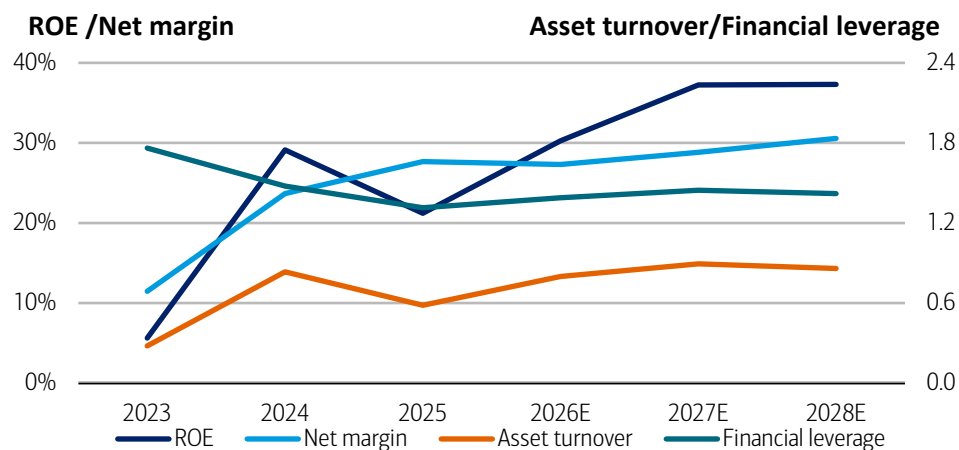
ROE to see further expansion on business diversification

All Ring's ROE historically had been steady at 15~20% levels from 2015-2023, trending closely to its net margins. Its ROE expanded to over 20% from 2024 along with the accelerated revenue contribution from CoWoS.

Looking ahead, we forecast All Ring's ROE to improve to 30~40% in 2027/2028E, supported by net margin improvement to 25-30% from business diversification and steady asset turnover/financial leverage at around 0.8x /1.4x.

Exhibit 43: All Ring's ROE/net margin/asset turnover/financial leverage trend

We expect ROE to maintain at the 30-40% range



Source: BofA Global research estimates, company data

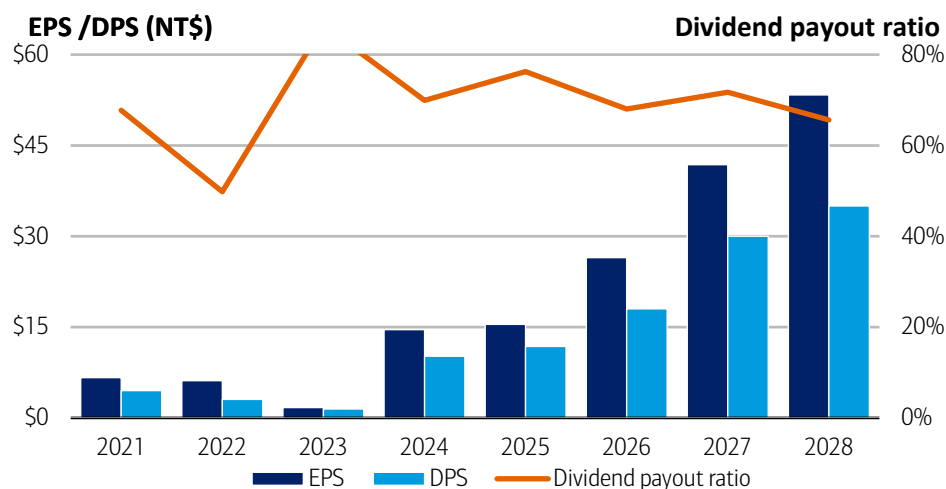
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Robust net cash position sustain decent payout ratio

All Ring has demonstrated nice free cash flow managing capability over the years, supported by enhancing profitability along with rising AI-driven advanced packaging exposure and disciplined capex requirement as the company mainly leverage outsourced partners for equipment production. We expect free cash flow to continue to trend positively on a YoY basis going onwards.

Exhibit 44: All Ring's dividend payout ratio

Dividend policy could sustain at current 65-75% levels



Source: BofA Global research estimates

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All Ring has maintained its long-term dividend payout ratio largely above 65% from 2015, and we expect the improving net cash position and healthy cash flow to sustain dividend policy at current 65-75% levels.



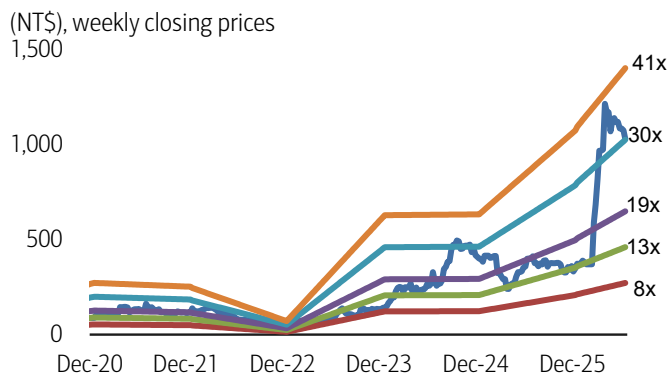
Valuation and risk

Our PO of NT\$1,500 is based on 36x 2027 P/E, positioned at the upper half of its historical trading range of 8-41x. We believe P/E based valuation is appropriate given All Ring's robust top-line outlook backed by strong order visibility, stable GMs profile, and operating margins expansion from higher revenue scale to support healthy earnings growth on the back of its decent exposure to AI-driven advanced packaging upcycle.

Our target PE multiple of 36x is justified by 34%/42% CAGR in sales and earnings over 2026-28E and steady ROE in the 30~40% range. All Ring's strong earnings growth in coming years is driven by 1) continued CoWoS/CoWoS-like capacity expansion at foundry/OSAT to meet surging demand across AI GPU/CPU/AISC vendors, 2) diversifying into next-generation advanced packaging technologies.

Exhibit 45: All Ring's P/E valuation band

All Ring's P/E of 36x is at the upper band of its range



Source: BofA Global Research estimates, Bloomberg

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We note the company's valuation has been re-rated from the average of 18x 1-year forward P/E over 2020-2025 to average 25x 1-year forward P/E YTD on the back of 1) rising expectations on its optical coupling equipment business opportunity for CPO technology, and 2) expanding growth drivers beyond CoWoS to new areas such as SoIC, CoPoS, FoCoS, FOPLP, and US IDM packaging technology. We believe successful market share gain and orders win in existing/new advanced packaging process steps should serve as the main catalyst for further re-rating.

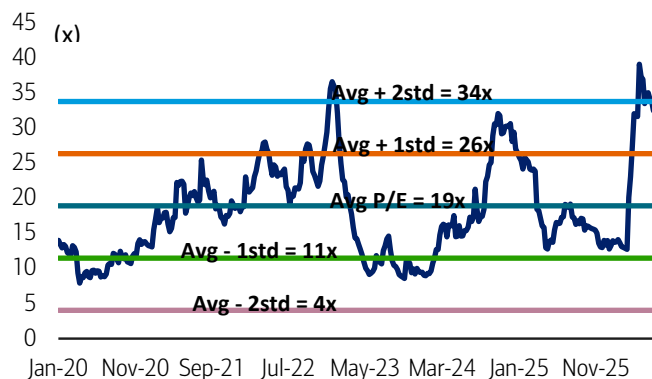
Attractive valuation vs. historical range/peer comparison

When compared with its competitors in the universe of semiconductor advanced packaging equipment supply, All Ring's valuation trails by 6%/2% at 40x/25x 2026/2027E P/E vs. 42x/26x for its close global equipment peers.

In our view, this valuation gap does not fully reflect All Ring's high exposure to AI upcycle to generate decent earnings uptrend. With sustained growth in its semiconductor equipment business on multiple growth engines, dominant market position in certain equipment segments, proven track record in new equipment development, and long-term relationship with key foundry/OSATs, we see room for the valuation discount to narrow and All Ring should see valuation premium to its global peers.

Exhibit 46: All Ring's valuation based on BofA estimates

All Ring's P/E is between 4-34x from 1-year forward perspective



Source: BofA Global Research estimates

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Exhibit 47: Peer valuation - All Ring vs. its equipment competitors

All Ring's valuation is still at a discount to its peers average

Ticker	Company	Share price (LC)	Rating	Mkt cap (US\$mn)	PER (X)		EPS CAGR 26-28E	ROE (%)		EV/EBITDA		Div. yield (%)	
					2026E	2027E		2026E	2027E	2026E	2027E	2026E	2027E
6187 TT	All Ring	1,050.0	BUY	3,203	39.7	25.1	42%	31.0	37.9	32.3	20.0	1.7	2.9
7751 TT	Hongg Terng	1,295.0	NC	1,082	28.4	12.4	129%	47.2	124.7	n.a.	n.a.	2.0	4.1
NDSN US	Nordson	286.4	NC	15,956	24.7	22.8	8%	18.5	18.1	18.3	16.9	1.2	1.2
3563 TT	MACHVISION	721.0	NC	1,433	30.9	19.1	56%	22.5	34.7	23.4	13.2	2.9	n.a.
7822 TT	V5	998.0	NC	1,413	70.6	25.6	74%	27.4	24.4	46.2	32.3	1.3	2.1
6640 TT	Gallant Micro Machining	995.0	NC	882	36.9	21.8	70%	36.1	57.7	n.a.	n.a.	2.3	3.7
2467 TT	C Sun	556.0	NC	2,708	40.4	28.8	40%	30.9	34.0	30.4	21.2	1.7	2.4
3131 TT	GPTC	3,305.0	BUY	3,000	47.0	28.2	52%	41.5	56.8	42.6	22.4	1.5	2.5
3583 TT	Scientech	817.0	NC	2,039	40.9	27.8	44%	23.5	27.7	25.2	16.6	1.2	1.7
BESI NA	BE Semiconductor	254.8	BUY	23,662	59.1	35.4	57%	69.4	84.6	44.9	28.2	1.6	2.7
042700 KS	Hanmi Semiconductor	223,000.0	BUY	14,053	70.7	36.9	83%	37.3	49.8	53.9	26.9	0.5	0.9
6590 JP	Shibaura (N.A.)	5,930.0	NC	2,560	23.7	20.7	28%	23.7	25.8	n.a.	n.a.	1.5	2.0
KLIC US	Kulicke & Soffa	111.4	NC	5,829	33.2	26.3	15%	20.9	23.9	n.a.	n.a.	0.7	0.7
Taiwan peers average					42.1	23.4	67%	32.7	51.4	33.6	21.1	1.8	2.7
Overseas peers average					42.3	28.4	38%	33.9	40.4	39.1	24.0	1.1	1.5
Global peers average					42.2	25.5	55%	33.2	46.8	35.6	22.2	1.5	2.2

Source: BofA Global Research estimates, Bloomberg

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Risk discussion

- **Deceleration in advanced packaging capacity expansion** among foundry and OSATs could reduce manufacturing equipment demand. As All Ring's growth is highly correlated to packaging capacity additions, a slowdown in industry capacity build would dampen All Ring's top-line momentum. However, we believe this risk is manageable as sustained AI infrastructure investment and surging AI chips demand would result in continued tight supply within advanced packaging industry.
- **Mis-execution in equipment development** may lead to losing new business opportunities to capture next wave of multi-year uptrend in advanced packaging market. Delay in engineering development, supply chain coordination, or workforce scaling could limit new product delivery and shipment growth. However, All Ring has demonstrated solid execution capability historically, supported by its experienced R&D team (accounting for around 60% of its total employees), and long-standing collaboration with key customers during product development stage.
- **New technology commercialization risk.** Next generation advanced packaging technology, such as CPO and CoPoS, remain at developing stage. Slower customers' qualifications, delayed volume production, worse-than-expected end-market adoption could postpone meaningful revenue contribution to All Ring.
- **Revenue remains highly concentrated in CoWoS**, exposing the company to fluctuation in CoWoS equipment installation schedule. While revenue growth primarily relays on single technology in past few years, we expect growth to become increasingly diversified as SoIC, CoPoS, and other advanced packaging technologies ramp up.



Exhibit 48: All Ring's income statement

All Ring's quarterly and annual income statement

(NT\$m; %)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2024	2025	2026E	2027E
Revenue	\$1,411	\$2,355	\$2,723	\$2,844	\$3,032	\$3,950	\$3,751	\$3,235	\$5,535	\$5,366	\$9,333	\$13,968
Cost of revenue	-\$681	-\$1,105	-\$1,277	-\$1,331	-\$1,419	-\$1,844	-\$1,720	-\$1,487	-\$2,818	-\$2,453	-\$4,393	-\$6,469
Gross profit	\$731	\$1,250	\$1,447	\$1,512	\$1,613	\$2,107	\$2,031	\$1,748	\$2,717	\$2,913	\$4,940	\$7,499
Operating expenses	-\$403	-\$607	-\$581	-\$608	-\$635	-\$790	-\$838	-\$765	-\$1,289	-\$1,303	-\$2,199	-\$3,028
Operating income	\$328	\$644	\$866	\$904	\$978	\$1,316	\$1,193	\$984	\$1,427	\$1,611	\$2,741	\$4,471
Non-opt net	\$59	\$68	\$73	\$86	\$72	\$79	\$76	\$84	\$139	\$202	\$285	\$311
Pre-tax income	\$387	\$711	\$938	\$990	\$1,050	\$1,395	\$1,269	\$1,068	\$1,566	\$1,813	\$3,026	\$4,782
Income tax	-\$67	-\$118	-\$145	-\$145	-\$168	-\$219	-\$196	-\$165	-\$255	-\$316	-\$476	-\$749
Unusual, extraordinary gain (loss)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Minority	\$5	-\$2	-\$2	-\$3	\$0	-\$2	-\$2	-\$2	\$0	-\$11	-\$2	-\$5
Net income (A)	\$325	\$591	\$791	\$842	\$881	\$1,174	\$1,071	\$901	\$1,311	\$1,485	\$2,549	\$4,028
EPS (NT\$)	\$3.37	\$6.14	\$8.21	\$8.74	\$9.15	\$12.20	\$11.12	\$9.35	\$15.25	\$15.46	\$26.46	\$41.82
% of revenue												
Gross margin	51.8%	53.1%	53.1%	53.2%	53.2%	53.3%	54.1%	54.0%	49.1%	54.3%	52.9%	53.7%
Opex ratio	-28.6%	-25.8%	-21.3%	-21.4%	-21.0%	-20.0%	-22.3%	-23.6%	-23.3%	-24.3%	-23.6%	-21.7%
Operating margin	23.2%	27.3%	31.8%	31.8%	32.2%	33.3%	31.8%	30.4%	25.8%	30.0%	29.4%	32.0%
Pre-tax margin	27.4%	30.2%	34.5%	34.8%	34.6%	35.3%	33.8%	33.0%	28.3%	33.8%	32.4%	34.2%
Net margin	23.0%	25.1%	29.0%	29.6%	29.1%	29.7%	28.6%	27.9%	23.7%	27.7%	27.3%	28.8%
QoQ growth (%)												
Revenue	59%	67%	16%	4%	7%	30%	-5%	-14%				
Gross profit	35%	71%	16%	5%	7%	31%	-4%	-14%				
Operating income	46%	96%	35%	4%	4%	24%	6%	-9%				
Pre-tax income	5%	84%	32%	5%	8%	35%	-9%	-18%				
Net income	0%	82%	34%	6%	5%	33%	-9%	-16%				
YoY growth (%)												
Revenue	13%	55%	59%	220%	115%	68%	38%	14%	359%	-3%	74%	50%
Gross profit	-3%	58%	75%	179%	121%	68%	40%	16%	335%	7%	70%	52%
Operating income	-22%	39%	73%	302%	58%	30%	44%	26%	1571%	13%	70%	63%
Pre-tax income	-8%	40%	81%	169%	198%	105%	38%	9%	874%	16%	67%	58%
Net income	-5%	48%	88%	161%	172%	99%	35%	7%	848%	13%	72%	58%

Source: BofA Global Research estimates, company data

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Exhibit 49: All Ring's cash flow

All Ring's quarterly and annual cash flow

(NT\$m)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2024	2025	2026E	2027E
Net Income	\$320	\$593	\$793	\$845	\$882	\$1,176	\$1,073	\$903	\$1,311	\$1,496	\$2,550	\$4,033
Depreciation & Amortization	\$22	\$21	\$22	\$21	\$22	\$21	\$22	\$21	\$56	\$69	\$86	\$86
Change in Working Capital	-\$308	-\$1,520	\$405	-\$1,196	\$1,325	-\$3,389	\$3,743	-\$2,640	-\$700	\$256	-\$2,619	-\$961
Other Adjustments	\$195	\$195	\$195	\$195	\$195	\$195	\$195	\$195	\$413	\$137	\$778	\$778
Operating Cash Flow	\$228	-\$711	\$1,414	-\$136	\$2,423	-\$1,997	\$5,032	-\$1,522	\$1,079	\$1,958	\$796	\$3,937
Capital Expenditure	-\$253	-\$149	-\$135	-\$136	-\$168	-\$162	-\$150	-\$154	-\$376	-\$513	-\$672	-\$633
Proceeds From Sale of Non-current Assets	\$1	\$0	\$0	\$0	\$1	\$0	\$0	\$0	\$3	\$1	\$2	\$2
Acquisitions/Disposals of investments	-\$190	\$47	-\$11	-\$6	-\$1	\$7	-\$3	-\$1	-\$201	-\$241	-\$161	\$2
Other Adjustments	\$144	-\$53	\$12	\$13	-\$2	-\$8	\$4	\$2	\$215	\$86	\$115	-\$4
Investing Cash Flow	-\$298	-\$155	-\$134	-\$129	-\$171	-\$162	-\$149	-\$153	-\$359	-\$666	-\$716	-\$634
Net Share Issue/Repurchase	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,394	\$0	\$0	\$0
Dividends Paid	\$0	\$0	-\$1,146	\$0	\$0	\$0	-\$1,749	\$0	-\$131	-\$980	-\$1,146	-\$1,749
Change in Debt	-\$2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$593	\$142	-\$2	\$0
Other Adjustments	-\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$2	-\$6	\$192	\$4	\$8
Financing Cash Flow	-\$4	\$2	-\$1,144	\$2	\$2	\$2	-\$1,747	\$2	\$1,851	-\$645	-\$1,143	-\$1,741
Net Change in Cash	-\$73	-\$864	\$137	-\$263	\$2,255	-\$2,157	\$3,136	-\$1,673	\$2,571	\$647	-\$1,063	\$1,561
Forex Effect	\$29	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$30	-\$1	\$29	\$0
Cash, Beginning of the Period	\$4,182	\$4,137	\$3,273	\$3,410	\$3,147	\$5,402	\$3,245	\$6,381	\$936	\$3,536	\$4,182	\$3,147
Cash, End of the Period	\$4,137	\$3,273	\$3,410	\$3,147	\$5,402	\$3,245	\$6,381	\$4,708	\$3,536	\$4,182	\$3,147	\$4,708

Source: BofA Global Research estimates, company data

BofA GLOBAL RESEARCH

Exhibit 50: All Ring's balance sheet

All Ring's quarterly and annual balance sheet

(NT\$m)	1Q26	2Q26E	3Q26E	4Q26E	1Q27E	2Q27E	3Q27E	4Q27E	2024	2025	2026E	2027E
Cash & Cash Equivalents	\$4,137	\$3,273	\$3,410	\$3,147	\$5,402	\$3,245	\$6,381	\$4,708	\$3,536	\$4,182	\$3,147	\$4,708
Short-term Investments	\$149	\$102	\$113	\$120	\$121	\$114	\$117	\$118	\$63	\$115	\$120	\$118
Notes & Accounts Receivable	\$1,230	\$1,988	\$1,911	\$2,456	\$1,922	\$3,784	\$1,707	\$3,055	\$1,552	\$806	\$2,456	\$3,055
Inventory	\$1,569	\$3,145	\$2,404	\$3,889	\$2,242	\$5,899	\$1,759	\$4,899	\$949	\$1,114	\$3,889	\$4,899
Other current assets	\$171	\$140	\$133	\$140	\$146	\$140	\$140	\$142	\$230	\$118	\$140	\$142
Current Assets	\$7,255	\$8,649	\$7,971	\$9,752	\$9,832	\$13,182	\$10,104	\$12,921	\$6,330	\$6,335	\$9,752	\$12,921
Long-term Investments	\$1,262	\$1,262	\$1,262	\$1,262	\$1,262	\$1,262	\$1,262	\$1,262	\$917	\$1,106	\$1,262	\$1,262
Net Fixed Assets	\$2,106	\$2,238	\$2,354	\$2,472	\$2,622	\$2,765	\$2,897	\$3,033	\$1,298	\$1,879	\$2,472	\$3,033
Other Assets	\$2,417	\$2,495	\$2,624	\$2,754	\$2,902	\$3,037	\$3,173	\$3,310	\$1,549	\$2,168	\$2,754	\$3,310
Long-term Assets	\$3,679	\$3,757	\$3,886	\$4,016	\$4,163	\$4,299	\$4,435	\$4,572	\$2,466	\$3,274	\$4,016	\$4,572
Total Assets	\$10,934	\$12,406	\$11,857	\$13,768	\$13,996	\$17,482	\$14,539	\$17,493	\$8,796	\$9,609	\$13,768	\$17,493
Short-term Loans/Bills	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Notes & Accounts Payable	\$1,134	\$1,949	\$1,536	\$2,370	\$1,514	\$3,645	\$1,171	\$3,017	\$888	\$564	\$2,370	\$3,017
Current Portion of Long-term Debt	\$82	\$82	\$82	\$82	\$82	\$82	\$82	\$82	\$0	\$7	\$82	\$82
Other Current Liabilities	\$2,432	\$1,693	\$1,570	\$1,691	\$1,846	\$1,700	\$1,775	\$1,829	\$970	\$1,069	\$1,691	\$1,829
Current Liabilities	\$3,648	\$3,724	\$3,188	\$4,143	\$3,442	\$5,427	\$3,028	\$4,928	\$1,858	\$1,640	\$4,143	\$4,928
Long-term Debt	\$133	\$133	\$133	\$133	\$133	\$133	\$133	\$133	\$290	\$339	\$133	\$133
Other Long-term Liabilities	\$143	\$145	\$144	\$144	\$144	\$144	\$144	\$144	\$131	\$142	\$144	\$144
Long-term Liabilities	\$276	\$278	\$277	\$277	\$277	\$277	\$277	\$277	\$421	\$481	\$277	\$277
Total Liabilities	\$3,924	\$4,002	\$3,465	\$4,420	\$3,719	\$5,704	\$3,305	\$5,205	\$2,279	\$2,121	\$4,420	\$5,205
Total Parent Shareholders' Equity	\$6,825	\$8,217	\$8,203	\$9,157	\$10,085	\$11,584	\$11,039	\$12,091	\$6,517	\$7,299	\$9,157	\$12,091
Minority Interest	\$185	\$186	\$188	\$191	\$191	\$193	\$195	\$196	\$0	\$189	\$191	\$196
Total Equity	\$7,010	\$8,404	\$8,392	\$9,348	\$10,276	\$11,777	\$11,234	\$12,288	\$6,517	\$7,488	\$9,348	\$12,288
Total Liabilities and Equity	\$10,934	\$12,406	\$11,857	\$13,768	\$13,996	\$17,482	\$14,539	\$17,493	\$8,796	\$9,609	\$13,768	\$17,493

Source: BofA Global Research estimates, company data

BofA GLOBAL RESEARCH

Exhibit 51: Terms and definitions
Glossary for abbreviations/acronyms

Term	Definition
ACF	Anisotropic Conductive Film
AI	Artificial Intelligence
AOI	Automated Optical Inspection
ASIC	Application-Specific Integrated Circuit
CoPoS	Chip-on-Panel-on-Substrate
CoWoS	Chip-on-Wafer-on-Substrate
CoWoS-L	Chip-on-Wafer-on-Substrate (Local Silicon Interconnect)
CoWoS-S	Chip-on-Wafer-on-Substrate (Silicon Interposer)
CPO	Co-Packaged Optics
CPU	Central Processing Unit
EMIB	Embedded Multi-die Interconnect Bridge
FAU	Fiber Array Unit
FoCoS	Fan-Out Chip-on-Substrate
FOPLP	Fan-Out Panel- Level Packaging
GPU	Graphics Processing Unit
HBM	High-Bandwidth Memory
IDM	Integrated Device Manufacturer
InFO	Integrated Fan-Out
IPD	Integrated Passive Device
LCD	Liquid Crystal Display
LED	Light-Emitting Diode
MLCC	Multilayer Ceramic Capacitor
OCA	Optically Clear Adhesive
OSAT	Outsourced Semiconductor Assembly and Test
PSA	Pressure-Sensitive Adhesive
SiP	System-in-Package
SoIC	System on Integrated Chips
SWIFT	Silicon Wafer Integrated Fan-Out Technology
TAM	Total Addressable Market
TIM	Thermal Interface Material
UV	Ultraviolet
WMCM	Wafer-Level Multi-Chip Module
WPM	Wafers Per Month

Source: BofA Global Research

BofA GLOBAL RESEARCH



Price objective basis & risk

All Ring (XNQNF)

Our PO of NT\$1,500 is based on 36x 2027 P/E, positioned at the upper half of its historical trading range of 8-41x. We believe P/E based valuation is appropriate given All Ring's robust top-line visibility, stable profitability profile, and structural earnings improvement on decent exposure to AI-driven advanced packaging upcycle. The valuation multiple is underpinned by

1) 34%/42% CAGR in sales and earnings over 2026-28E and 2) sustained ROE in the 30-40% range

Downside risks are:

1) slowdown in advanced packaging capacity expansion and 2) mis-execution on equipment development

Analyst Certification

I, Haas Liu, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY	Alchip	ALCPF	3661 TT	Haas Liu
	All Ring	XNQNF	6187 TT	Haas Liu
	AMEC	XRTOF	688012 CH	Dai Shen
	ASE Technology Holding	XSRIF	3711 TT	Haas Liu
	ASE Technology Holding -ADR	ASX	ASX US	Haas Liu
	ASMPT	ASMVF	522 HK	Simon Woo, CFA
	Aspeed	XLKMF	5274 TT	Mike Yang
	Chroma ATE	CRMJF	2360 TT	Haas Liu



APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	eMemory	XYLWF	3529 TT	Mike Yang
	GigaDevice	XGXIF	603986 CH	Daley Li, CFA
	Global Unichip Corp.	GBUHF	3443 TT	Haas Liu
	Grand Process Technology Corp	XZOWF	3131 TT	Haas Liu
	Hanmi Semiconductor	HNSIF	042700 KS	Simon Woo, CFA
	Hon Precision	XXPIF	7769 TT	Haas Liu
	Horizon Robotics	HRZRF	9660 HK	Daley Li, CFA
	Iluvatar CoreX	XSIBF	9903 HK	Daley Li, CFA
	Ingenic	XISCF	300223 CH	Dai Shen
	InnoScience Technology	XSCHF	2577 HK	Daley Li, CFA
	JCET Group Co Ltd	XJIEF	600584 CH	Dai Shen
	King Yuan Electronics Corp.	KYUFF	2449 TT	Haas Liu
	Kinik	KIKCF	1560 TT	Haas Liu
	MediaTek	MDTKF	2454 TT	Haas Liu
	Montage Technology	XRDF	688008 CH	Daley Li, CFA
	MPI Corporation	XMJCF	6223 TT	Mike Yang
	Nanya Technology	NNYAF	2408 TT	Simon Woo, CFA
	NCE Power	XVFFF	605111 CH	Daley Li, CFA
	OmniVision	XXHQF	603501 CH	Dai Shen
	Phison Electronics	PISNF	8299 TT	Simon Woo, CFA
	Powerchip Semiconductor Manufacturing Co	XCHPF	6770 TT	Haas Liu
	Powertech Technology	XPPZF	6239 TT	Simon Woo, CFA
	Rockchip	XRPF	603893 CH	Daley Li, CFA
	Samsung C&T	XCDF	028260 KS	Simon Woo, CFA
	Samsung Elec -G	SSNHZ	SMSN LI	Simon Woo, CFA
	Samsung Electronics	SSNLF	005930 KS	Simon Woo, CFA
	Samsung Electronics Preferred	SSNNF	005935 KS	Simon Woo, CFA
	Silergy Corp.	SLEGF	6415 TT	Mike Yang
	Silicon Motion	SIMO	SIMO US	Simon Woo, CFA
	SK Square	SKSQF	402340 KS	Simon Woo, CFA
	Taiwan Semiconductor Manufacturing Co.	TSM	TSM US	Haas Liu
	Taiwan Semiconductor Manufacturing Co.	TSMWF	2330 TT	Haas Liu
	Vanguard International Semiconductor Co	VGILF	5347 TT	Haas Liu
	Winbond Electronics	WBEKF	2344 TT	Dai Shen
	WinWay Technology	XWCLF	6515 TT	Mike Yang
	WT Microelectronics	XZOPF	3036 TT	Mike Yang

NEUTRAL

	ASMedia Technology Inc.	XZSFF	5269 TT	Mike Yang
	Black Sesame Intl Holding	BSIHF	2533 HK	Daley Li, CFA
	Hangzhou Silan Microelectronics	XDFRF	600460 CH	Daley Li, CFA
	Lion Electronics	XDHFF	605358 CH	Dai Shen
	LX Semicon	XLXSF	108320 KS	Simon Woo, CFA
	MetaX	XMEZF	688802 CH	Daley Li, CFA
	Novatek	NVKMF	3034 TT	Haas Liu
	Realtek	RLTKF	2379 TT	Mike Yang
	Shenzhen Goodix	XQPLF	603160 CH	Daley Li, CFA

UNDERPERFORM

	Crystal Clear	XPPTF	300655 CH	Dai Shen
	Faraday	FDYTF	3035 TT	Haas Liu
	GlobalWafers	XWLFF	6488 TT	Mike Yang
	Hua Hong Semi	HHUSF	1347 HK	Dai Shen
	M31 Technology	XMTZF	6643 TT	Mike Yang
	Macronix International	MXICF	2337 TT	Dai Shen
	Maxscend	MXXSF	300782 CH	Daley Li, CFA
	Parade	PRDWF	4966 TT	Mike Yang
	Soulbrain	XSBOF	357780 KS	Simon Woo, CFA
	United Microelectronics Corp.	XUMIF	2303 TT	Haas Liu
	United Microelectronics Corp.	UMC	UMC US	Haas Liu
	VeriSilicon	XMLZF	688521 CH	Daley Li, CFA
	Win Semiconductors	WSMIF	3105 TT	Haas Liu
	Wonik IPS	XRHQF	240810 KS	Simon Woo, CFA

RSTR

	SK Hynix	HXSCF	000660 KS	Simon Woo, CFA
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APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
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iQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity
Operating Margin
Earnings Growth
Free Cash Flow

Quality of Earnings

Cash Realization Ratio
Asset Replacement Ratio
Tax Rate
Net Debt-To-Equity Ratio
Interest Cover

Valuation Toolkit

Price / Earnings Ratio
Price / Book Value
Dividend Yield
Free Cash Flow Yield
Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income
Operating Profit
Expected 5 Year CAGR From Latest Actual
Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations
Capex
Tax Charge
Net Debt = Total Debt – Cash & Equivalents
EBIT

Numerator

Current Share Price
Current Share Price
Annualised Declared Cash Dividend
Cash Flow From Operations – Total Capex
EV = Current Share Price × Current Shares + Minority Equity + Net Debt + Other LT Liabilities
Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill
Amortization
Shareholders' Equity
Sales
N/A
N/A

Denominator

Net Income
Depreciation
Pre-Tax Income
Total Equity
Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)
Shareholders' Equity / Current Basic Shares
Current Share Price
Market Cap = Current Share Price × Current Basic Shares
Sales

Basic EBIT + Depreciation + Amortization

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

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

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

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

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

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