Technology

2025 Outlook: Promising AI/upgrade cycle; Focus on accelerated edge AI proliferation

OUTPERFORM (Maintain)

China Technology Sector

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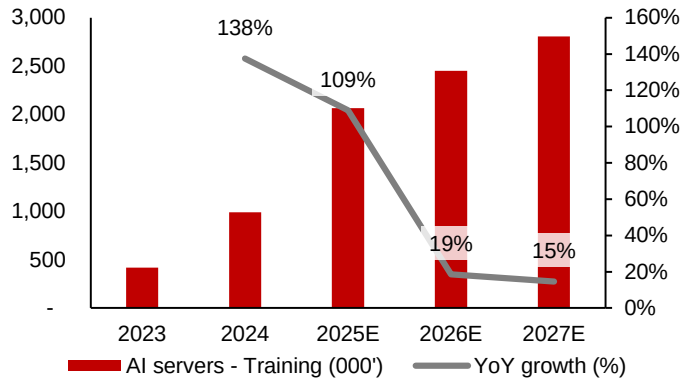
Rapid development of training and inference models has fueled the robust growth of AI supply chain since the introduction of ChatGPT in 2023. In 2024, edge AI innovations accelerated with product launches of AI smartphones/PCs and expansion into AI glasses and smart homes. Heading into 2025, backed by a moderate global economic growth, continued recovery in smartphones/PCs, sustained growth in general/AI servers and edge AI upcycle, we stay bullish on the technology sector and recommend two key themes: 1) AI computing and server/network architecture upgrade. 2) Edge AI proliferation (smartphones/ PCs/wearables/glasses/smart homes/EVs). **Stock picks:** Xiaomi, Sunny Optical, BYDE, FIT Hon Teng, AAC Tech, Luxshare, BOEVx and Intron.

- **Servers: GPU/ASIC AI server momentum continues; GB200/300 infra upgrades.** Rapid development of AI large models has boosted exponential growth in computing supply chain. We believe CSPs have started to benefit from commercial potential of AI, while edge AI models accelerates integration into more use cases. We estimate AI training server shipments to grow 109%/19% YoY to 2.07mn/2.45mn in 2025/26E. In addition, GB200/300 architecture upgrade and rapid growth of ASIC AI servers will further boost demand for ODMs and related components, such as copper interconnects, liquid cooling, and power components. Key beneficiaries include BYDE, FIT Hon Teng, and Foxconn Industrial Internet.
- **Smartphones/PCs: iPhone 17 and AI integration to boost innovation and replacement cycle.** After two consecutive years of recovery, we expect iPhone 17 (5 new models) and AI integration will boost global smartphone shipments to grow 3% YoY to 1.25bn in 2025. Key innovations focus on optics, acoustics, power management, thermals and foldable phones. We also expect PC market to benefit from more mainstream AI PCs, Win-10 upgrade, and improving macro. We expect domestic supply chain to benefit from global share gains, easing competition and cost optimization, leading to profitability improvement. Key beneficiaries include Xiaomi, BYDE, Sunny Optical, AAC Tech, Luxshare, and FIT Hon Teng.
- **AR/VR: AI glasses to become mainstream AI platform.** Since the launch of 2nd-gen Ray-Ban Meta smart glasses in 2023, which received highly positive market feedback, we expect global tech giants, domestic AR/VR brands and smartphone OEMs to accelerate development of AR glasses. We expect integration of AI + AR will significantly enhance user experience and expand use cases. Companies with higher exposure to AR/VR stand to benefit, which include Sunny Optical, AAC Tech, Luxshare, and Xiaomi.
- **Auto electronics: electrification, intelligence, autonomous driving, and domain controller trends.** Rapid growth of the NEV industry is driven by electrification and intelligence. Look ahead, we are positive on two key trends: 1) autonomous driving: Penetration for L3 and higher autonomous vehicles are expected to rise significantly, driving demand for in-car cameras and displays. 2) Domain controllers as an essential component: With advancements in automotive intelligence, domain controllers are opening up new opportunities in NEV market. Beneficiaries include BYDE, BOE Varitronix, Intron Tech and Sunny Optical.

Focus Charts

Figure 1: Global AI training server market (2023-27E)



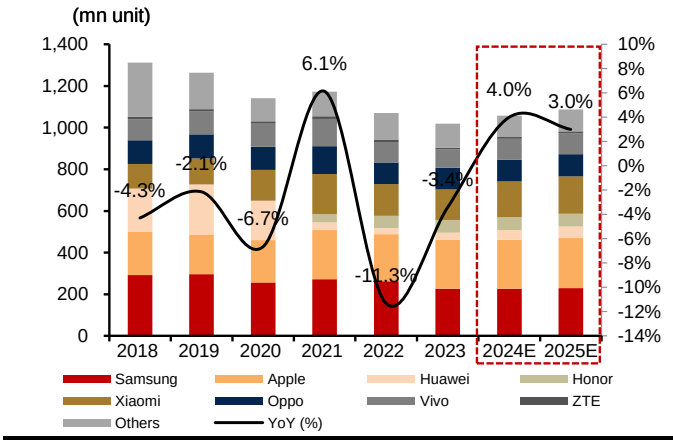
Source: IDC, Trendforce, CMBIGM estimates

Figure 2: GB200 NVL72 ODM vendors (2025)

	GB200 NVL72 Unit	GB200 NVL72 Mix%	ODMs
Microsoft	14,000	29%	Honhai/FII (70%), Quanta (30%)
AWS	8,500	18%	Quanta (70%), Honhai/FII (30%)
Meta	9,000	19%	Quanta (70%), Honhai/FII (30%)
Google	5,500	12%	Quanta (80%), Inventec (20%)
Dell	3,000	6%	Wistron, Honhai/FII
HP	1,500	3%	Honhai/Fii, Wistron
SMCI	2,500	5%	In-house
Oracle	2,500	5%	Honhai/FII
Others	1,300	3%	Honhai/FII, Wistron, others
Total	**47,800**		

Source: Trendforce, CMBIGM estimates

Figure 3: Global smartphone shipment forecast



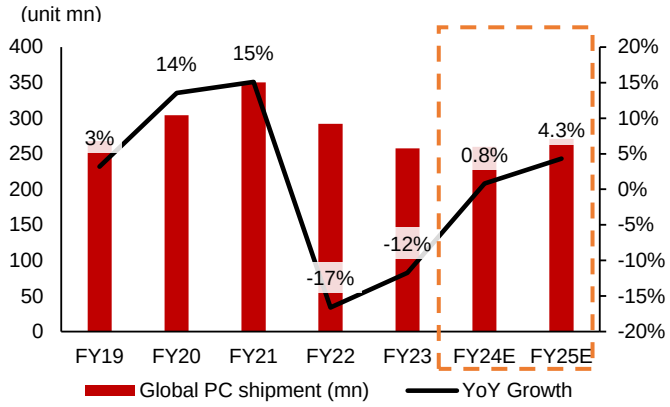
Source: IDC, CMBIGM estimates

Figure 4: Global smartphone shipment (by brand)

(mn unit)	2020	2021	2022	2023	2024E	2025E
Samsung	257	272	262	227	226	230
Apple	203	236	226	234	235	240
Xiaomi	148	191	153	146	170	180
Huawei	189	38	31	35	48	55
Honor	-	40	57	61	62	61
Oppo	161	211	166	154	155	157
Vivo	112	132	99	88	100	100
Others	212	240	212	220	215	225
Total	**1,281**	**1,360**	**1,206**	**1,165**	**1,211**	**1,248**
YoY	-7%	6%	-11%	-3%	4%	3%

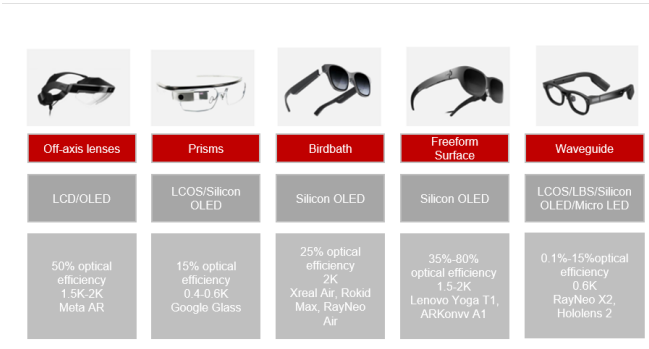
Source: IDC, CMBIGM estimates

Figure 5: Global PC shipment forecasts



Source: IDC, CMBIGM estimates

Figure 6: AR optical solution roadmap



Source: Wellsenn XR, CMBIGM estimates

2025 Outlook: Promising AI/upgrade cycle; Edge AI innovation set to accelerate

Positive outlook on computing upgrade and edge AI innovation cycle

In the past two years, rapid deployment of AI models has driven significant growth across AI supply chain, and AI edge products have gained strong momentum. Innovations such as AI smartphones and AI PCs are seeing faster adoption, and extended to AI glasses and smart home devices. Looking into 2025, backed by moderate economic recovery, smartphone/PC growth, general /AI servers demand, and edge AI cycle, we recommend two themes: 1) Accelerated AI computing and server/network architecture upgrade. 2) Expansion of edge AI devices (smartphones/PCs/wearables/glasses/smart home/EVs). As market liquidity improves, we believe global industry leaders will see re-rating opportunities.

1) Servers: Major CSPs' CAPEX is expected to remain strong in 2025, and we forecast global server shipment to grow 8% YoY to 14.9mn in 2025. New Blackwell and GB200/AI ASIC platforms will continue to boost AI server demand, and we estimate AI server shipment to grow 109% YoY to 2.07mn in 2025. **2) PCs:** We believe PC market will benefit from more mainstream AI PCs, Win-10 upgrade, and improving macro (e.g. US rate cuts, Chinese stimulus, and the US corporate tax cuts). We forecast global PC shipments to grow 4.3% YoY to 271mn in 2025. **3) Smartphones**: AI applications on smartphones is set to drive replacement cycle. We expect global smartphone shipment to grow 3% YoY 1.25bn in 2025.

Figure 7: Global TAM estimate: servers, PCs, smartphone, AR/VR, TV, iPhone/iPad/AirPods/Watch/Mac

(mn unit)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024E	2025E
Server	**9.7**	**9.6**	**10.2**	**11.8**	**11.8**	**12.7**	**13.5**	**14.9**	**12.3**	**13.9**	**14.9**
YoY growth		*-1%*	*6%*	*16%*	*0%*	*7%*	*7%*	*10%*	*-17%*	*13%*	*8%*
AI Server- Training									**0.42**	**1.0**	**2.1**
YoY growth										*138%*	*109%*
PC	**275.8**	**260.2**	**259.7**	**259.6**	**267.9**	**304.2**	**350.1**	**292.0**	**257.7**	**259.8**	**271.0**
YoY growth		*-6%*	*0%*	*0%*	*3%*	*14%*	*15%*	*-17%*	*-12%*	*1%*	*4%*
Smartphones	**1437.6**	**1,469.5**	**1,465.3**	**1,402.5**	**1,372.6**	**1,281.2**	**1,359.8**	**1,205.9**	**1,164.7**	**1,211.3**	**1,247.6**
YoY growth		*2%*	*0%*	*-4%*	*-2%*	*-7%*	*6%*	*-11%*	*-3%*	*4%*	*3%*
AR/VR		**12.9**	**22.1**	**13.5**	**7.1**	**7.7**	**11.5**	**8.0**	**7.1**	**6.8**	**6.6**
YoY growth			*71%*	*-39%*	*-48%*	*9%*	*50%*	*-31%*	*-11%*	*-4%*	*-2%*
TV	**98.7**	**115.0**	**128.8**	**148.7**	**159.2**	**167.9**	**155.0**	**143.8**	**140.1**	**143.2**	**147.5**
YoY growth		*17%*	*12%*	*15%*	*7%*	*5%*	*-8%*	*-7%*	*-3%*	*2%*	*3%*
Apple Products											
iPhone	**231.5**	**215.4**	**215.8**	**208.0**	**200.5**	**204.9**	**228.6**	**224.8**	**224.1**	**221.7**	**226.1**
YoY growth		*-7%*	*0%*	*-4%*	*-4%*	*2%*	*12%*	*-2%*	*0%*	*-1%*	*2%*
AirPods				**27.5**	**58.2**	**73.7**	**83.8**	**82.1**	**74.4**	**66.3**	**63.0**
YoY growth					*112%*	*27%*	*14%*	*-2%*	*-9%*	*-11%*	*-5%*
iPad	**49.6**	**42.5**	**43.8**	**44.8**	**46.0**	**57.3**	**62.2**	**63.6**	**52.4**	**53.8**	**56.5**
YoY growth		*-14%*	*3%*	*2%*	*3%*	*25%*	*9%*	*2%*	*-18%*	*3%*	*5%*
Watch	**8.8**	**11.6**	**18.2**	**21.4**	**27.2**	**34.2**	**43.4**	**42.8**	**40.6**	**37.9**	**36.0**
YoY growth		*32%*	*57%*	*18%*	*27%*	*26%*	*27%*	*-1%*	*-5%*	*-7%*	*-5%*
Mac	**20.4**	**18.5**	**19.0**	**18.1**	**18.0**	**20.7**	**24.7**	**23.7**	**20.6**	**22.5**	**23.7**
YoY growth		*-9%*	*2%*	*-4%*	*-1%*	*15%*	*19%*	*-4%*	*-13%*	*10%*	*5%*
HomePod				**4.6**	**6.1**	**7.1**	**10.5**	**10.7**	**10.0**	**8.2**	**7.8**
YoY growth					*33%*	*16%*	*48%*	*2%*	*-7%*	*-18%*	*-5%*
Vision Pro										**0.5**	**0.2**
YoY growth											*-50%*

Source: IDC, Gartner, S&P, Trendforce, CMBIGM estimates

Potential Impact of Trump's Tariff Policies

U.S. President-elect Donald Trump plans to sign an executive order to impose new tariffs on China, Mexico, and Canada. This includes a 25% tariff on all goods imported from Mexico and Canada, and an additional 10% tariff on most exports from China, effective immediately after his administration takes office. For components (smartphones, PCs, servers), we expect limited direct impact, as suppliers have been accelerating global expansion since 2019. For ODMs, most servers exported to the US are assembled in Mexico, while PC and smartphone assembly remains primarily in China, although production capacity has been expanding to Vietnam and India since 2019.

1) AI Servers: The US remains the primary market for global AI servers. Most NVIDIA AI servers are manufactured and assembled in the US and Taiwan region, while some ASIC AI servers are assembled in Mexico. In 2018, due to geopolitical risks, major CSPs asked ODMs to relocate server production bases and absorbed most of the relocation costs. Therefore, we believe costs of new tariffs will likely to be passed on to CSP customers this time. Compared to smartphones/PCs, AI servers have a higher level of production automation and lower shipment volumes, making it easier to relocate the supply chain.

2) General servers: Due to the size, weight, and transportation costs of server racks, final assembly of servers is typically conducted near data centers. Currently, most general servers exported to the US are assembled in Mexico. Leading ODMs such as Wiwynn, Inventec, and Foxconn assemble servers in Mexico for clients like Dell, HP, and major CSPs. If Mexico is subjected to tariffs, these companies may relocate production to the US or return to Asia. Notably, two major ODMs, Quanta and Foxconn, have server capacity in the US, and we believe they are well-positioned to manage potential supply chain shifts.

3) PC: Since trade war in 2018, PC ODMs began expanding their global capacity. We believe many NB brands are well prepared to shift assembly capacity for their U.S. exports to other regions. For desktop PCs, we believe the situation is similar to general servers. Most desktop PCs exported to the US are assembled in Mexico, making it challenging to relocate production in the short term. However, as desktop PCs have lower added-value, production may shift to Asia or low-cost countries in Europe in the future.

4) Smartphones: Currently, 85% of iPhone assembly capacity is located in China. If the US imposes an additional 10% tariff on Chinese imports, iPhone production will be impacted, as it still takes time for India to scale up capacity for the US market. In this case, we believe Apple may pass on tariff costs to customers, and iPhone consumers are not necessarily price-sensitive to this price hike. By 2026, Foxconn aims to have 15-20% of its smartphone production capacity located in India, while Luxshare plans to increase its Vietnam capacity to 25-30% by 2024. BYD's Vietnam capacity is focused on tablets.

Figure 8: Global capacity of component names

Company	Production base
AAC Tech	China, Vietnam, Philippines, Singapore, Germany
FIT Hon Teng	China, Vietnam, Taiwan, India, Mexico, Europe
BYDE	China, India, Vietnam, Europe, Mexico
Goertek	China, Vietnam
Luxshare	China, Vietnam, Malaysia, Germany
Lens Tech	China, Vietnam
Sunny Optical	China, India, Vietnam
Q-Tech	China, Taiwan, India

Source: Company data, CMBIGM

Figure 9: Global capacity of ODM names

Company	Production base
Hon Hai	China, Taiwan, Vietnam, India, Mexico, US, Malaysia
Quanta	China, Taiwan, US, Thailand, Vietnam, Germany, Mexico
Wistron	China, Taiwan, India, Vietnam, Mexico, Europe, Malaysia
Wiwynn	Taiwan, Malaysia, Mexico
Inventec	China, Taiwan, Mexico, Europe
Compal	Taiwan, Vietnam, Mexico, United States, Brazil
Lenovo	China, Europe, Mexico
Xiaomi	China, SEA, India

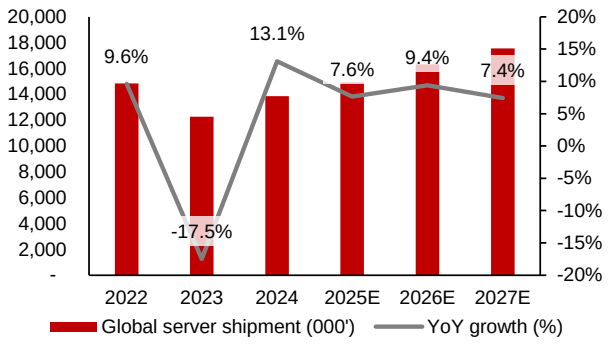
Source: Company data, CMBIGM

Global servers: general server recovery, GB200/ASIC AI server demand accelerating

In the past two years, AI large models exhibited trends of increased parameter sizes, larger training datasets, accelerated iteration cycles, and multi-modal capabilities. Driven by both training and inference demand, AI supply chain has experienced rapid growth. In 2024, NVIDIA has introduced GB200 rack-level AI server solution, which will impose higher requirements on ODMs. We expect AI supply chain will maintain robust momentum throughout 2025, and ODMs and related components will also benefit, such as connectors, liquid cooling and power management.

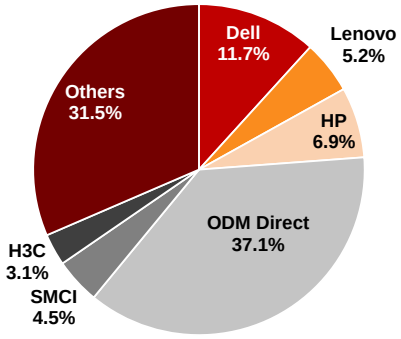
General servers: stable growth in cloud demand, despite softer enterprise orders. In 2025, we expect spending on traditional servers will maintain steady growth, driven by strong CSPs' CAPEX and business performance. On enterprise server side, demand is likely to remain weak due to softer macro and ongoing migration from private cloud to public cloud. Overall, we estimate global server shipment will grow 8% YoY to 14.83mn in 2025.

Figure 10: Global server shipment (2022-27E)



Source: IDC, CMBIGM estimates

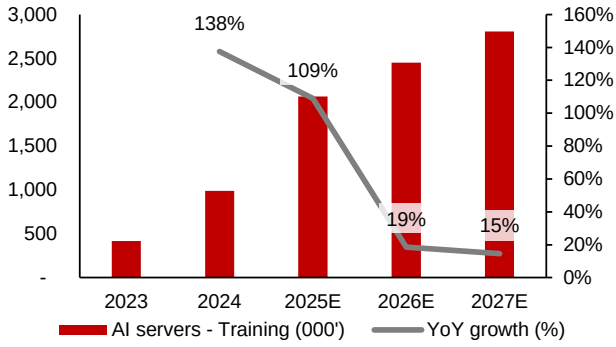
Figure 11: Global server brand mix (2023)



Source: IDC, CMBIGM estimates

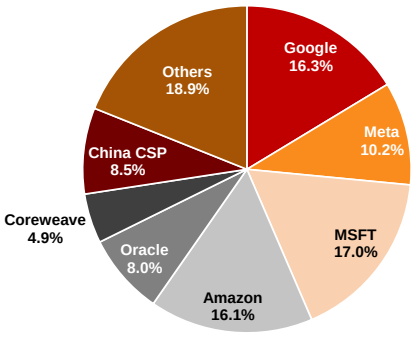
AI servers: product transition ahead; GB200 set for strong growth. We believe AI servers will be in a transition phase in 4Q24-1Q25 as the market gears up for the next GB200 cycle. We expect robust AI server demand to continue through 2025, with AI monetization being a key focus in 2026. With Blackwell platform mass production ramping up in Dec 2024, we expect GB200/HGX B200 servers to enter volume production in 1Q25E. We expect global AI training server to grow 109%/19% YoY to 2.07mn/2.45mn in 2025/26E.

Figure 12: Global AI training server market (23-27E)



Source: IDC, Trendforce, CMBIGM estimates

Figure 13: Global AI training server by CSP (2024)



Source: Trendforce, CMBIGM estimates

Figure 14: AI accelerator（GPU / ASIC）product roadmap

		1H23	2H23	1H24	2H24E	1H25E	2H25E	2026
Nvidia	GPU	H100 (N4N)		H200 (N4N)	B200 (N4NP)	B300 (N4NP)	B300A (N4NP)	R100 (N3)
	AI Server	HGX A100/H100			HGX H200	GB200 NVL36/72 HGX B200	GB300/300A NVL36/72 HGX B300	GR100 NVL36/72 HGX R100
AMD	GPU	MI300A (N5)	MI300X (N5)	MI325X (N5)			MI350 (N3)	MI400 (N2)
Intel	ASIC				Guadi 3 (5nm)		Falcon Shores (18A)	
Google	ASIC		TPU v5e (5nm) TPU v5p (5nm)			TPU v6e (4nm) TPU v6p (4nm)		TPU v7e (3nm) TPU v7p (3nm)
Amazon	ASIC	Inferentia 2 (7nm)		Trainium 2 (5nm)			Trainium 3 (3nm)	
Meta	ASIC			MTIA v1 (7nm)			MTIA v2 (5nm)	MTIA v3 (3nm)
Microsoft	ASIC			MAIA 100 (5nm)				MAIA 200 (3nm)

Source: Company CMBIGM estimates

Figure 15: AI server TAM forecasts

	2023	2024E	2025E	2026E
Total AI accelerator volume ('000)				
GPU chips	**1,759**	**5,420**	**7,347**	**8,446**
YoY growth		*208%*	*36%*	*15%*
Nvidia	**1,620**	**4,950**	**6,282**	**6,736**
YoY growth		*206%*	*27%*	*7%*
AMD	**139**	**470**	**1,065**	**1,710**
YoY growth		*239%*	*127%*	*61%*
ASIC chips	**3,140**	**6,112**	**10,819**	**14,842**
YoY growth		*95%*	*77%*	*37%*
Total	**4,899**	**11,532**	**18,167**	**23,287**
YoY growth		*135%*	*58%*	*28%*
AI server - Training ('000)				
GPU AI server	**199**	**626**	**1,471**	**1,994**
YoY growth		*215%*	*135%*	*36%*
ASIC AI server	**217**	**362**	**594**	**928**
YoY growth		*67%*	*64%*	*56%*
Total	**416**	**988**	**2,065**	**2,449**
YoY growth		*138%*	*109%*	*19%*
Nvidia AI server rack ('000)				
HGX/MGX Rack	47.1	144.2	136.0	115.2
GB200/300/GR100/200 NVL72	-	1.1	47.8	79.22
Total	**47**	**145**	**184**	**194**
YoY growth		*208%*	*27%*	*6%*
Global server shipment ('000)				
General and other servers	**11,842**	**12,878**	**12,861**	**13,880**
YoY growth		*9%*	*0%*	*8%*
AI server – Training	**416**	**988**	**2,065**	**2,449**
YoY growth		*138%*	*109%*	*19%*
AIserver – Training mix (%)	*3.5%*	*7.7%*	*16.1%*	*17.6%*
Total	**12,258**	**13,867**	**14,926**	**16,329**
YoY growth		*13%*	*8%*	*9%*

Source: IDC, Trendforce, CMBIGM estimates

Figure 16: GB200 NVL72 ODM vendors (2025)

	GB200 NVL72 Unit	GB200 NVL72 Mix%	ODMs
Microsoft	14,000	29%	Honhai/FII (70%), Quanta (30%)
AWS	8,500	18%	Quanta (70%), Honhai/FII (30%)
Meta	9,000	19%	Quanta (70%), Honhai/FII (30%)
Google	5,500	12%	Quanta (80%), Inventec (20%)
Dell	3,000	6%	Wistron, Honhai/FII
HP	1,500	3%	Honhai/Fii, Wistron
SMCI	2,500	5%	In-house
Oracle	2,500	5%	Honhai/FII
Others	1,300	3%	Honhai/FII, Wistron, others
Total	**47,800**		

Source: Trendforce, CMBIGM estimates

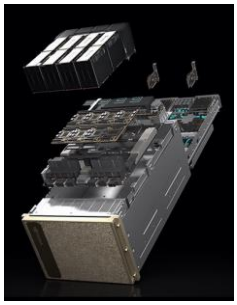
Figure 17: AI server ODM mix (2024)

	ODMs
Microsoft	Honhai/FII(30%), Quanda(35%), Inventec(30%), Wiwynn (5%)
AWS	Honhai/FII(15%), Quanda(30%), Inventec(35%), Wiwynn (20%)
Meta	Honhai/FII(10%), Quanda(70%),Wiwynn (20%)
Google	Honhai/FII(15%), Quanda(50%), Inventec (35%)
Dell	Wistron (35%), Honhai/FII (15%), Inventec (10%)
HP	Wistron (25%), Honhai/FII (20%), Inventec (20%)
SMCI	In-hosue, Wistron (20%)
Oracle	Honhai/FII (90%), Dell/HPE (10%)
Coreweave	SMCI (75%), Gigabytes (10%), Dell/HPE (15%)
Tesla	SMCI (40%), Dell (40%), Wistron (20%)

Source: CMBIGM estimates

GB300/GB300A server spec set to change. We believe upcoming GB300/300A servers will feature design changes with mass production in 3Q25E. Key changes include: **1) LPDDR CAMMs and GPU sockets**: GB300 will adopt LPDDR CAMMs and GPU sockets to reduce GPU failure costs and supply chain risks. **2) x86 CPU alternatives:** The servers will incorporate x86 CPU alternatives, which will still require PCI-E interfaces. **3) Increased rack power consumption**: total power consumption per rack will increase to 130-140kW, with that of B300 server of 1.4kW (vs 1.2kW for B200). **4) Optional power capacitor racks and BBU**: GB300/GB300A servers will have the option to adopt power capacitor racks and Battery Backup Units (BBU). **5) Flexible component suppliers:** GB300/GB300A servers will offer greater flexibility in component supplier choices.

Figure 18: AI server architecture and suppliers: H100 vs GB200 vs GB300

	HGX H100	GB200 NVL72	GB300 NVL72
Architecture			
Platform	HGX H100	MGX	MGX
Rack design	4 x HGX server	18 x Compute trays 9 x Switch trays NVL Backplane	18 x Compute trays 9 x Switch trays NVL Backplane
CPU	x86	Grace	X86 or Grace
GPU Memory Size	192GB	288GB	288GB
GPU Memory Bandwidth	8TB/s	8TB/s	8TB/s
# of CPU	8 x CPUs	36 x Grace CPUs	36 x Grace CPUs
# of GPU	32 x H100	72 x B200	72 x B300
GPU Max TDP	1,000W	1,200W	1,200W
GPU Sockets	-	-	Yes
GPU Cooling	Air cooling	Liquid cooling	Liquid cooling
# of Powerself	3	4	4
Network	400G CX7/ BF3	400G CX7/ BF3	800G CX8/ BF3
Launch Timing	4Q24	1Q25	2H25
Suppliers			
GPU module	Hon Hai	-	-
GPU socket	-	-	FIT
CPU socket	FIT, Lotes, APH	FIT, Lotes, APH	FIT, Lotes, APH
GPU Baseboard	Wistron, Hon Hai/FII	-	-
Motherboard	Inventec, Wistron, Hon Hai, Quanta, SMCI, Wiwynn	-	-
Compute board	-	Wistron, Hon Hai/FII	Wistron, Hon Hai/FII
NVLink switch board	-	Hon Hai/FII	Hon Hai/FII
Server	Wistron, Quanta, Wiwynn, SMIC, Gigabyte		
Compute trays	-	ODMs	ODMs
Switch trays	-	ODMs	ODMs
Air cooling/ Liquid cooling	Avc, Cooler Master	Auras, AVC	Auras, AVC
… Cold plates	AVC, Auras, Cooler Master		
… CDU	Vertix, Delta, Hon Hai		
… Fan	Delta, AVC, Sunon		
Power Supply	Delta, Lite-On, Flextronics		
Rack		Hon Hai/FII, Quanta	Hon Hai/FII, Quanta
			

Source: Company data, CMBIGM

ODM/Brand: GB200/300 mass production in 2025 driven by AI server strong demand

Server brands/ODM strong revenue growth and improving GPM in 2024; positive on 2025 outlook. Most server brands/ODM vendors' server businesses in 9M24 continued to grow in sales and we maintain an optimistic outlook on 4Q24 and 2025, mainly benefiting from increasing demand for AI servers and mass production and shipment of GB200 servers. In 3Q24, Dell/Lenovo/HPE/SMCI server sales increased by 34%/65%/33%/201% YoY. In terms of GPM, due to higher ASP of servers, most server brands/ODM gross profit margins remained unchanged or slightly increased QoQ. HP expected low GPM of AI servers to be temporary, and overall profit margin will increase in the future. It also expected to achieve higher GPM from enterprise customers in the future. Driven by mass production and demand growth of GB200 servers, coupled with increasing penetration of liquid cooling, we expect the server brand/ODM profit margin to improve into 2025.

Positive on AI server shipment in 2025 driven by CSP and enterprise customers. Dell expected that growth of ISG business in 2025 will be mainly driven by AI servers, with AI demand shifting to Blackwell and massive backlog of orders waiting for delivery. Enterprise customer demand is also growing rapidly. Lenovo saw strong demand for AI GPU server orders in its ISG business, and expected that from 2H24 to FY25E, orders received will be converted into revenue contribution. Foxconn Industrial Internet expressed optimistic view that AI technology will drive company's profitability and the company has developed key components for GB200 servers, including GPU boards, Compute boards, NV Link Switches, Smart NIC, DPU and other components, covering all key parts of AI servers. It is also the only supplier in server industry with comprehensive manufacturing capabilities. FII expected to achieve large-scale AI server shipments in 2025, which will drive profitability ahead. Quanta is optimistic about continued strong performance of AI server business and expected that AI server revenue will continue to grow strongly by triple-digit % in 2025, with overall server revenue mix increasing from 50%+ to 70%.

GB200 server ODM market integration to accelerate. As GB200 server architecture became increasingly more complex, upgrade of AI product roadmap is also accelerating. In 2024, upstream chip company AMD acquires ODM company ZT Systems, and we expect AI server ODM industry integration to accelerate ahead. Given the close business relationship between Quanta/Foxconn and major CSPs, strong operating capital and research and development resources, as well as production bases across the world, we believe that Quanta and Foxconn will be the major beneficiaries. We expect that Quanda/Foxconn will occupy the majority of the GB200 server ODM market share.

Overall, we believe that server supply chains will continue to benefit from strong demand for general server recovery, GB200/ASIC AI server shipments, and enterprise customers' orders. Beneficiaries include Foxconn Industrial Internet as a top tier GB200 server supplier, BYD Electronics with H20/GB200 server related products' mass production, and FIT Hon Teng with GB200 server products and liquid cooling components shipment. In addition, AI server related beneficiaries include Dawning Information, Unisplendour, Foxconn Industrial Internet, Leit Systems and China Great wall Technology.

Figure 19: Server supply chain 3Q24 results and outlook

Company	Revenue	3Q22 A	4Q22 A	1Q23 A	2Q23 A	3Q23 A	4Q23 A	1Q24 A	2Q24 A	3Q24 A	4Q24E Cons.	Outlook/Guidance
Revenue Growth:												
Server Brands												
	YoY Growth %											
Dell (DELL US)	Client solutions Group (CSG)	-17%	-23%	-23%	-16%	-11%	-12%	-13%	-4%	-1%	3%	*3Q sales improvement due to GPM improvement especially in server biz and lower operational expense
	Infra. Solutions Group (ISG)	12%	7%	-18%	-11%	-12%	-6%	22%	38%	34%	26%	*3Q flattish server and storage profit margin and slight improvement is a positive sign; general server recovery and customers tend to buy high-end servers
	Total	-13%	-11%	-20%	-13%	-10%	-11%	6%	9%	10%	10%	*Expect 2025 ISG growth driven by AI servers and then general server and storage businesses
	QoQ Growth %											*AI demand shifted to Blackwell and corresponding demand has entered order backlog and waiting for delivery, enterprise customer demand is growing rapidly
	Client solutions Group (CSG)	-11%	-3%	-10%	8%	-5%	-5%	2%	4%	-2%	-1%	*Rack integration including network, storage and cooling systems provide space to expand profit margins
	Infra. Solutions Group (ISG)	1%	3%	-23%	11%	0%	10%	-1%	26%	-2%	4%	
	Total	-6%	1%	-16%	10%	-3%	0%	0%	13%	-3%	1%	
	YoY Growth %											
HP Enterprise (HPE US)	Server	-	16%	-7%	-14%	-20%	23%	18%	35%	33%	27%	* 3Q personal PC biz sales grew 2% YoY but below market expectations; consumer PC declined 4% YoY while commercial PC jumped 5% YoY
	Hybrid Cloud	-	12%	9%	7%	-7%	-10%	-8%	-7%	0%	28%	* 3Q uneven results is mainly due to limited recovery of PC market demand
	Intelligent Edge	24%	23%	47%	48%	39%	3%	-19%	-23%	-18%	12%	* AI PC function is not widely popularized among consumers, and some have only a partial understanding of the benefits of AI PC
	Financial Services	0%	4%	4%	7%	2%	0%	1%	1%	2%	2%	*The slowdown of global economic growth, work from home trend fading, weaker consumer demand for personal PC and strong competition from domestic and overseas PC brands have led to major products including personal computers' shipment decline
	Corp. Investments & Other	-32%	-11%	-10%	3%	10%	2%	4%	7%	1%	8%	* Chinese market is experiencing a downturn with weak product sales such as PCs and printers
	Total	7%	12%	4%	1%	-7%	-13%	3%	10%	2%	15%	* Profit outlook for 1Q25E is lower than expected and slow recovery of PC market
	QoQ Growth %											
	Server	-	-3%	-24%	-4%	13%	-6%	15%	11%	11%	-10%	
	Hybrid Cloud	11%	-4%	-1%	2%	-4%	-7%	1%	4%	3%	19%	
	Intelligent Edge	3%	16%	15%	8%	-3%	-15%	-10%	3%	2%	17%	
	Financial Services	5%	2%	-2%	2%	0%	0%	-1%	1%	2%	-1%	
	Corp. Investments & Other	0%	-3%	3%	2%	7%	-10%	6%	4%	1%	-3%	
	Total	13%	-1%	-11%	0%	5%	-8%	7%	7%	-8%	9%	
	YoY Growth %											
Supermicro (SMCI US)	Server & Storage Systems	102%	68%	2%	37%	15%	107%	218%	148%	201%	71%	* DLC liquid cooling system can significantly reduce energy costs and improve computing performance for customers; expect 15-30% of new data centers will adopt liquid cooling technology facilities within the next year
	Subsystems & Accessories	-24%	-24%	-43%	0%	10%	61%	27%	78%	88%	24%	*Prepared relevant solutions for GB200, NVL72, and B200 liquid cooled and air-cooled rack systems based on Blackwell and waiting for Blackwell chip supply
	Total	79%	54%	-5%	34%	14%	103%	200%	143%	180%	63%	*Blackwell chip supply will significantly affect the rack shipment and corresponding performance
	QoQ Growth %											*Modular solution DCBBS constructed by the center will promote the popularization of liquid cooling technology in the data center market and help customers reduce operating costs and achieve higher operational efficiency in the future
	Server & Storage Systems	16%	-3%	-30%	75%	-3%	75%	8%	36%	18%	-1%	
	Subsystems & Accessories	-9%	2%	-16%	28%	0%	50%	-34%	79%	6%	-1%	
	Total	13%	-3%	-29%	70%	-3%	73%	5%	38%	12%	1%	
	YoY Growth %											
Lenovo (992 HK)	Intelligent Devices Group (IDG)	-11%	-34%	-33%	-28%	-16%	7%	7%	11%	17%	6%	*liquid cooling servers continue to grow at a double-digit rate due to widespread adoption by customers
	Infra. Solutions Group (ISG)	33%	48%	56%	-8%	-23%	-13%	15%	65%	65%	40%	*Expect PC market to steadily recover and enter a new update cycle driven by AI PCs; AI PC will gradually grow and account for 80% of PC market by 2027
	Solutions & Srv. Group (SSG)	26%	23%	18%	18%	11%	10%	10%	10%	13%	12%	* ISG sales will exceed market average driven by strong cloud demand for hybrid infrastructure, recovery of enterprise demand, and accelerated adoption of liquid cooling
	Total	-4%	-24%	-24%	-24%	-16%	3%	9%	20%	24%	12%	*ISG sees strong demand for AI GPU server orders; expect orders received will be converted into revenue contributions starting from 2H24E
	QoQ Growth %											*ISG latest ThinkSystem server is based on the NVIDIA GB200 platform and uses advanced sixth generation Neptune technology to achieve 100% liquid cooling without the need for specialized data center air conditioning
	Intelligent Devices Group (IDG)	-4%	-16%	-15%	5%	12%	7%	-15%	9%	18%	-3%	
	Infra. Solutions Group (ISG)	25%	9%	-23%	-13%	5%	219%	-60%	25%	5%	5%	
	Solutions & Srv. Group (SSG)	18%	7%	-10%	4%	12%	5%	-10%	4%	15%	4%	
	Total	1%	-11%	-17%	2%	12%	9%	-12%	12%	16%	-1%	
Server ODMs												
FII (601138 CH)	YoY (%)	24%	12%	1%	-16%	-10%	-2%	12%	46%	40%	27%	*Cloud computing revenue increased by 71% YoY, with AI server revenue growing by 228% YoY, accounting for 45% of server revenue in 9M24;the proportion of AI servers in server revenue increased to 48% in 3Q24 (compared to 46% in 2Q)
	QoQ (%)	-	11%	-30%	-5%	21%	21%	-20%	24%	16%	10%	*Positive on AI technology to drive profits; GB200 and AI related network products will be launched on a large scale and will further drive profit growth in 2025
												*Continue to increase R&D and shipment of AI related products to drive profit growth
												*The layout of products on GB200 key components includes GPU, baseboard, ComputeBoard, NVLinkSwitches, SmartNIC, DPU and other components, which cover all key links of the AI industry chain; the only supplier in the industry with comprehensive production capacity and expect to achieve large-scale shipments by 2025 with profit margin improvement
												*Committed to providing customers with comprehensive heat dissipation solutions, including In Rack, Sidecar; expect to have higher profit margins than previous generations of products
Quanta (2382 TT)	YoY (%)	46%	22%	-12%	-9%	-25%	-12%	-3%	27%	48%	42%	* 3Q sales and net profit growth rate accelerated; GPM improvement due to rising products' competitiveness
		41%	-15%	-18%	-8%	17%	0%	-10%	20%	37%	-4%	*Significant increase in inventory, strong demand from downstream customers with sufficient orders
	QoQ (%)											* Positive on the continuous strong performance of the AI server business, and expect that AI server revenue will continue to grow strongly in the third digit percentage by 2025. The proportion of overall server revenue will increase from currently over 50% to over 70%.
Wistron (3231 TT)	YoY (%)	13%	0%	-6%	-15%	-13%	-13%	13%	16%	26%	25%	* Flattish shipment from laptops, desktops and monitors in 4Q24E
	QoQ (%)	2%	5%	-20%	-2%	5%	6%	4%	0%	14%	6%	*AI servers maintain monthly and quarterly growth trends
Inventec (2356 TT)	YoY (%)	-2%	-9%	-7%	-4%	-5%	-5%	9%	18%	21%	34%	* Revenue growth in 9M24 was due to: 1) increasing ships in operation, resulting in increase in operational efficiency; 2) foreign trade biz has achieved a simultaneous increase in ASP and shipment
		5%	-5%	-11%	9%	4%	-6%	2%	18%	6%	5%	* Have the water-cooling product and mother board design for Nvidia B100 AI servers; achieved a significant share in orders in GB200
	QoQ (%)											*AI server shipment focus on motherboards with GPM of over double-digits; server motherboards account for ~20% of total market
Gigabyte (2376 TT)	YoY (%)	-23%	-9%	-14%	15%	53%	64%	97%	183%	90%	50%	* Received the first GB200 large order with a total amount of Rmb$20bn from a major European customer; expect to start shipping in 1H25E, and the number of customers is constantly increasing
		7%	15%	1%	-7%	42%	23%	21%	34%	-5%	-3%	*Revised up 2024 revenue from NT$120bn to NT$160bn; by 2025, sales will reach Rmb$250bn with the support of GB200 and water cooling technology is one of the key advantages for obtaining orders
	QoQ (%)											
Profitability (GPM/OPM)												
Server Brands												
Dell	Infra. Solutions Group (ISG) OPM	14.3%	15.6%	9.7%	12.4%	12.6%	15.3%	8.0%	11.0%	13.3%	15.3%	*Service, installation (L11 and L12), DFS (Dell Financial Services) and financing measures, as well as opportunities in the network and storage fields, are the means to continuously improve GPM
HPE	Server OPM	14.0%	15.7%	14.4%	10.1%	10.1%	11.4%	11.0%	10.8%	11.0%	11.1%	*low AI servers GPM is temporary; expect to achieve higher GPM from corporate clients in the future
Supermicro	Blended OPM	12.5%	12.8%	8.7%	11.0%	10.8%	11.3%	11.3%	7.8%	9.5%	8.5%	*3Q sales and GPM below expectations due to Nvidia chip supply shortage
Lenovo	Infra. Solutions Group (ISG) OPM	1.4%	1.5%	0.3%	-3.2%	-2.7%	-1.5%	-3.8%	-1.2%	-	-0.3%	* Commercial PC recovery in 2025 will drive NPM and ASP upside
Server ODMs												
FII	GPM	7.6%	8.1%	7.4%	7.0%	9.3%	8.3%	7.6%	6.0%	11.5%	9.0%	*9M24 GPM YoY decline due to product mix change
Quanta	GPM	5.6%	6.5%	6.6%	8.5%	8.1%	8.1%	8.5%	8.6%	7.3%	7.1%	
Wistron	GPM	7.2%	8.6%	7.0%	7.6%	7.9%	9.3%	7.2%	8.4%	8.4%	8.6%	
Gigabyte	GPM	12.4%	9.3%	12.6%	11.8%	13.3%	11.0%	11.3%	10.8%	10.3%	10.7%	

Source: company data, company presentation PPT, company official website, earnings call transcripts, CMBIGM

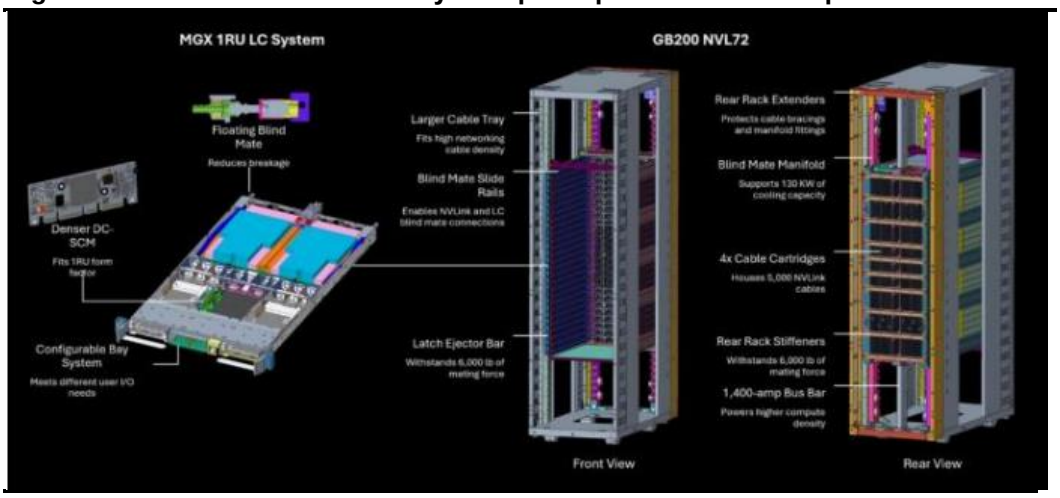
Server Components: GB200/300 new architecture to drive ecosystem development, benefiting upstream suppliers

The launch of GB200 server rack solutions, based on NVIDIA's B200, achieved another key milestone of innovative GPU solutions. Compared to traditional NVIDIA HGX H200 8-card servers, GB200 rack can integrate 36 or 72 B200 compute chips in the same rack, enabling a transfer speed of 1.8TB/s between each chip, providing an optimal solution for building large-scale AI compute infrastructure. Taking GB200 NVL72 as an example, one single NVL72 rack consists of 18 compute trays and 9 NVLink Switch trays. This innovative architecture provides new business opportunities for upstream component suppliers across optical/copper connections, liquid cooling solutions, and power supply solutions.

At the OCP (Open Compute Project) global summit in Oct this year, the NVIDIA GB200 NVL72 became the highlight of the conference. Suppliers from various sectors, including server assembly, interconnect cables, power supplies, and cooling systems, showcased their components that comply with the product design guidelines published by NVIDIA for the GB200 NVL72 on the OCP platform. OCP, an open-source collaboration platform initiated by Meta in 2011, aims to promote hardware innovation for compute infrastructure components (including servers, storage, and networking devices) and support the development of the entire datacenter infrastructure supply chain. Currently, OCP has over 400 membership companies, and has listed more than 270 products with over 400 approved contributions, including standardized designs, best practice solutions, and recommended reference architectures. In this instance, NVIDIA shared the recommended design for the GB200 NVL72 on the OCP platform, including official design guidelines and detailed parameters for the architecture design, compute trays and Switch trays, liquid cooling system, thermal management, and NVLink Cartridge.

We believe that by publishing the full content and parameters of the GB200 NVL72 recommended design on the OCP platform, NVIDIA will lead the integration of the AI server supply chain towards greater openness, benefiting more component companies along supply chain. It is beneficial for enhancing supply chain collaboration, encouraging participants in the supply chain to accelerate hardware innovation and production efficiency improvements, and jointly addressing the challenges currently facing the GB200 production.

Figure 1: Nvidia's GB200 NVL72 system plans published at OCP platform



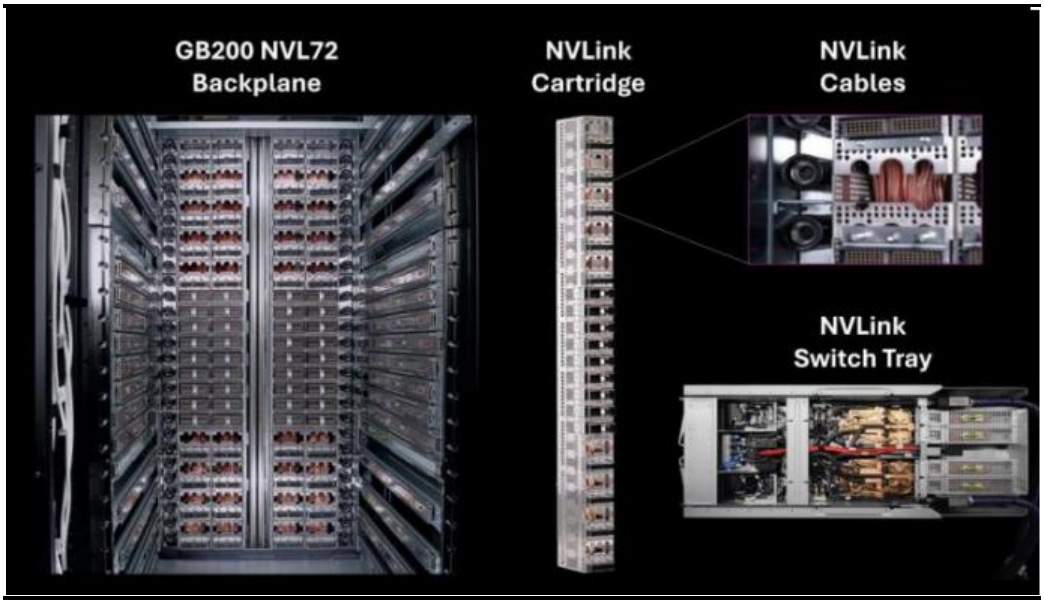
Source: Nvidia, CMBIGM

Copper connectors: Rack solutions expected to become mainstream

In GB200 NVL36/72 rack solutions, high-speed communication between 36 or 72 GPUs is required to achieve full performance. Considering factors such as cost, transmission loss, and energy consumption, copper connections are the best solution for inner-rack communication between multiple GPUs. As a result, a large number of copper cable connections are used in NVIDIA GB200 NVL36/72 racks. Each GPU is directly connected to 18 NVLink cartridge ports, with each NVLink port connected to the NVSwitch board via four wire bundles (Overpass cables). We expect that each GB200 NVL72 rack will be equipped with 5,184 copper cables.

In addition to communication between compute trays and Switch trays, copper connections are also adopted in jumpers, MCIO connectors, storage interface products, PCIe connectors, and other I/O interface products, including EDSFF and Gen-Z connectors. Currently, the NVLink cartridge ports are exclusively supplied by the American company Amphenol, which also supplies the wire bundles through its subsidiary Amphenol Times Microwave Systems, as well as upstream suppliers like WOER and DingTong Technology. Additionally, FIT Hon Teng is actively engaged in compute tray copper connectivity solutions and the backplane/switch tray related products are currently under sample verification. Leveraging its advantages in traditional server interfaces and connectors, along with its close cooperation with its parent company, Foxconn Group, FIT Hon Teng has achieved a total content value of US$500-1,000 for its connection products on compute trays. Shipments already began in 3Q24, with further supply share growth potential in 2025.

Figure 21: Copper connectivity designs in Nvidia's GB200



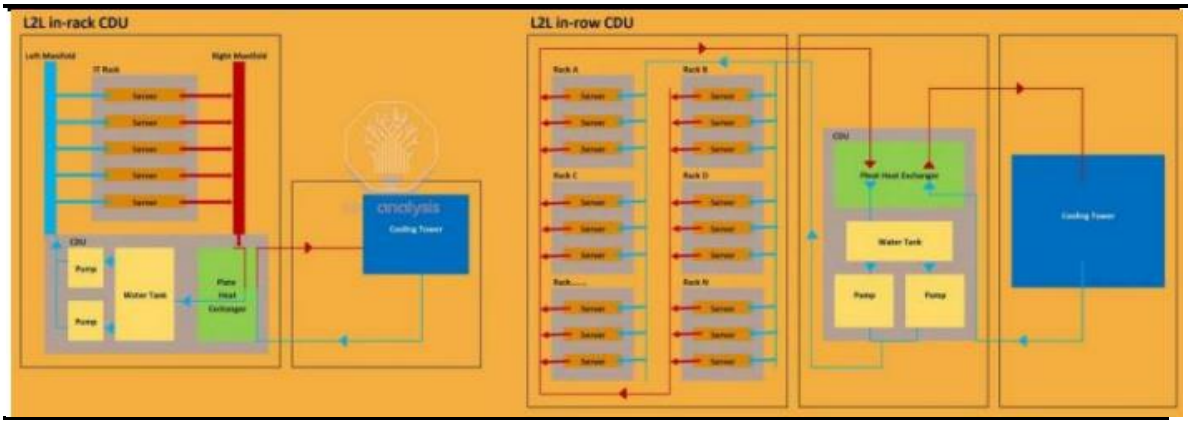
Source: Nvidia, CMBIGM

Liquid cooling: Replacing air cooling as mainstream cooling solution

Due to significant increase in power requirements driven by enhancement of AI computing power, the demand for TDP (Thermal Design Power) climbed rapidly, leading to upgrades from traditional fan-based cooling solutions. Liquid cooling became the optimal solution for AI computing infrastructure. The liquid cooling components in NVIDIA's GB200 include cold plates, manifold, rear-door heat exchangers (RDHx), and liquid cooling distribution units (CDU). The CDU is used to regulate the server cooling system and maintain the temperature within the required standards. Each NVL36/72 rack requires one CDU, and each CDU contains four UQD (universal quick disconnect).

As AI computing infrastructure development accelerates, demand for liquid cooling systems is growing rapidly, leading to supply shortage of UQD in 3Q24. Previously, UQD products were mainly supplied by European and American companies such as Danfoss, Parker, CPC, and Staubil, with demand concentrated in niche sectors and limited supply capacity expansion. However, with the surge in demand for liquid cooling components in AI datacenters, there are more opportunities for supply chain in Greater China. According to our industrial survey, BYD Electronics is currently conducting customer validation for the liquid cooling distribution units (CDU) and cold plates in NVIDIA's GB200 solution, with shipments starting in 2025 after successful validation.

Figure 22: AI datacentre liquid cooling solutions



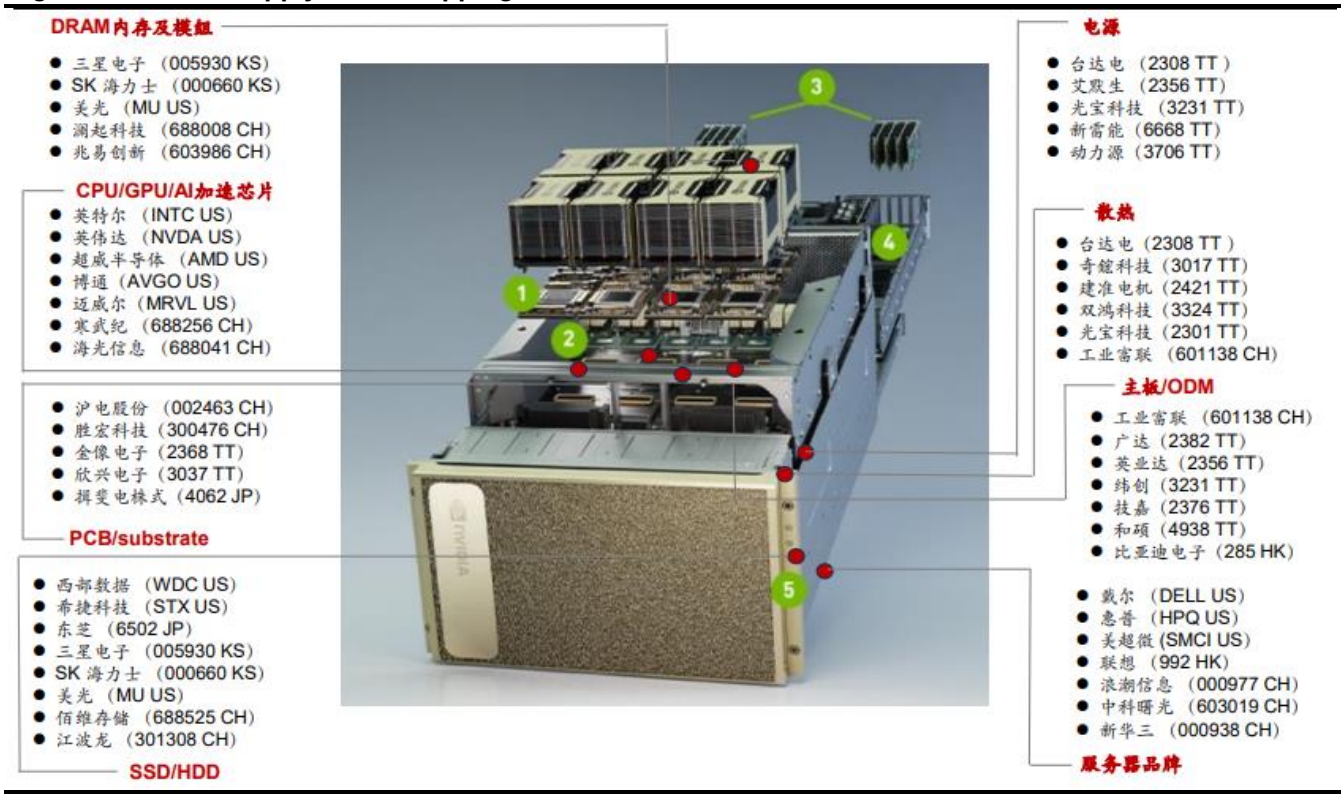
Source: Semi Analysis, CMBIGM

At the 2024 HHTD (Hon Hai Technology Day) exhibition, Hon Hai Group showcased its liquid cooling solutions and related components, such as cold plates, UQD, and manifold. According to our industrial survey, FIT Hon Teng has begun supplying UQD products for the GB200 liquid cooling solution. Although the liquid cooling component market is highly competitive, and more suppliers are expected to enter the field by 2025, we remain optimistic about FIT Hon Teng's expansion of its AI server product portfolio. Currently, we estimate that FIT Hon Teng will generate approximately US$300 per GB200 rack for liquid cooling-related products.

Power supply: High voltage and high current applications to drive innovation in power components

The Nvidia GB200 rack solution adopts an innovative power supply design. To accommodate the high computational density and increased power requirements within the rack, the GB200 uses a new power system design, incorporating high-capacity power busbars to enhance power transmission capacity, supporting currents of up to 1,400 amperes—doubling the capacity compared to the previous standards. According to our industrial survey, FIT Hon Teng has already started supplying power busbar products. Assuming the average selling price (ASP) of the power busbar is US$300 and FIT Hon Teng's supply share in FY25 is 5%, we expect related revenue to reach US$10mn in FY25.

Figure 23: Server supply chain mapping



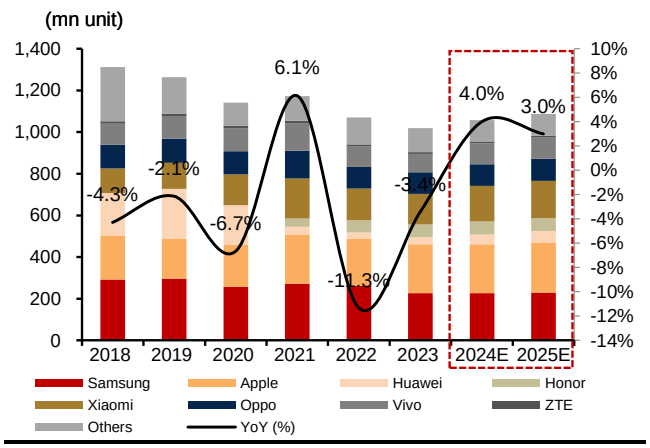
Source: CMBIGM

Global smartphones: Edge AI use case to drive innovation and enhance user experience

After two consecutive years of smartphone recovery in 2023-2024, we believe rapid development of AI applications on smartphones will trigger a new replacement cycle and more use case innovations in 2025. We expect global smartphone market to continue moderate recovery and shipment will grow 3% YoY to 1.25bn in 2025. We also suggest to pay attention to several key factors in 2025: 1) Trump's new tariff policies; 2) China's subsidy policies for smartphones and other consumer electronics.

In addition, we expect domestic supply chain to deliver profitability improvement, driven by global share gains, easing competition and cost-efficiency enhancements. Looking into 2025, we expect smartphone brands will embrace AI era, driving advancements in human-machine interaction. We believe this transition will boost demand for both software and hardware upgrades on edge devices. Furthermore, innovations such as foldable designs, including tri-fold displays, are also worth close attention.

Figure 24: Global smartphone shipment forecast



Source: IDC, CMBIGM estimates

Figure 25: Global smartphone shipment (by brand)

(mn unit)	2020	2021	2022	2023	2024E	2025E
Samsung	257	272	262	227	226	230
Apple	203	236	226	234	235	240
Xiaomi	148	191	153	146	170	180
Huawei	189	38	31	35	48	55
Honor	-	40	57	61	62	61
Oppo	161	211	166	154	155	157
Vivo	112	132	99	88	100	100
Others	212	240	212	220	215	225
Total	1,281	1,360	1,206	1,165	1,211	1,248
YoY	-7%	6%	-11%	-3%	4%	3%

Source: IDC, CMBIGM estimates

Apple: Expect a strong 2H25E after softness in 1H25E. Demand for iPhone 16 base models in 2024 is weaker than anticipated, and we expect headwinds for iPhone 16 series in 1H25E. However, the launch of new iPhone SE4 in 2Q25E (20mn estimate) will partially offset the weakness of iPhone 16 series, in our view. In addition, with the introduction of Apple Intelligence and other native applications, we believe iPhone 17 series will drive AI upgrade cycle in 2H25E. We estimate iPhone shipment to grow 2% YoY to 240mn in 2025.

Huawei: Uncertainties remain, potential impact on Honor. We believe Huawei's outlook remains uncertain due to lingering component shortages, which posed challenges for its high-end models in 2024/25. We estimate Huawei shipment of 48mn in 2024, slightly below supply chain targets set earlier. Looking into 2025, we project Huawei to grow 15% YoY to 55mn. However, as Huawei and Honor overlap in certain markets and sales channels, Huawei shipment increase in 2025 could potentially impact Honor's performance.

Samsung/Oppo/Vivo: Facing pressure amid market shifts. In 2024, Oppo and Vivo expanded presence in low-end emerging markets, but demand for their high-end models remained weak. As Chinese brands accelerate their global expansion, Samsung is likely to face increasing pressure in overseas markets. In addition, if the Trump administration implements higher tariffs on Chinese products, high-end iPhone models—most of which are manufactured in China—could be directly impacted. This could create an opportunity for Samsung to emerge as a key beneficiary in the high-end smartphone segment.

2025: A potential supercycle for iPhone upgrades (iPhone SE4, iPhone 17/Air/Pro/Max)

Looking into 2025, we are positive on Apple supply chain with a strong product pipeline. iPhone 16 series introduced initial AI capabilities in 2024, and with advancements in edge AI models in 2025, we expect iPhone 17 series to deliver significant hardware upgrades and innovations in edge AI functionality. Beyond 2025, we believe Apple will launch foldable phones and smart glasses in 2026, further solidifying its core competitive advantage in chips, systems, hardware, and AI model ecosystems.

2025 iPhone lineup: Expanding the AI Hardware Ecosystem. We expect Apple to launch five iPhone models in 2025, accelerating its push to build a comprehensive AI hardware ecosystem. The introduction of iPhone 17 Air is expected to attract significant consumer interest, while SE4 will provide an affordable upgrade path for older iPhone users. We expect Apple's hardware upgrades and advancements in edge AI capabilities to drive shipment growth in 2025-2026. With the release of SE4, a slim model (Air), and a foldable phone in 2025, we project iPhone shipments to reach 240-260mn in 2026.

1) **iPhone SE4**: Replacement for SE3 in 2022. Entry-level option with modern features.
2) **iPhone 17**: The standard flagship model.
3) **iPhone 17 Air:** New addition replacing "Plus" model, featuring the most significant design overhaul in the past decade.
4) **iPhone 17 Pro**: The premium flagship model.
5) **iPhone 17 Pro Max:** The top-tier model with the highest specifications.

Figure 26: iPhone16/17 series major supplier

	iPhone 16 Series	iPhone 17 Series
Baseband	Qualcomm	Qualcomm, Apple
Lens	Largan, Genius, Sunny	Largan, Genius, Sunny
Camera module	LGI, Hon Hai, Cowell	LGI, Hon Hai, Cowell
Display panel	Samsung, LGD, BOE	Samsung, LGD, BOE
Battery steel case	Sunway, Ruilong	Sunway, Ruilong, Lingyi
Battery pack	Sunwanda, Desay, Simplo	Sunwanda, Desay, Simplo
Acoustics/haptics	AAC, Goertek, Luxshare	AAC, Goertek, Luxshare
Cooling (VC)	-	AVC, AAC
Glass back cover	Lens,Biel, BYDE	Lens,Biel, BYDE
Structural parts	FII, BYDE, Lens, Luxshare	FII, BYDE, Lens, Luxshare
OEM assembly	Hon Hai, Luxshare, TATA	Hon Hai, Luxshare, TATA

Source: CMBIGM. Note: Those marked in red are suppliers with increasing share allocation.

Figure 27: Supplier mapping and sales mix (2024)

Company	Ticker	Apple	Huawei	Samsung	Other brands	Others	Major products
AAC Tech	2018 HK	25%	10%	10%	43%	12%	Acoustics, haptics, optics, casing
FIT Hon Teng	6088 HK	25%	-	-	-	75%	Connectors, AirPods, accessories, EVs, servers
Sunny Optical	2382 HK	5%	5%	15%	60%	15%	Camera modules, lens sets, automotive lenses/modules
BYDE	285 HK	60%	5%	5%	15%	15%	Metal/Glass/Plastic casing, ODM/OEM, automotive
Tongda	698 HK	5%	5%	5%	50%	35%	Metal/plastic casing
Q-Tech	1478 HK	-	5%	-	85%	15%	Camera module/lens, fingerprint module, auto CCM
TK Group	2283 HK	10%	-	-	-	90%	Plastic molding, plastic precision
Truly	732 HK	-	-	3%	62%	35%	Camera module, fingerprint, display module
Cowell	1415 HK	90%	-	5%	-	5%	Camera module
Luxshare	002475 CN	60%	10%	3%	-	27%	Wireless, iPhone/AirPods/Watch OEM, Acoustic/haptics

Source: Company data, CMBIGM estimates

AI Smartphone poised to drive hardware innovation, edge AI application to enhance user experience

Major smartphone SoC suppliers introduced the latest AI smartphone SoC products with more advanced features

Following the release of the first generation smartphone processor chips that supports AI smartphone edge computing requirements in the fall of 2023, Qualcomm, MediaTek, Samsung, and Google have all launched the latest generation of AI smartphone SoC in 4Q24, which have further improvements in processing technology, AI performance, power consumption, and memory. In terms of AI capability, Apple A18/A18 Pro is equipped with the same 16-core NPU chip as the previous generation; the Qualcomm Snapdragon 8 Elite chip uses an enhanced version of the Hexagon AI processor, achieving a 45% performance increase compared to the previous generation and supports multimodal AI model operations on the edge. The latest MediaTek Dimensity 9400 is equipped with a brand-new 8th generation NPU 890, with stable diffusion performance doubled compared to the previous generation, and edge multimodal AI computing performance of 50 Tokens/second.

Figure 28: The latest AI smartphone SoC chips

		Qualcomm Snapdragon 8 Elite	MediaTek Dimensity 9400	Apple A 18/A 18 Pro	Google Tensor G5
Launch date		10/22/2024	10/9/2024	9/10/2024	10/24/2024
Launch model		Xiaomi 15 Series	Vivo X200 Series	iPhone 16 Series	Google Pixel 10 Series
Process		TSMC 3nm N3E	TSMC 3nm N3E	TSMC 3nm N3E	TSMC 3nm
CPU	Clock speed	4.32GHz	3.62GHz	4.05GHz	3.40GHz
	CPU core count	64-bit Qualcomm Oryon/8	Arm Cortex-X925 CPU/8	6	8
	Core Type	2*4.32GHz Super Core	1*Cortex-X925 Prime core	2*high performance cores	1*Cortex-X4 core
		6*3.52GHz High Performance core	3*Cortex-X4 Prime core	4*efficiency cores	5*Cortex-A725 core
			4*Cortex-A720 big core		2*Cortex-A520 core
GPU		Qualcomm Adreno	Arm Immortalis-G925 MC12	Mali-G79/G79 Pro GPU	Imagination Tech DXT-48-1536 GPU
Ray-tracking		Yes	Yes	Yes	Yes
Memory		5.3GHz LPDDR5X	LPDDR5X	LPDDR5X	LPDDR5X
		24 GB，UFS 4.0	UFS 4.0+MCQ	8GB	12GB, UFS3.1
Connectivity		Wi-Fi 7; Bluetooth 6.0	Wi-Fi 7	Wi-Fi 7; Bluetooth 5.3	WiFi 7
AI chip/NPU		Hexagon Processor	MediaTek NPU 890	16 core Apple NPU	Google TPU
Comment		AI Engine boasts the fastest Qualcomm Hexagon NPU, delivering a 45% AI performance improvement and 45% better performance per watt.	World's 1st high-quality on-device video generation and on-device LoRA training. >50 token MLLM generation performance and +100% diffusion generation performance compared with last generation.	Up to 30% performance improvement compared with A16, 50% CPU performance improvement compared with A15.	Tensor G5 AI performance has increased by 40% compared to the previous generation. The new TPU includes a small embedded RISC-V core that supports on-device training.

Source: Company data, CMBIGM estimates

Apple: Upcoming integration of ChatGPT with Apple Intelligence, eye on service revenue boost from AI application deployments

Since the release of Apple Intelligence in mid-2024 and its subsequent updates in iOS 18, iPadOS 18, and macOS Sequoia, Apple's hardware ecosystem has been equipped with AI capabilities including text correction and rewriting, text summarization, audio-to-text conversion, image creation, image and video search, and updated Siri with more advanced language capabilities.

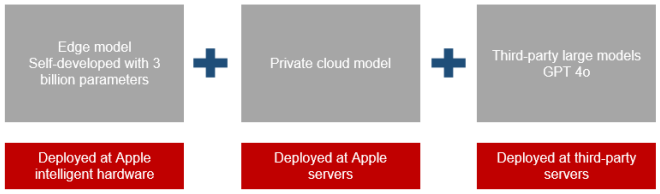
In terms of cross-application functionality, Siri can perform AI functions across Apple and third-party apps, based on user's personal and on-device information. In the latest round of iOS 18.2 updates in December, users are able to invoke ChatGPT features from the Siri interface, as well as experience the integration of ChatGPT with the iOS system.

We believe that Apple's strong hardware user base, software ecosystem construction, and the broad developer community will enable Apple to break down barriers between different hardware devices and software applications, bringing consumers a full AI experience at the edge. In terms of pricing and the use of the ChatGPT-integrated version of Apple Intelligence, Apple Intelligence will be provided free of charge to users, which includes basic ChatGPT features. The option to upgrade to the ChatGPT Plus plan requires an additional payment of $19.99 per month, and we are positive on the trend of service revenue growth triggered by Apple Intelligence in the future.

Figure 29: Apple Intelligence AI functions

Source: WWDC, CMBIGM estimates

Figure 30: Apple AI deployments



Source: WWDC, CMBIGM estimates

Figure 31: Smartphone vendor edge AI models

Brand	Edge model	Parameters (bn)	Self-developed
Apple	AFM-on-device	3	Yes
Samsung	Gemini Nano	1.8/3.25	No
Google	Gemini Nano	1.8/3.25	Yes
OPPO	AndesGPT	7	Yes
vivo	BlueLM	7	Yes
Xiaomi	MiLM 2	0.3-6	Yes
Huawei	Pangu		Yes

Source: Company data, CMBIGM estimates

Xiaomi: AI Empowers the "Human-Car-Home" ecosystem

Xiaomi has introduced its self-developed MiLM2 model matrix, emphasizing a lightweight structure and cloud-edge collaboration. Currently, the MiLM2 model matrix covers multiple parameter sizes, including 0.3B/0.7B/1.3B/2.4B/4B/6B/13B/30B, to meet the needs of different user scenarios. In terms of operating systems and AI voice assistant upgrades, following the update of Xiaomi's Hyper OS2, Xiaomi has launched Super Xiao Ai. Building on existing features such as voice assistance, image generation and meeting summary generation, it added functions like video search, automatic recording of IDs/addresses/schedules, personal data reminders and automatic operation execution based on personal operating habits. The update places a greater emphasis on personalized operations and the capabilities of human-computer interaction. In terms of ecosystem integration, HyperOS 2 promotes cross-ecosystem compatibility, supporting the interconnection between Apple and Xiaomi devices.

Figure 32: Xiaomi's "human-car-home" ecosystem

Source: Xiaomi, CMBIGM

Figure 33: Super Xiao Ai voice assistant upgrades

Source: Xiaomi, CMBIGM

The current edge AI models on smartphones are primarily at the level of tens of billions of parameters, focusing on edge-to-cloud collaboration. Due to hardware and technical limitations such as edge-side computing power and storage capabilities, AI applications on smartphones are still limited to tasks like text content generation, voice assistant, image search and generation. More complex tasks still require cloud-based large models. At present, the development of edge AI on smartphone is focused on enhancing the cross-application and cross-device intelligence of AI Agents, allowing them to collect user habits to predict user's needs and perform tasks.

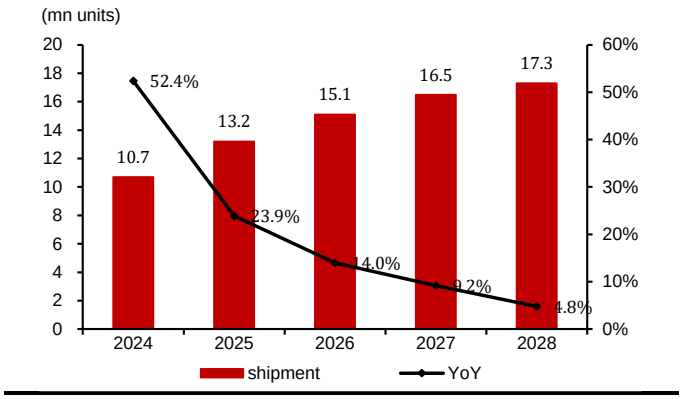
The storage and collection of user data on mobile devices are the foundation for the functionality of the on-device AI Agent. The ability to perform commands across software applications/hardware devices, and even across ecosystems, becomes more important. Therefore, we are optimistic about mobile brands that have a strong global user base, AIoT multi-device interconnection ecosystem, software operating system, and the edge-cloud AI model development capability. In the overseas market, we recommend investor's attention on Apple, and for the domestic market, we are optimistic about Xiaomi. We believe that Xiaomi will significantly benefit from the future explosion of edge-side AI applications and AI smart hardware.

Foldable smartphones: Accelerated market penetration, product innovation triggered high-end consumer demand

In 2024, global shipments of foldable smartphones are expected to continue to grow, significantly outpacing that of overall smartphone market. China's foldable smartphone shipment grew by 13.6% YoY in 3Q24, reaching 2.23mn units, by IDC. However, due to high base in 2H23, growth momentum is showing signs of slowdown. In 3Q24, penetration of foldable smartphones in China stands at 3.2%. IDC predicted that China's foldable smartphone shipments will reach 10.68mn unit in 2024, up 52.4% YoY. By 2028, shipments are expected to exceed 17mn units, with a five-year CAGR of 19.8%.

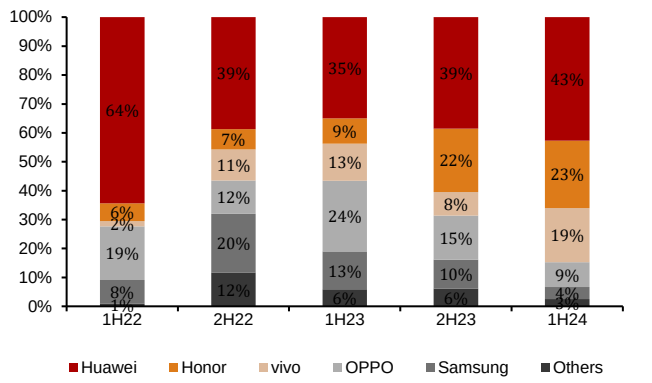
Huawei maintained a leading position in China's foldable smartphone market, backed by innovations in product design, component innovations and supply chain integration. In 1H24, Honor and Vivo captured market share of 23.3% and 18.7%. OPPO ranked fourth but has not launched any new foldable models this year. China and the US are the two largest markets for foldable smartphones globally, accounting for 56% of global shipments. Globally, Samsung remained the leading vendor in 1H24, but Chinese competitors such as Huawei and Honor are eroding its market share advantage. Xiaomi saw a significant boost in its market share thanks to the successful launch of its compact foldable model (Mix Flip) in 3Q24. We expect Apple to launch a foldable iPhone model in 2026, which could be a major catalyst to accelerate the adoption of foldable smartphones.

Figure 34: China foldable phone market (2024-28E)



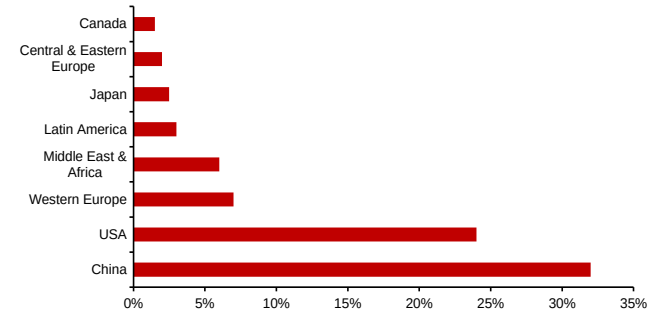
Source: IDC, CMBIGM estimates

Figure 35: China's foldable phone market



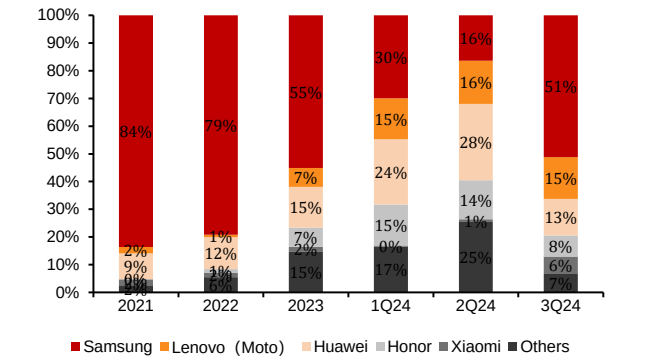
Source: IDC, CMBIGM estimates

Figure 36: China/US lead in global foldable phone demand



Source: IDC, CMBIGM estimates

Figure 37: Global foldable phone market (2021-3Q24)



Source: IDC, CMBIGM estimates

As Chinese foldable smartphone market gradually matures, major smartphone brands are transitioning from early exploratory phase to upgrade phase for hardware innovations and differentiated designs. Early generations of foldable phones, constrained by the limitations of internal space and design complexity, often compromised on processing performance, storage capacity, battery spec, camera performance, thinness, and durability. However, significant advancements have been made in these areas with flagship foldable models launched in 2024 with cutting-edge design and technology.

In terms of pricing, flagship foldable models would boost ASP for Android brands. Large flagship foldable models are usually priced higher than the traditional flagship models from the same brand, which can serve as the flagship model to showcase hardware innovation and technological strength. Meanwhile, vertical foldable models also saw improvements in design and specifications, but their selling prices gradually declined as supply chain became more mature. The decline in pricing and design/specifications improvements continue to drive the penetration of foldable smartphones.

Figure 38: The latest foldable phone models from the leading smartphone vendors

Fodable phone model	Processor	Main camera	Memory	Battery	Start price (RMB)
Huawei Mate X6	Kirin 9100	50MP+40MP ultra-wide+48MP periscope telephoto+1.5MP	12/16GB+512GB, 16GB+1TB	5110mAh	13,999
Huawei Mate XT	Kirin 9010	50MP+12MP ultra-wide+12MP	16GB+512BG/1TB	5600mAh	19,999
Samsung Z Fold 6	Snapdragon 8 Gen 3	50MP+12MP+10MP	12GB+512GB/12GB+1TB	4400mAh	13,999
Samsung Z Flip 6	Snapdragon 8 Gen 3	50MP+12MP	12GB+256/512GB	4000mAh	7,999
Xiaomi MIX Fold 4	Snapdragon 8 Gen 3	50MP+50MP floating telephoto+10MP macro telephoto+12MP ultra-wide	12/16GB+256/512/1TB	5100mAh	8,999
Xiaomi MIX Flip 4	Snapdragon 8 Gen 3	50MP+50MP floating telephoto	12/16GB+256/512/1TB	4780mAh	5,999
Vivo X Fold 3	Snapdragon 8 Gen 2	50MP+50M portrait+50MP ultra-wide	12/16GB+256/512/1TB	5500mAh	6,999
Vivo X Flip	Snapdragon 8+ Gen 1	50MP+12MP ultra-wide	12GB+256/512GB	4400mAh	5,999
Honor Magic V3	Snapdragon 8 Gen 3	50MP+40MP ultra-wide+50MP periscope telephoto	12/16GB+256/512/1TB	5150mAh	8,999
Honor Magic V Flip	Snapdragon 8+ Gen 1	50MP+12MP ultra-wide	12GB+256/512GB/1TB	4800mAh	4,999
Honor V purse	Snapdragon 778G	50MP+12MP ultra-wide	12/16GB+256/512GB	4500mAh	5,999
OPPO Find N3	Snapdragon 8 Gen 2	48MP+64MP periscope telephoto+48MP ultra-wide	12/16GB+512/1TB	4805mAh	9,999
OPPO Find N3 Flip	Dimensity 9200	50MP+32MP telephoto+48MP ultra-wide	12GB+256/512GB	4300mAh	5,999

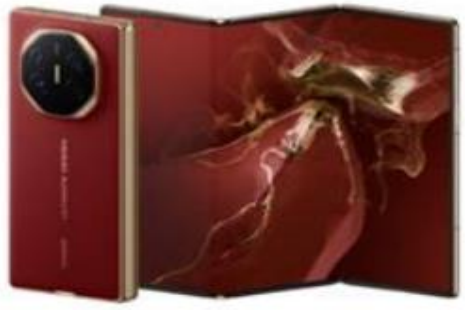
Source: Company websites, CMBIGM estimates

In Sept 2024, Huawei officially launched the world's first tri-fold smartphone, Mate XT, which boasts the world's largest foldable smartphone display of 10.2 inches. This device enhances user experience by supporting split-screen with improved reading capabilities. We believe large foldable smartphones have become a key category for major brands to showcase their hardware innovation and brand image, benefiting upstream component vendors. Hinges and displays are the key components in terms of BOM cost of foldable smartphones, and supply chain names include AAC Tech (hinges, structural components), Jiangsu Gian and NBTM (hinge products for Android), and Eontec (liquid metal hinge components).

Figure 39: Xiaomi's latest flip model smartphone

Source: Xiaomi, CMBIGM

Figure 40: Huawei's latest tri-fold smartphone



Source: Huawei, CMBIGM

Smartphone components: outsourcing, optics upgrade and casing's new materials

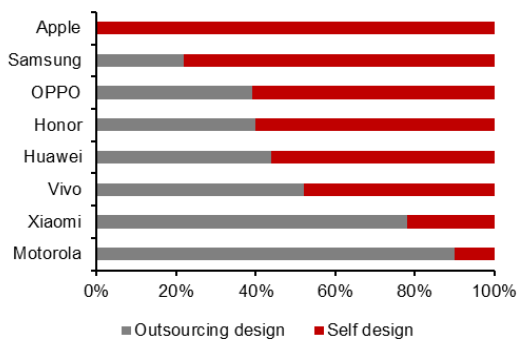
ODM: capacity relocation to boost competitiveness and market share

Chinese smartphone brand recovery on track; positive on ODM leaders' share gain in high-end models. According to Counterpoint, global smartphone market shipments increased by 7% YoY in 1H24., while shipment volume of independent design companies and original design manufacturers (ODM/IDH) increased by 6% YoY, mainly due to strong shipment from Chinese smartphone brands. Counterpoint predicts that global smartphone shipments will increase by 5% YoY in 2024, while the ODM/IDH market share will remain at around 41%. As competition in the smartphone industry becomes fierce, customers have higher requirements for cost, performance, and design. They also have higher demands on ODM manufacturers in terms of research and development, manufacturing processes, and productivity. We expect ODM leaders have cost advantages in research and development, design, and supply chain, making them more competitive when undertaking high-end smartphone orders.

Chinese consumer electronics market is relatively saturated; factory relocation to continue given geopolitical uncertainties and favorable policies. Due to increased uncertainty caused by geopolitics concerns, consumer electronics companies believe supply chain centralization poses certain risks. Currently, Apple has relocated some of its supply chains to India and Southeast Asia. We expect that by 2025, Apple's iPhone production in India will increase to 25% of its global production. Against the backdrop of technological competition between China and the US, saturation of Chinese consumer electronics market, and favorable policies in countries such as India and Southeast Asia, we believe relocation of tech industry chain will continue into 2025-26E, while some component companies have already relocated their production capacity since 2019.

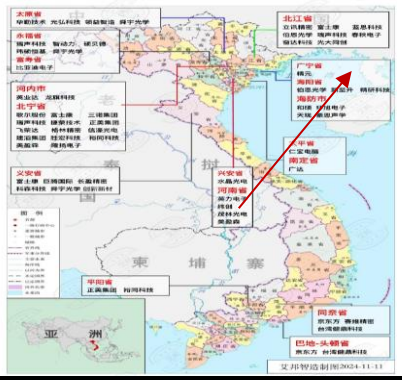
1) Luxshare: after expanding its Yi'an production capacity in Vietnam, Luxshare's Yi'an factory has entered Apple supply chain and will produce iPhone accessories or related products in the future. **2) Inventec:** in September 2023, it invested US$125mn to build a factory in Hanoi to produce smartphones, computer peripherals, circuit boards, and other smart products. The Vietnamese factory is expected to officially start production in 4Q24E, with a planned annual output of 32mn products for export. **3) GoerTek:** It established GoerTek Electronic Technology (Vietnam) Co., Ltd. in Vietnam in January 2024, with total investment not exceeding US$280mn, for production of headphones, smartwatches, VR&AR, and consumer electronics products. **4) Hon Hai Precision/Foxconn:** Foxconn has established a total of 14 subsidiaries or indirect holding companies in Vietnam, and has 16 manufacturing plants in northern Vietnam, with a total investment of US$3.2bn.

Figure 41: Smartphone self-design /outsourcing mix



Source: Counterpoint, CMBIGM

Figure 42: Location of CE companies in Vietnam



Source: Aibang, CMBIGM

Optics: focus on periscope, hybrid lens, large image size and OIS optical upgrade

High-end smartphones to boost lenses' demand and upgrade. Considering that high-end smartphones are equipped with more lenses, Trendforce expected global shipment of smartphone camera lenses will be approximately 4.22bn in 2024, up 3.8% YoY. Currently, smartphone manufacturers are focusing on developing smartphones with multiple cameras, including telephoto lenses, macro lenses, and ultra wide-angle lenses. According to Yixing Industry Research Institute, with 5G development, AI, integration of digital technologies in industries such as cloud computing and IoT creates significant growth potential for the optical lens market. It is expected that by 2030, global optical lens market size will reach RMB 103.59bn.

High-pixel smartphones to drive stable growth in camera module market. After spec upgrade from single camera to dual camera, various camera spec continue to innovate. Currently, rear camera of smartphones is composed of one main camera and multiple sub cameras, and different sub cameras correspond to different functions such as background blurring, far view details, and improvement of light input and image quality. Considering consumers' demand for integrity of photographic performance, camera upgrades include increasing pixels and overlaying cameras with different functions to achieve better and more complete photographic performance. We believe the increasing demand for high pixel smartphones will continue to drive stable growth for mobile camera modules market . According to QY Research, global market size of mobile phone camera modules will reach RMB41.57bn by 2030, with 3.6% CAGR for FY24-30E.

In terms of optical innovation, we are positive on following trends in 2025-26E:

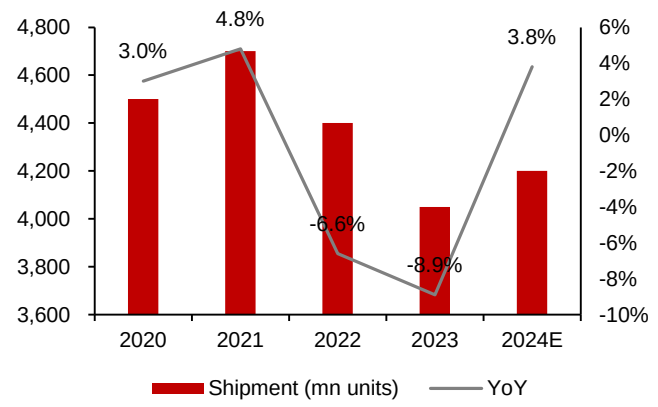
1) Periscope lens: This technology could imitate submarine periscopes to fold light and extend the transmission distance of light, thereby increasing the focal length of the lens. Periscope has the ability to capture images from a long distance, combines portability and aesthetics, protects mobile phone lenses, and improves imaging quality, resulting in a more balanced and delicate image. Due to high manufacturing cost of periscope lenses, which are mostly equipped in mid to high end mobile phones, we expect the periscope lens market to grow rapidly with more launches of high-end flagship phone models.

2) Glass plastic hybrid lens: Combining glass and plastic materials, it has better optical performance and lower cost, providing higher resolution, wider viewing angle and color reproduction, improving photo quality and reducing the overall weight of the phone.

3) Large image size: It becomes the direction of high-end camera modules, and it is expected to be used in lower to mid to low end mobile phones in the future.

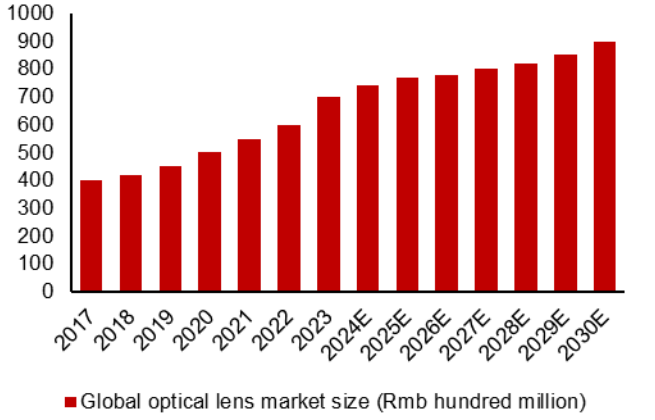
4) OIS: It can reduce hand shake issues and blurs in low light environments, which is a feature of high-end flagship models and support higher smartphone prices. With fierce competition from domestic mobile phones, OIS is expected to gradually penetrate into the mid to low end models. We suggest paying attention to mobile camera and module companies including Sunny Optical and Q-Tech.

Figure 43: Global smartphone lens shipment



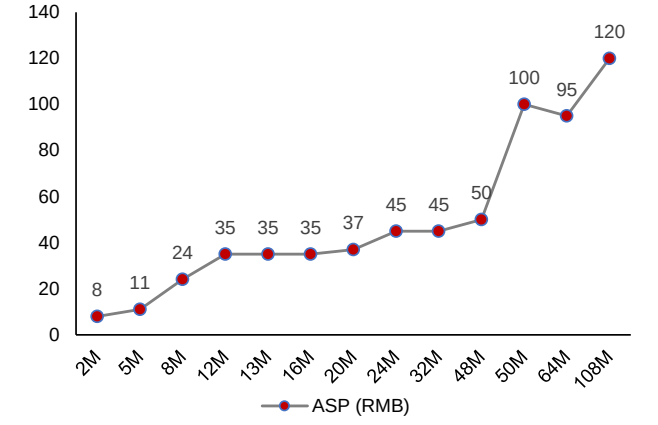
Source: Trendforce, CMBIGM

Figure 44: Global optical lens market size forecast



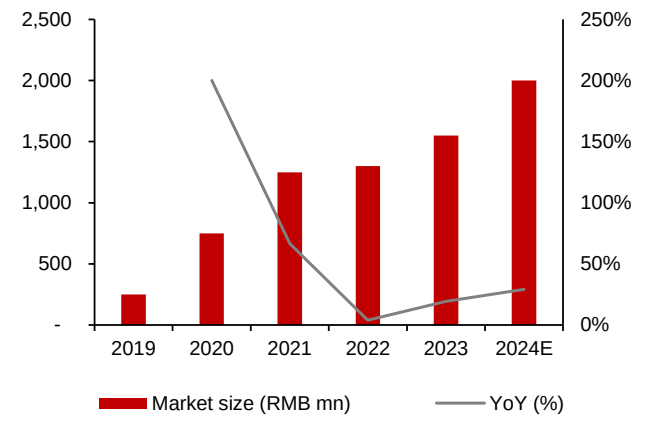
Source: Easseen Research, CMBIGM

Figure 45: Camera module ASP and pixel trend



Source: Trendforce, CMBIGM

Figure 46: China's periscope lens market size



Source: Gonyn, CMBIGM

Structural components/casing: glass, ceramics and composite as the mainstream, and aluminum and fiberglass are the future trends

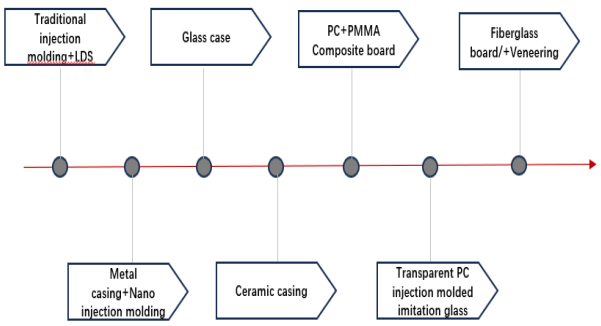
Glass, ceramics, and composite are currently the mainstream materials for mobile phone casing, and we are positive on fiberglass in next few years. According to Aibang, mobile phone casing have gradually upgraded from traditional plastic + LDS technology to metal cases + nano injection molding technology, but given 5G technology adoption, metal back casing became less popular due to weak signal issues. Afterwards, innovative technologies such as glass, ceramics, PC+PMMA composite board process, and transparent PC injection molding imitation glass process were introduced into market.

At present, mobile phone casing mainly use materials such as glass, ceramics, composite panels, fiberglass panels, and fiberglass + plain leather. Although fiberglass board has long been used on the back cover of tablets, its application on smartphones only begun to increase in recent years, such as Huawei, Honor and OPPO. Some models such as Xiaomi and Vivo have adopted it, especially the back cover of Huawei Mate60 series adopting fiberglass board spraying+3D printing technology. We expect that ceramic hot press bonding with fiberglass board will be the trend for lightweight back cover.

Dual material solution for aluminum frame and back cover of iPhone 17 flagship model. We expect Apple iPhone 17 Pro and iPhone 17 Pro Max flagship models will not adopt titanium alloy and stainless-steel frame materials, and they will become the first

flagship phones to adopt aluminum frames. In terms of back cover design, the two flagship models will also adopt a new partially aluminum and partially glass design for the back panel. The upper half of the back (camera module) will be made of aluminum and feature a rectangular camera protrusion made of aluminum instead of traditional 3D glass, while the lower half will continue to be made of glass to support wireless charging. Compared to the current design of all glass back cover, the new dual material solution will provide better durability and texture.

Figure 47: Smartphone cases' material innovation and upgrade trend



Source: Aibang, CMBIGM

Figure 48: Fiberglass and glass cover/composite comparison

Phone cover	3D Fiberglass Board (New)	Glass cover board (mature)	Composite board (mature)
Weight	*	***	**
Strength	****	*	**
Surface hardness	***	****	**
Thickness	*	**	**
Cost	**	**	**
Resistance	***	***	***
Heat dissipation	**	**	**
Environment friendly	**	**	***
Process maturity	***	***	****
Yield rate	**	**	***
Texture	***	***	***
Molding process time	***	***	**
Fire resistance	****	****	**
Forming process	Hot pressing	Hot bending	High pressure

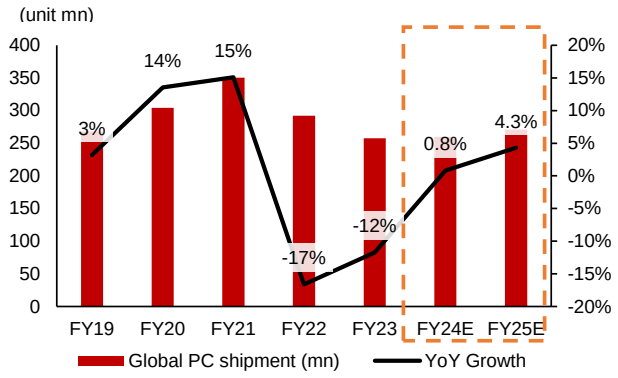
Source: Aibang, CMBIGM
Note: more * means higher the attribute

Global PCs: AI PCs and Windows 11 upgrades to drive industry recovery

In 1H24, global PC shipments experienced a mild rebound. However, due to weaker demand driven by macroeconomic factors in the second half, we anticipate stable QoQ shipments for PC components and ODMs in 4Q24. From the profitability perspective, healthy channel inventory levels are expected to improve margins for PC brands.

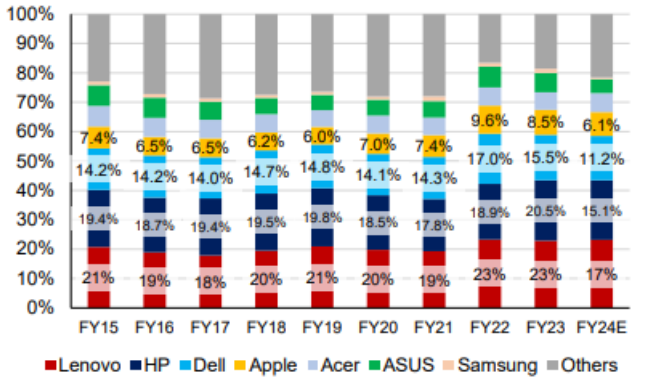
Looking into 2025, with the introduction of more mainstream AI PCs, Windows 10 replacement, and improving macro (e.g. US interest rate cuts, China's stimulus policies, and US corporate tax reductions), we expect global PC shipments to grow by 4.3% YoY to 271mn in 2025. With rising penetration of AI PCs, we expect PC ASP/margins to rise.

Figure 49: Global PC shipment estimates



Source: IDC, CMBIGM

Figure 50: Global PC market share (2015-2024E)



Source: IDC, CMBIGM

Since late-2023, major PC processor chip vendors have introduced new chips to meet the computing requirements of AI PCs. For example, Intel launched Meteor Lake Core Ultra, and Qualcomm released Snapdragon X Elite. In 2024, the market saw the release of new-generation PC processors. Intel introduced its next-gen Core Ultra laptop chip, codenamed Lunar Lake, featuring an 8-core design and a significant boost in AI capabilities. Its NPU performance reaches 48 TOPS, exceeding the 40 TOPS requirement set by Microsoft's Copilot+PC for AI computing and hardware compatibility. Qualcomm, building on its previously launched Snapdragon X Elite AI PC processor, released the Snapdragon X Plus, a scaled-down version of the X Elite aimed at reducing BOM costs and lowering entry barriers AI PC products. Apple also released its M4 chip this year, increasing AI computing power from M3's 18 TOPS to 38 TOPS, further enhancing its AI capabilities.

Figure 51: Global PC processor chips development roadmap

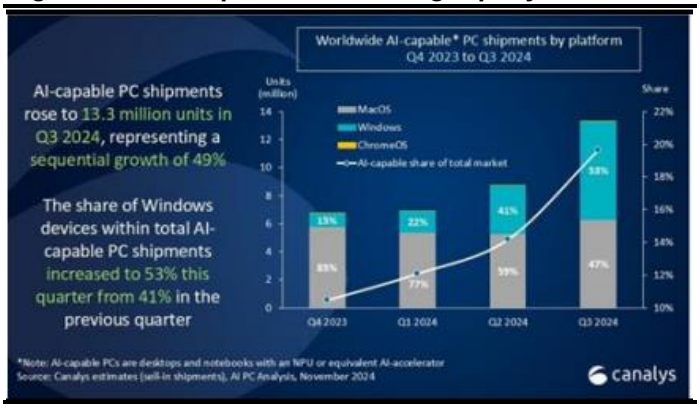
	1H22	2H22	1H23	2H23	1H24	2H24E	1H25E	2H25E
Intel		Raptor Lake (7nm)		Meteor Lake 11 TOPS (4nm)		Lunar Lake 48 TOPS (3nm)		Panther Lake 120 TOPS (2nm)
						Arrow Lake 13 TOPS (3nm)		
AMD			Phoenix 10 TOPS (4nm)		Hawk Point 16 TOPS (4nm)	Strix Point 48 TOPS (4nm)		
Apple	M1 Ultra 22 TOPS (5nm)	M2 15.8 TOPS (5nm)		M3 18 TOPS (3nm)	M4 38 TOPS (3nm)			
Qualcomm	Snapdragon 8cx Gen3 29 TOPS (5nm)				Snapdragon X Elite 45 TOPS (4nm)			
MediaTek		Kompanio 1380 4.8 TOPS (6nm)						AI PC chip (3nm)
NVIDIA								

Source: Company data, CMBIGM

Microsoft has introduced Copilot+PC, defining the AI PC standards within the Windows ecosystem. These standards require a combination of CPU, GPU, and NPU, the support for Copilot, and the inclusion of a dedicated Copilot button. The wave of AI PCs has driven both PC processor chip vendors and operating system providers to innovate and iterate on AI-focused products, enhancing user experience and accelerating AI PC market penetration.

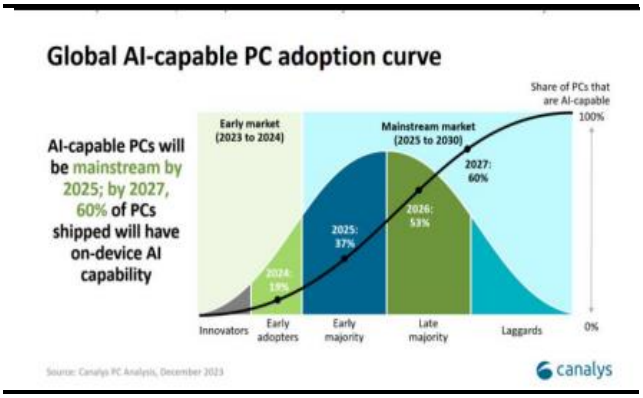
According to Canalys, the market share of AI PCs is expected to grow from 19% in 2024 to 37% in 2025, and further to 53% by 2026. In 3Q24, global AI PC shipments reached 13.3mn units, accounting for 20% of total quarterly PC shipments. During this quarter, PCs equipped with Qualcomm's Snapdragon X series chips combined with Microsoft's Copilot+ started shipping. Looking ahead, the release of Intel Lunar Lake and AMD Ryzen AI 300-powered Copilot+PC products, along with the end-of-service for Windows 10, is expected to further boost AI PC penetration in 2025.

Figure 52: AI PC penetration rising rapidly in 2H24



Source: Canalys, CMBIGM

Figure 53: AI-capable PCs as mainstream by 2025



Source: Canalys, CMBIGM

Lenovo leads AI PC innovation with its AI agent concept, pioneering in edge AI applications

At the 2024 Lenovo Tech World conference, Lenovo not only launched a range of new PC products but also unveiled its definition of the AI PC concept. According to Lenovo, a true AI PC should possess five key features: 1) natural language interaction with a personal AI agent, 2) embedded personal large language models (LLMs), 3) a hybrid AI computing foundation powered by CPU + GPU + NPU, 4) device-level personal data privacy and security, 5) an open AI application ecosystem. As early as 2H23, Lenovo introduced the concept of AI Twins—personal and enterprise-level AI agents designed to create local knowledge bases, run foundational personal LLMs, support AI functions, and enable natural interactions of human and AI PCs. At the 2024 conference, Lenovo further expanded its vision with AI Now, a local AI agent based on Meta's Llama model. This solution enables real-time interaction with a user's personal knowledge base through natural language, allowing users to efficiently complete tasks and retrieve information via AI assistants on their PCs.

As a global leader in PC and other hardware, Lenovo plays a central role in the AI PC revolution by closely collaborating with upstream processor chip vendors and operating system providers. Lenovo is well-positioned to benefit from the accelerated adoption of the AI PCs and the ongoing evolution of the industry.

Figure 54: Lenovo's definition of AI PCs

Source: Lenovo, CMBIGM

Figure 55: Lenovo AI agent Xiao Tian

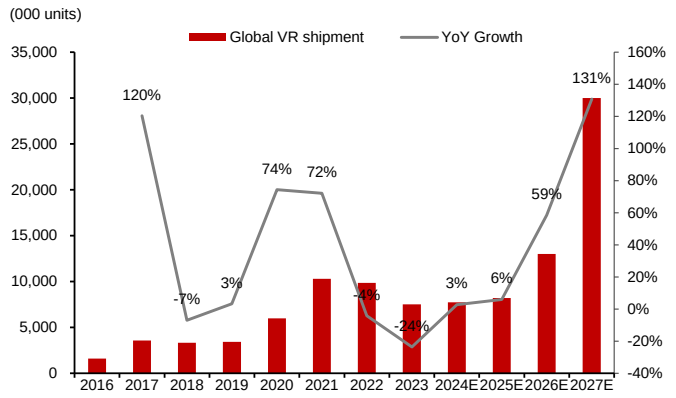
Source: Lenovo, CMBIGM

VR/AR/AI glasses: well-positioned to capture opportunities from new wave of product launches in 2025

Global VR device shipment returned to moderate growth in 2024 after a decline in 2023. In 2023, VR devices centered on gaming applications lacked compelling content to drive hardware upgrades or consumer replacements. However, the launch of Meta Quest 3 and Apple Vision Pro in 2024 helped stabilize global VR shipments. According to Wellsenn XR, global VR device shipment will reach 7.74mn units in 2024, up 3% YoY.

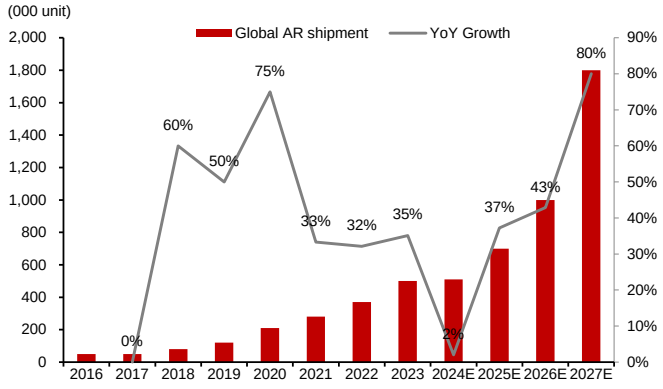
Meanwhile, global AR device market, after experiencing rapid growth in 2023, is expected to stabilize in 2024. In 2023, global AR device shipment reached 510k, up 38% YoY, primarily driven by AR devices with large-screen video watching functions. Notably, Chinese AR device shipment reached 200k, with local AR brands gaining prominence and strengthening the development of upstream supply chain in China. For 2024, Wellsenn XR predicted that global shipments of AR glasses will remain largely flat compared to 2023, due to weaker demand for entertainment-focused AR glasses, which had been a major driver of previous market expansion.

Figure 56: Global VR device shipment and growth



Source: Wellsenn XR, CMBIGM

Figure 57: Global AR device shipment and growth

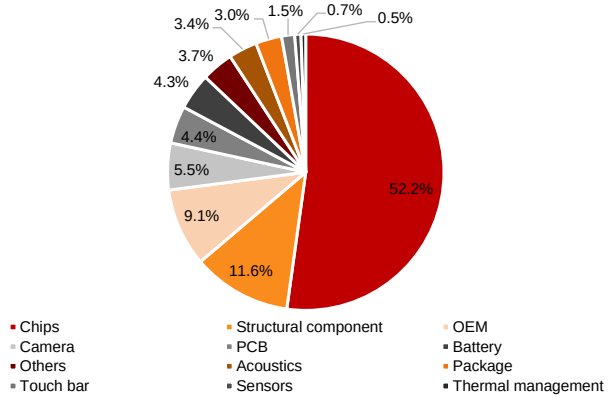


Source: Wellsenn XR, CMBIGM

The launch of 2nd-gen Meta Ray-Ban smart glasses in Sep 2023, a collaboration between Meta and EssilorLuxottica, received positive feedback from global consumers. The Meta Ray-Ban smart glasses integrate Meta's Llama 3 multimodal AI model, enabling features such as AI voice assistant interaction, object recognition, and live translation.

We believe the success of Meta Ray-Ban glasses is attributed to its lightweight and stylish design, which largely reduced traditional AR glasses display hardware spec. This design not only lowered BOM cost but also made the product more accessible to a broader consumer base. Equipped with a 12MP camera and AI capabilities for voice interaction, the glasses allow users to easily capture photos and videos, share on social media, and interact seamlessly with an AI assistant. These qualities position the Meta Ray-Ban AI smart glasses as a fashionable, everyday wearable device that balances style and utility. In the long term, as optical display and spatial computing technologies continue to advance, the design and functionality of AI smart glasses and AR glasses are expected to continue to improve, offering enhanced performance while maintaining lightweight design.

Figure 58: Meta Ray-Ban AI glasses BOM breakdown



Source: Wellsenn XR, CMBIGM

Figure 59: The latest Meta Ray-Ban limited edition AI glasses

Source: Meta, CMBIGM

AR/AI glasses: A new era of innovation with internet companies and smartphone brands entering the market

Chinese AR/AI glasses startups like Rokid, XREAL, Magic Leap, and RayNeo have emerged as key players in the global AR device market. These companies have cultivated robust hardware supply chains and developed industry-standardized hardware solutions. Positive consumer feedback for AR startups' products has prompted major smartphone brands and internet companies to accelerate their AR product deployments and product launches. The combination of AI and AR continues to enhance functionality and user interaction, setting the stage for a vibrant and diverse AR market boom.

In Nov 2024, Baidu unveiled Xiaodu AI Glasses, the world's first native AI glasses equipped with a Chinese-language large language model. This device rivals Meta Ray-Ban glasses, offering features like photo/video capture, real-time Q&A, live translation, and voice memos. Scheduled for release in mid-2025, it signifies Baidu's entry into AI-powered AR solutions. Xiaomi is expected to release its first AI smart glasses in 2025, integrating AI voice assistant capabilities, cameras, and smart audio functions. These glasses will complement Xiaomi's smartphones and AIoT ecosystem, emphasizing seamless cross-device integration. In collaboration with Google and Qualcomm, Samsung is likely to unveil its first AR glasses at the 2025 Galaxy Unpacked event. This device will combine Samsung's ecosystem with cutting-edge AR and AI technologies, potentially making a significant impact in global markets.

We expect 2025 will be a critical year for AR/AI glasses industry, with major smartphone brands and internet companies launching a new wave of flagship products. By leveraging their strengths in AI models, channels and ecosystems, these brands are well-positioned to shape the next phase of the AR/AI glasses industry, paving the way for a new era in wearable technology.

Figure 60: Summary of AR/AI glasses currently available on China AR/AI glasses market

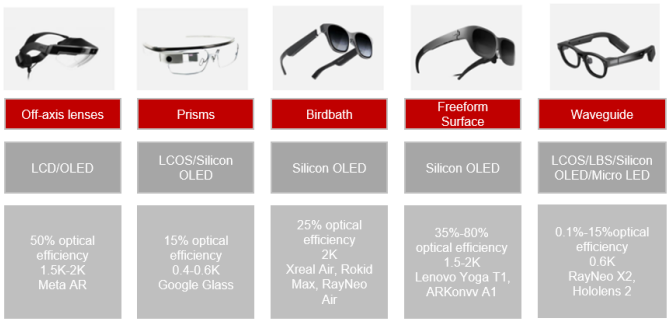
Brand	Series	Type	Resolution	Optical and display solution	Weight	Price (RMB)
RayNeo	Air 1S	Separate	1920*1080	-	-	1,599
	X2	All-in-one	-	Diffractive Waveguide+MicroLED	119g	4,999
	Air 2 Champion	Separate	1920*1080	Birdbath+Sony 0.55 inch Micro-Oled	76g	1,399
	Air Plus	Separate	1920*1080	-	-	1,399
	Air 3	Separate	1920*1080	Birdbath+SeeYA 0.6 inch Micro-Oled	76g	1,699
Xreal	Air 2	Separate	1920*1080	Birdbath+Sony 0.55 inch Micro-Oled	72g	1,799
	Air 2 Pro	Separate	-	Sony 0.55 inch Micro-Oled	75g	2,599
	Air	Separate	-	Sony Micro Oled	79g	1,451
	Air 2 Ultra	Separate	-	-	83g	5,698
	X	Separate	-	-	106g	
Rokid	Rokid Glasses	All-in-one	-	Diffractive Waveguide	49g	2,499
	Rokid Max	Separate	1080P/1200P	Birdbath+Sony Micro Oled	75g	3,599
	Rokid Air Lite	Separate	1920*1200	Sony Micro Oled	75g	4,499
INMO	Air	All-in-one	640*400	Micro-OLED	79g	
	Air 2	All-in-one	640*400	Vertical array light waveguide	-	
	Go	All-in-one	640*480	Diffractive Waveguide+Micro LED	52g	1,951
meizu	StarV View AR	Separate	1920*1080	Sony OLED	74g	2499/2450
	StarV Air2 AR	All-in-one	640*480	Micro LED+single green light engine	44g	2,799
	MYVU Air	All-in-one	1280*480	0.3cc Micro LED+Diffractive Waveguide	43g	2,499
	MYVU exploration	All-in-one	1280*480	Micro LED+Diffractive Waveguide	71g	
Xiaomi	Mijia glasses camera	All-in-one	-	Sony Micro-OLED	100g	2,099
Huawei	Huawei Vision Glass	Separate	1920*1080	Micro OLED	112g	2,199
OPPO	Air Glass	Separate	-	Micro LED+waveguide	30g	-
Baidu	Xiao Du AI Glasses	-	-	-	45g	-

Source: Company websites, CMBIGM

AR glasses supply chain is developing rapidly; more hardware innovations to come

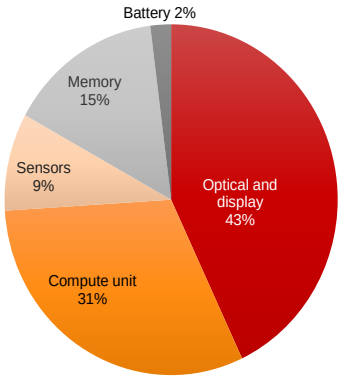
AR glasses adopts optical see-through technology, combining certain functions of regular glasses, while VR generally adopts video see-through technology, capturing information from the real world through sensors and cameras. As a result, AR glasses are typically lighter and provide more realistic visual effects. Their external form and wearing experience can resemble regular glasses. Looking at BOM cost breakdown for AR glasses, the optical display unit accounts for the largest portion. Development of AR display screens goes alongside the advancement of optical solutions. Different optical solutions impose different requirements on the screen, with significant differences in light transmission, optical path design, and size of solution.

Figure 61: AR device optical solution roadmap



Source: Wellsenn XR, CMBIGM

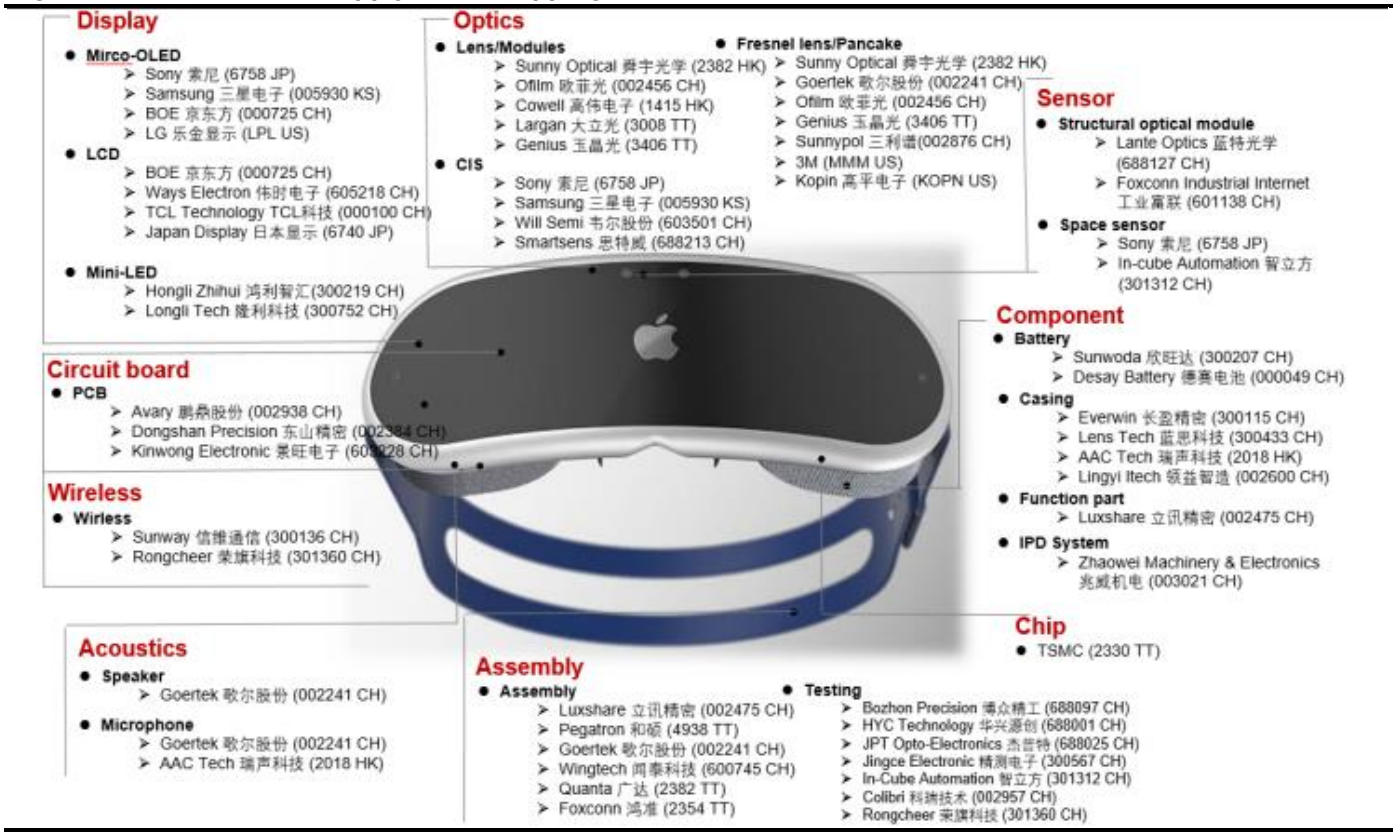
Figure 62: AR device BOM breakdown



Source: iResearch, CMBIGM

Against the backdrop of the accelerated development of AR glasses and AI smart glasses, we are optimistic about companies that are deeply involved in the supply chain. In terms of assembly, we favor manufacturers with leading product customers, such as Luxshare and Longcheer. For SoC (System on Chip) main control chips, in addition to companies like Qualcomm and UNISOC, we believe Bestechnic, which is expected to establish a competitive advantage in the low-power AR product field, will benefit. For AR glasses' optical solutions, we recommend companies that have deep cooperation with major international clients, such as Sunny Optical and AAC Tech. In terms of acoustic solutions for AR glasses, we suggest paying attention to MEMSensing, and AAC Tech.

Figure 63: AR/VR device supply chain mapping



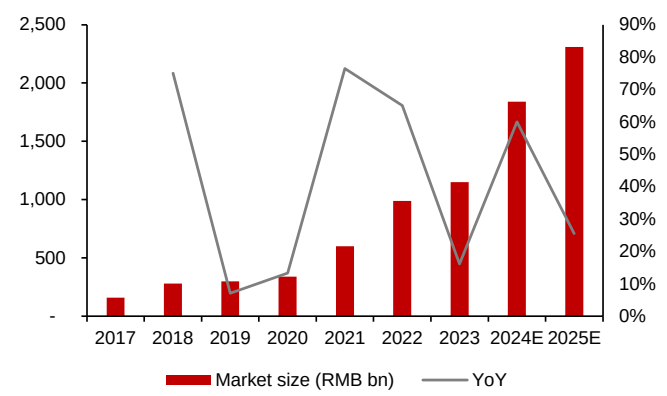
Source: CMBIGM

Auto Electronics: electric+intelligent, autonomous driving and electronic architecture domain control the major trends

Electrification and intelligence drive the rapid development of new energy vehicles. Electric vehicles, powered by batteries, are gradually replacing traditional fuel vehicles. Compared to traditional fuel vehicles, they have the advantages of zero emissions and low noise. At the same time, electric vehicles have the advantages of strong endurance and convenient charging, breaking down the barriers of traditional fuel vehicles from a technical perspective. Benefiting from the continuous development of battery technology, fast charging, etc., electrification will help the rapid development of the new energy vehicle industry in the future. In addition, intelligence is achieved through AI, autonomous driving, and vehicle networking technologies to help cars achieve self-learning functions from perception to decision-making and execution, thus achieving the goal of full automation of automobiles. Therefore, the integration of electrification and intelligence will drive the transformation of the automotive industry, which is conducive to the rapid development of the new energy vehicle industry.

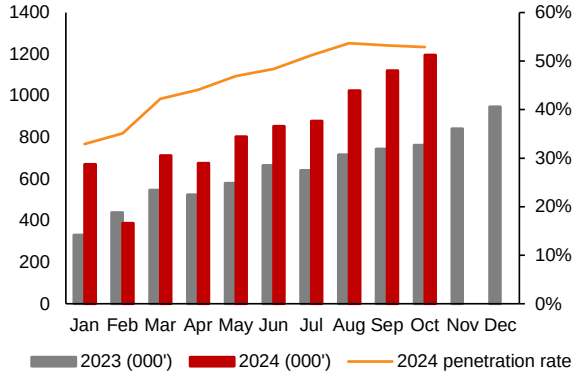
Penetration rate of new energy vehicles will continue to increase. According to iiMedia Research, the market size of China's new energy vehicle is expected to show a rapid growth trend from 2024 to 2025, mainly due to the rich selection of new energy vehicle models in the Chinese market, many attractive products, strong demand, and sustained high market growth. It is expected that the size of China's new energy vehicle market will reach RMB 2.31bn by 2025, a year-on-year increase of 26%. According to data from the China Automobile Dealers Association, the penetration rate of new energy vehicles reached 52.9% in October 2024, and has exceeded 50% for four consecutive months. It is expected that the penetration rate will further increase in the future.

Figure 64: Chinese NEV market size forecast



Source: iiMedia Research, CMBIGM

Figure 65: China's NEV monthly sales trend

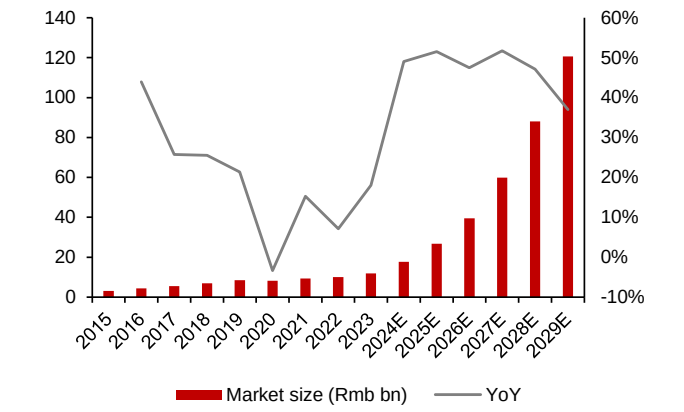


Source: China Automobile Dealers Association, CMBIGM

Rising penetration of level three and above autonomous vehicles is the key trend. Autonomous driving mainly utilizes technologies such as computer vision, sensors, and machine learning algorithms to achieve vehicle perception, decision-making, and control of the surrounding environment. It can effectively reduce the incidence of traffic accidents, improve traffic operation efficiency, and reduce energy consumption. At the same time, it can also enhance the user's driving experience. According to Chyxx, L1 and L2 levels of autonomous driving have become popular, while L3 and L4 levels are also being tested and commercialized in specific scenarios. According to iiMedia Research, under the stimulation of policies, technological innovation, and solid demand, it is expected that China's autonomous vehicle market size will increase by 52% YoY to RMB 26.76bn in 2025. As traditional cars face transformation, the application of autonomous vehicles will become

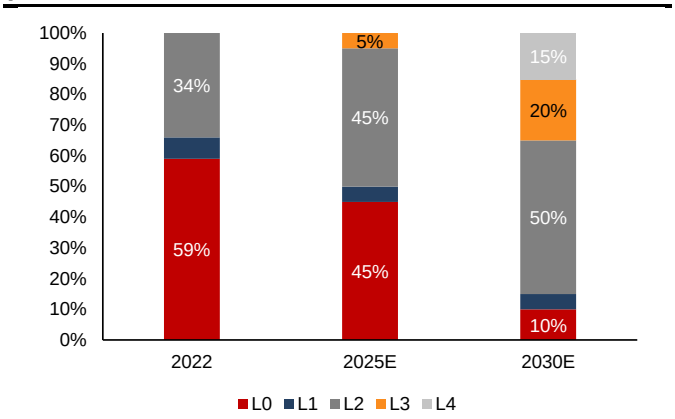
more widespread, and consumers' demand for autonomous driving services will grow synchronously. The penetration rate of L3 level and above autonomous driving is expected to significantly increase from 2025 to 2030.

Figure 66: China's autonomous driving market size



Source: iiMedia Research, CMBIGM

Figure 67: China different levels of ADAS penetration

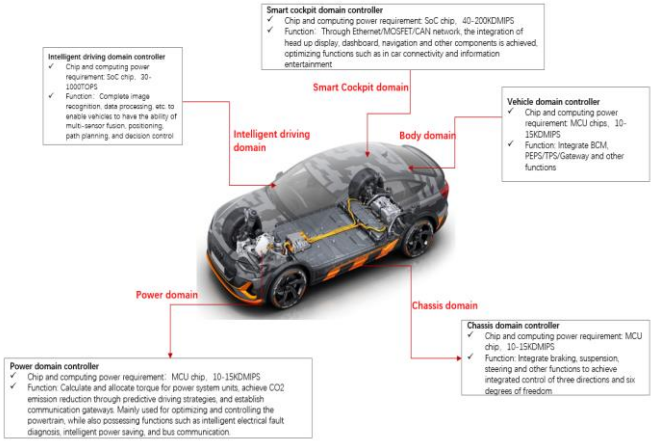


Source: iiMedia Research, CMBIGM

Domain control as an important component of electric vehicles and automotive intelligence is driving up demand. The electronic and electrical architecture of automobiles is related to their performance and affects their intelligent, automated, and networked functions. With the gradual development of automobiles towards electric vehicles and intelligent networking, the importance of automotive electronic and electrical architecture has become increasingly prominent. With the increasing number of automotive functions, the number of independent electronic control units (ECUs) corresponding to these functions is also increasing, resulting in increased costs and weight. The industry is currently transitioning from a distributed architecture to a centralized architecture, achieving centralized management and improving efficiency by reducing the number of ECUs. In addition, the functionality and performance of cars are constantly achieved through software upgrades, driving rapid updates and iterations of car functions. In order to achieve centralization and software upgrades to promote the development of intelligent vehicles, the demand for domain controller architecture has increased. Domain control can divide automotive functions into different fields such as autonomous driving, body control, and power systems. Each field corresponds to one or more domain control management, simplifying the system structure and facilitating software operation and expansion. With the continuous development of automotive intelligence, we expect the demand for domain controllers to continue to increase.

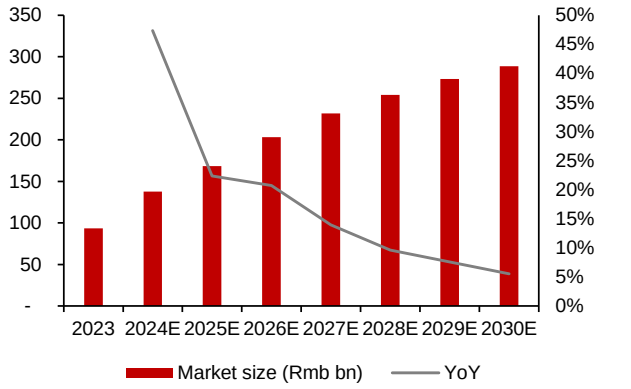
The continuous evolution of automotive intelligence has opened up growth opportunities for the electric vehicle domain controller market. According to Yiou, with the continuous improvement of domain controller technology, the promotion of automobile sales, and the iteration of OEM vehicle models, it is expected that the market size of intelligent electric vehicle domain controllers in China will increase by 22%/21% YoY from 2025 to 2026. It is expected that the market size will exceed RMB 280bn in 2030, and the potential market space is considerable.

Figure 68: Electrical vehicle domain control fields



Source: Yiou, CMBIGM

Figure 69: China's domain control market size



Source: Yiou, CMBIGM

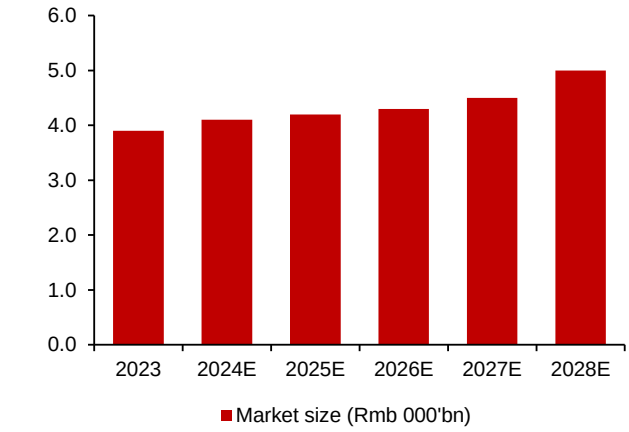
Auto components: Autonomous driving, domain controllers, intelligent cockpits, thermal management and suspension technology innovations

Auto manufacturers and component companies jointly boost rapid development of supply chain. Under the stable growth of global automotive industry, automotive component market is in good condition and showing a steady growth trend. With the refinement of global automotive industry chain, automotive components' suppliers need to cooperate with vehicle manufacturers in the development and production process to develop new products. The partnership between vehicle manufacturers and component manufacturers is gradually maturing, and higher requirements are put forward for the specialization and scale of automotive parts, which will promote the rapid development of automotive parts industry. According to Qianzhan Research Institute, global automotive component market is expected to reach US$453bn by 2026, and further increase to US$1,980bn by 2028, with 109% CAGR from FY26-28E.

Automotive component industry to benefit from policy support and the market size will exceed RMB4.8 tn by 2028. Automotive components are the foundation of the development of the automotive industry and an industry that China has long encouraged to develop. China has introduced a series of policies to promote the development of the industry. Among them, the "Development Plan for New Energy Vehicle Industry (2021-2035)" points out that by 2025, the competitiveness of China's new energy vehicle market will be significantly enhanced, key technologies such as power batteries, drive motors, and vehicle operating systems will make significant breakthroughs, and safety levels will be comprehensively improved. In addition, the "Medium - and Long-term Development Plan for the Automotive Industry" points out the need to break through the shortcomings of advanced automotive electronics such as automotive sensors and on-board chips, as well as lightweight new materials and high-end manufacturing equipment in the industrial chain, cultivate internationally competitive component suppliers, and form a complete industrial system from components to whole vehicles. According to Qianzhan Research Institute, the market size of China's automotive components industry will maintain a steady growth trend, and it is expected that the revenue scale of China's automotive components industry will exceed RMB 4.8 tn by 2028.

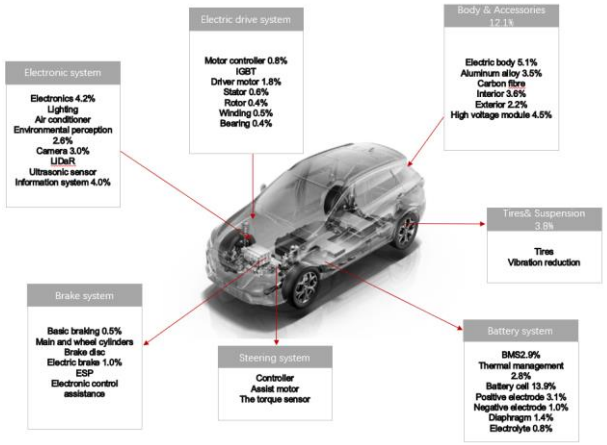
Transformation of auto manufacturing is driven by various innovative technologies, reinventing traditional auto manufacturing and defining innovative performance and functions of vehicles. For example, in terms of **1) electric driving technology,** it includes efficient integrated motors, controllers, and reducers that can ensure fast acceleration but smoother driving of electric vehicles; **2) Lidar, cameras, sensors, and algorithms in autonomous driving technology** help cars achieve autonomous driving, reducing operational errors and improving driving safety. **3) In the intelligent cockpit,** cabin thermal management system includes air conditioning cold air, heat pump warm air or PTC warm air, with heating and cooling requirements; Air suspension focuses on upgrading elastic components, which means that the softness and hardness of the springs can be automatically adjusted according to needs, and electronic control systems and air pumps have been added to endow the suspension with intelligent adjustment functions. **4) Domain controllers, shock absorbers, chassis, etc.** We believe that as the penetration rate of new energy vehicles continues to increase, manufacturers such as BYD Electronics that focus on producing electronic components for new energy vehicles will continue to benefit.

Figure 70: China auto components market size



Source: Qianzhan Research Institute, CMBIGM

Figure 71: New energy vehicle BOM cost



Source: Automotive Electronic Library, CMBIGM

Auto cameras: rapid ADAS development driving camera demand

Rapid development of ADAS autonomous driving increasing demand for automotive cameras. The auto camera is mainly composed of optical lenses, CMOS, DSP and other components, and is the foundation of ADAS autonomous driving perception layer. Auto cameras have performance such as high temperature resistance, earthquake resistance, and waterproofing. At the same time, in auto cameras can achieve intelligent driving by integrating and complementing sensors such as lasers and millimeter wave radars to enhance perception and improve the safety and accuracy of autonomous driving. With the rapid development of autonomous driving, the demand for cameras has also increased. According to Gaishi Automotive Research Institute, it is expected that auto camera shipment in China will reach 100mn by 2025, up 20.5% YoY.

Domestic suppliers have a clear advantage in the front and interior camera market. According to Gai Shi Automotive, in the front facing camera market, Sunny Smartlead has benefited from the popularity of the Ideal L series and Volkswagen models, ranking high. The surround view cameras are mainly concentrated in the price range of RMB 100k-200k for new cars, with the highest installation volume in the RMB 100k-150k range. From a brand perspective, BYD has the highest installation volume, reaching 6.282 million units, while both Lixiang and NIO come standard with surround view cameras across the entire lineup. The installation of side cameras and rearview cameras in new cars has significantly increased in the range of RMB 200k-300k and RMB 300k-500k, with prominent demand for side cameras in mid to high price models. The installation of reverse cameras is the highest in the price range of RMB 100k-200k. In terms of vehicle models, Model Y and Sagitar have the highest installation volume, while Model 3 and Wuling Binguo have a 100% penetration rate of reverse cameras. In the car, there is mainly one camera, with Model Y, Model 3, and Lixiang L7 leading in sales. Among the models with standard L2 level functions, the sensor scheme is mainly based on 5V (including surround view) +1-3R scheme. Among the new cars with navigation function, the scheme with 11 cameras is the most commonly used and combined with LiDAR to enhance the vehicle's perception ability.

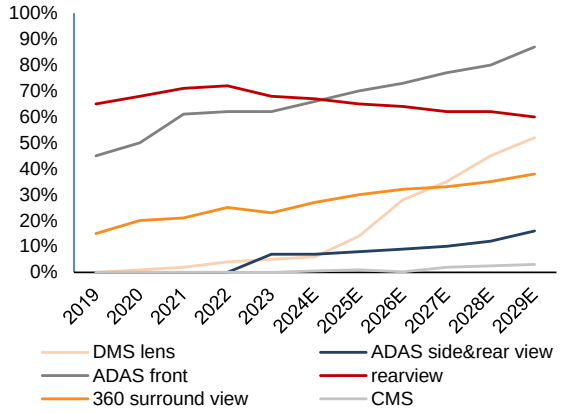
The 8MP front facing camera is growing rapidly. According to GAC Motor, driven by the urgent demand for high-resolution cameras in autonomous driving, the 8-megapixel front facing car camera has experienced explosive growth, and various large vehicle models have adopted this technology. For example, models from brands such as Ideal, XPeng, NIO, Wenjie, Geely, Baojun, and Tengshi have all adopted 8MP cameras. In addition, local manufacturers of 8MP have also launched related products, and many companies such as

Freetech, Desay SV Automotive, Sunny Smartlead, LianChuang Electronic, and OFilm have entered mass production and delivery.

Figure 72: Auto front camera market size

Source: Gaishi Automotive Research Institute, CMBIGM

Figure 73: Auto camera penetration rate by type

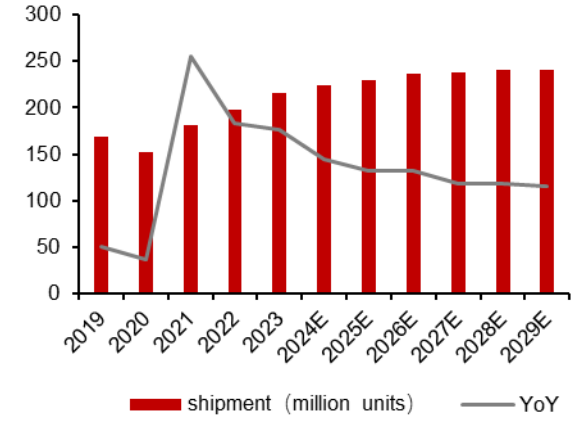


Source: Yole, CMBIGM

Auto display: Large & multi-display as mainstream; focus on OLED, Mini LED and CMS opportunities

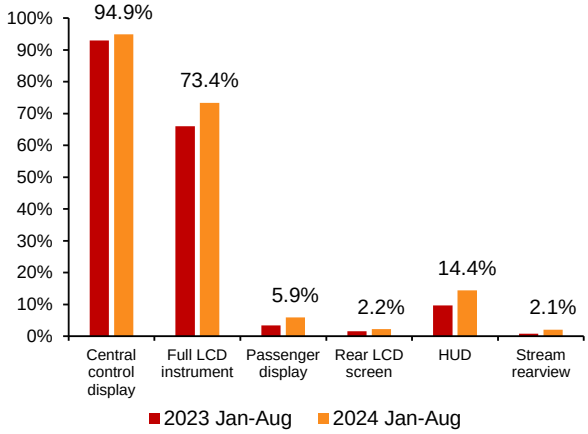
Increasing penetration of innovative auto display products such as HUD, rear-view cameras, passenger screens, and rear LCD screens. Penetration rate of central control screen and full LCD instrument panel, as traditional in car display products, reached a high level in 2024, based on Gaishi Automotive Research Institute. In Jan-Aug 2024, penetration rate of central control screens reached 95%, and penetration rate of full LCD instruments increased to 73.4% from 66.0% in the same period of 2023. With continuous enhancement of entertainment and intelligence in car cabins, penetration of emerging in car display products, including HUD (Head Up Display), streaming media rearview mirrors, passenger screens, and rear LCD screens, has shown a clear upward trend. Among them, penetration rate of HUD increased from 9.7% from January to August 2023 to 14.4% in the same period of 2024. The penetration rate of rearview mirrors in streaming media increased from 0.8% to 2.1%. The passenger screen and rear LCD screen are mainly equipped in mid to high end models, but their penetration also increased from 3.4% to 5.9% and from 1.6% to 2.2% respectively.

Figure 74: Global auto display shipment forecast



Source: Sigmaintell, CMBIGM

Figure 75: 2023-2024 auto display penetration



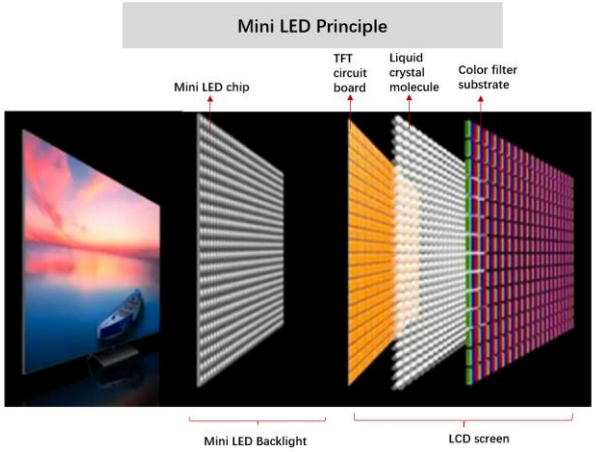
Source: Gaishi Auto Research Institute, CMBIGM

Large and multi-displays are still the mainstream. According to Gaishi Automotive, during Jan-Aug 2024, large-sized central control displays are popular, with 17% of screens being 15 inches or larger and 68% being 10 to 15 inches or larger. The dual screen layout still dominates the market, accounting for 78%, while integrated displays accounts for 11%. The market share of full LCD instruments exceeds 80%, with 29% being larger than 12 inches and 68% being larger than 8 inches. Small size instruments are gradually being phased out, with the mix of 5 inches and below decreasing from 21% to 13%.

Advanced display technologies such as OLED and Mini LED are gradually adopted in high-end NEV. OLED has advantages such as low power consumption, lightweight, high refresh rate, and flexibility, which can significantly increase the added value of automobiles. Mini LED miniaturizes the LED beads in the backlight layer of LCD screens to achieve better brightness. By using LED chip partition dimming, the black and white contrast of LCD can be improved, resulting in a display effect similar to OLED while avoiding issues such as lifespan. According to GAC Motor, due to factors such as cost and technological maturity, these advanced display technologies are mainly applied to mid- to high-end new energy vehicle models. By adopting technologies such as OLED and Mini LED, the central control screen can provide clearer and more delicate display effects, enhancing the user's driving experience.

Camera Monitor System (CMS) has prominent advantages, compared to traditional rearview mirrors. Increasing penetration will benefit leading manufacturers. CMS is equipped with main lens and wide-angle lens, including high-definition camera, digital visual processing system, security system, LCD display and other electronic devices. Compared to traditional rearview mirrors, CMS has a wider field of view and multifunctionality, including waterproofing and anti-fog, which can effectively reduce the risk of safety accidents. In addition, CMS can improve visual experience, save energy, reduce fuel consumption, provide navigation and real-time reminders for drivers, and other auxiliary system functions to ensure driving convenience and safety. Sihan Industry Research Institute forecasts that the market size of the automotive CMS industry is expected to grow from RMB2.7bn to RMB8.1bn from 2024 to 2028, with a compound annual growth rate of 31.68% during this period. According to experts from China Automotive News, the global CMS market is expected to see a significant increase in 2025, with a penetration rate of approximately 5% -10%. Around 2027, it will enter a period of rapid growth, with penetration rates increasing to 15% -20%. We believe that leading companies with large-scale production will continue to benefit.

Figure 76: Mini LED principle



Source: Good Orange Family, CMBIGM

Figure 77: Major auto displays show larger sizes

	Auto type	Image	Display size	Release date
Front (central + passenger screen) display	Galaxy E8		45 inch 8K integrated screen	2024.1
	Im motors L6		26.3-inch integrated screen	2024.4
	Buick Enclave		30-inch central control screen	2H24
Rear entertainment display	Xpeng x9		21.4-inch rear folding screen	2024.1
	NIO ET7		14.5-inch rear screen*2	2024.04

Source: Gaishi Auto, CMBIGM

Figure 78: Peers valuation

Company	Ticker	Mkt Cap (US$ mn)	Price (LC)	P/E (x) FY24E	P/E (x) FY25E	P/B (x) FY24E	P/B (x) FY25E	ROE (%) FY24E	ROE (%) FY25E	Perf YTD (%)
Brand										
Apple	AAPL US	3,748,119	247.96	37.0	33.6	59.8	51.9	156.0	166.6	28.8
Xiaomi	1810 HK	101,043	31.45	29.1	24.5	3.8	3.4	13.1	13.8	101.6
Transsion	688036 CH	14,619	93.28	19.6	16.4	5.0	4.1	26.3	26.4	(5.6)
Samsung	005930 KS	233,810	56,100.00	10.9	9.8	1.0	0.9	9.2	9.5	(28.5)
LG	066570 KS	10,088	88,300.00	9.7	6.6	0.7	0.7	7.5	10.1	(13.3)
TCL Electronics	1070 HK	1,939	5.98	11.1	9.2	0.8	0.7	7.5	8.4	140.9
		Average		**21.3**	**18.2**	**14.1**	**12.2**	**42.4**	**45.3**	**16.6**
ODM/EMS										
BYDE	285 HK	12,159	41.90	19.1	14.0	4.6	3.8	24.2	26.8	14.6
Luxshare	002475 CH	40,319	40.61	21.6	17.7	3.5	2.9	16.0	16.4	17.9
Hon Hai Precision	2317 TT	79,572	186.50	16.3	12.4	1.5	1.4	9.6	11.6	78.5
		Average		**19.0**	**14.7**	**3.2**	**2.7**	**16.6**	**18.3**	**37.0**
Optics										
Sunny Optical	2382 HK	9,541	67.75	27.0	22.7	2.7	2.5	10.1	11.2	(4.4)
Q Tech	1478 HK	983	6.45	19.3	12.9	1.3	1.2	6.9	9.6	45.3
Truly	732 HK	459	1.13	-	-	-	-	-	-	41.3
Cowell	1415 HK	3,041	27.45	29.4	17.1	5.9	4.4	22.1	28.2	19.1
Largan	3008 TT	10,434	2,540.00	14.4	14.2	1.9	1.7	13.3	13.0	(11.5)
Genius	3406 TT	1,601	461.50	11.5	12.3	2.1	1.9	19.8	16.5	9.8
O-Film	002456 CH	6,100	13.43	125.3	49.7	10.6	10.2	6.0	12.2	54.0
Lg Innotek	011070 KS	2,829	171,200.00	6.7	5.8	0.8	0.7	12.2	12.5	(28.5)
		Average		**33.4**	**19.2**	**3.6**	**3.3**	**12.9**	**14.7**	**15.6**
Acoustics/Haptics										
AAC Tech	2018 HK	5,935	38.50	23.0	18.2	1.7	1.6	7.4	8.8	65.9
Luxshare	002475 CH	40,319	40.61	21.6	17.7	3.5	2.9	16.0	16.4	17.9
Merry	2439 TT	827	106.00	13.0	11.9	1.7	1.5	14.1	14.0	(2.8)
Knowles	KN US	1,746	19.83	20.2	18.0	-	-	-	-	10.7
Nidec	6594 JP	21,998	2,816.50	22.5	17.9	2.1	1.8	10.1	10.6	(1.1)
		Average		**22.0**	**18.0**	**2.3**	**2.1**	**11.2**	**12.0**	**19.6**
Connector										
FIT Hon Teng	6088 HK	3,113	3.32	16.5	9.9	1.2	1.0	7.0	10.6	181.4
Luxshare	002475 CH	40,319	40.61	21.6	17.7	3.5	2.9	16.0	16.4	17.9
TE	TEL US	45,269	151.32	20.0	18.7	3.6	3.6	19.1	18.9	7.7
Amphenol	APH US	88,733	73.60	39.9	33.8	9.2	7.8	24.9	25.2	48.5
		Average		**24.5**	**20.0**	**4.4**	**3.8**	**16.7**	**17.8**	**63.9**
Casing										
BYDE	285 HK	12,159	41.90	19.1	14.0	4.6	3.8	24.2	26.8	14.6
Tongda	698 HK	103	0.08	27.3	4.1	0.1	0.1	0.4	2.7	(20.4)
TK Group	2283 HK	214	2.00	5.9	4.7	0.9	0.8	15.2	17.4	49.7
Everwin	300115 CH	3,292	17.71	32.3	27.7	2.4	2.2	10.8	11.7	33.7
Lens Tech	300433 CH	15,004	21.92	26.8	20.0	2.2	2.1	8.5	10.6	66.0
Catcher	2474 TT	3,780	180.50	9.9	11.8	0.8	0.8	7.7	6.2	(7.0)
Jabil	JBL US	14,927	133.64	15.9	15.4	8.8	9.9	44.5	57.9	4.9
		Average		**19.6**	**13.9**	**2.8**	**2.8**	**15.9**	**19.0**	**20.2**
Hinge										
AAC Tech	2018 HK	5,935	38.50	23.0	18.2	1.7	1.6	7.4	8.8	65.9
Jiangsu Gian	300709 CH	1,074	41.98	30.0	23.9	-	-	-	-	34.6
KH Vatec	060720 KS	133	8,070.00	7.3	5.4	0.7	0.7	10.2	12.6	(45.1)
Foseltek	6805 TT	2,110	1,000.00	53.6	26.3	12.8	9.4	25.3	40.4	161.4
Jarlytec	3548 TT	371	182.50	22.0	17.6	2.2	2.1	-	-	(3.7)
NBTM	600114 CH	1,431	16.90	25.4	19.1	3.7	3.3	14.5	17.0	9.1
Dongguan Eontec	300328 CH	843	8.88	-	-	-	-	-	-	27.6
		Average		**26.9**	**18.4**	**4.2**	**3.4**	**14.3**	**19.7**	**35.7**

Source: Bloomberg, CMBIGM estimates, As of 12/13/2024 12:00pm close price

Figure 79: Peers valuation (cont.)

Company	Ticker	Mkt Cap (US$ mn)	Price (LC)	P/E (x) FY24E	P/E (x) FY25E	P/B (x) FY24E	P/B (x) FY25E	ROE (%) FY24E	ROE (%) FY25E	Perf YTD (%)
PC/Server										
Lenovo	992 HK	14,632	9.17	15.7	11.7	2.3	2.3	16.0	20.5	(16.0)
Dell	DELL US	83,481	119.18	17.9	15.2	-	-	(156.9)	(78.1)	55.8
HPE	HPE US	28,350	21.83	11.1	10.3	1.3	1.1	11.9	11.8	28.6
HP Inc	HPQ US	33,711	34.98	10.3	9.8	-	-	(242.5)	(256.2)	16.3
Super Micro	SMCI US	22,210	37.93	16.0	12.2	4.0	3.1	38.3	32.3	33.4
ASUSTeK	2357 TT	14,059	615.00	12.7	12.8	1.8	1.7	14.3	13.4	25.6
Inspur	000977 CH	9,288	45.90	30.0	23.9	3.4	3.0	11.4	12.7	38.3
Dawning	603019 CH	14,502	72.13	50.8	40.5	5.1	4.6	10.3	11.4	82.7
		Average		**20.6**	**17.0**	**3.0**	**2.6**	**(37.1)**	**(29.0)**	**(2.9)**
ODM/OEM										
FII	601138 CH	58,458	21.41	17.5	13.6	2.8	2.5	16.0	18.5	41.5
Huaqing	603296 CH	8,702	62.33	21.1	16.9	2.7	2.3	12.8	13.6	9.2
Quanta	2382 TT	33,940	285.50	19.1	15.1	5.4	4.6	29.1	33.1	27.2
Wistron	3231 TT	9,941	111.50	17.9	13.0	2.6	2.3	15.2	18.3	13.1
Wiwynn	6669 TT	14,385	2,515.00	20.8	17.7	7.0	5.9	41.5	38.8	37.8
Inventec	2356 TT	5,476	49.60	23.8	17.7	2.7	2.6	11.9	14.9	(6.1)
GigaByte	2376 TT	5,525	268.00	18.4	14.4	3.8	3.3	22.9	24.3	0.8
		Average		**19.8**	**15.5**	**3.9**	**3.4**	**21.3**	**23.1**	**(2.9)**
Switch/Storage										
Cisco	CSCO US	234,385	58.85	15.9	16.1	5.1	5.1	32.3	30.7	16.5
Arista	ANET US	134,643	106.88	48.8	43.7	13.9	11.0	31.1	26.7	81.5
Juniper	JNPR US	12,350	37.30	22.6	18.3	2.6	2.5	12.7	13.8	26.5
Keysight	KEYS US	29,216	168.35	27.2	24.3	5.5	5.3	20.0	20.1	5.8
Seagate	STX US	20,654	97.64	97.4	13.2	-	-	(2.1)	(138.9)	14.4
Western Digital	WDC US	22,813	65.99	-	8.8	1.9	1.7	(3.0)	19.7	26.0
		Average		**39.4**	**22.1**	**5.5**	**4.9**	**15.9**	**1.0**	**38.1**
Substrate										
Unimicron	3037 TT	6,642	141.50	29.0	11.7	2.3	2.0	7.7	18.7	(19.6)
Ibiden	4062 JP	3,865	4,190.00	17.5	17.9	1.3	1.1	8.1	6.6	(46.4)
NYPCB	8046 TT	2,088	105.00	156.3	18.0	1.4	1.3	0.2	8.2	(58.3)
		Average		**67.6**	**15.9**	**1.7**	**1.5**	**5.3**	**11.2**	**(41.4)**
PCB										
WUS Printed	002463 CH	9,901	37.56	28.2	21.5	6.2	5.0	22.1	23.8	69.8
Victory Giant	300476 CH	5,174	43.64	32.1	20.3	4.3	3.6	13.7	17.1	136.5
Gold Circuit	2368 TT	3,512	232.00	19.5	15.6	5.6	4.7	31.5	32.6	6.4
		Average		**26.6**	**19.1**	**5.4**	**4.4**	**22.5**	**24.5**	**70.9**
Power Supply										
Delta	2308 TT	33,816	423.00	27.6	22.6	4.9	4.3	17.3	18.9	34.9
Lite-on	2301 TT	7,369	102.00	18.8	15.5	2.7	2.5	14.5	16.7	(12.8)
		Average		**23.2**	**19.0**	**3.8**	**3.4**	**15.9**	**17.8**	**11.1**
Thermal										
FII	601138 CH	58,458	21.41	17.5	13.6	2.8	2.5	16.0	18.5	41.5
Sunowealth	2421 TT	29,486	123.50	25.7	24.8	2.5	2.4	9.7	10.1	2.9
AVC	3017 TT	8,182	686.00	32.3	21.7	9.3	7.2	32.0	38.2	104.6
		Average		**25.2**	**20.0**	**4.8**	**4.0**	**19.2**	**22.3**	**49.7**

Source: Bloomberg, CMBIGM estimates, As of 12/13/2024 12:00pm close price

Figure 80: Peers valuation (cont.)

Company	Ticker	Mkt Cap (US$ mn)	Price (LC)	P/E (x) FY24E	P/E (x) FY25E	P/B (x) FY24E	P/B (x) FY25E	ROE (%) FY24E	ROE (%) FY25E	Perf YTD (%)
Auto Electronics										
Luxshare	002475 CH	40,319	40.61	21.6	17.7	3.5	2.9	16.0	16.4	(4.3)
Sunny Optical	2382 HK	9,541	67.75	27.0	22.7	2.7	2.5	10.1	11.2	7.3
BYDE	285 HK	12,159	41.90	19.1	14.0	4.6	3.8	24.2	26.8	15.2
BOE Varitronix	710 HK	649	6.37	11.5	8.9	1.1	1.0	9.8	11.8	0.4
Intron Tech	1760 HK	179	1.28	5.4	4.0	0.5	0.5	9.7	12.4	(1.5)
Desay SV	002920 CH	8,854	116.11	30.1	23.1	6.7	5.4	23.3	24.1	1.3
Joyson	600699 CH	3,068	15.84	16.5	13.2	1.5	1.4	9.4	11.0	(1.1)
Jingwei Hirain	688326 CH	1,511	91.65	-	81.2	2.3	2.3	(4.7)	2.8	0.3
Foryou	002906 CH	2,333	32.35	25.7	19.7	2.6	2.3	10.2	12.2	(2.3)
O-Film	002456 CH	6,100	13.43	125.3	49.7	10.6	10.2	6.0	12.2	1.2
LianChuang	002036 CH	1,555	10.59	423.6	58.8	4.0	3.4	0.3	4.5	3.1
		Average		**70.6**	**28.4**	**3.7**	**3.2**	**10.4**	**13.2**	**1.8**

Source: Bloomberg, CMBIGM estimates, As of 12/13/2024 12:00pm close price

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