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Investor Presentation: Greater China Technology Hardware | Asia Pacific

Structural Growth, Selective Opportunities

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the 2027 Extel Asia Research Survey. Voting opens 10 November 2026.

GREATER CHINA TECHNOLOGY HARDWARE
Asia Pacific
Industry View **In-Line**

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

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

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Hardware Technology Valuation Comparison

Ticker	Company	Closing Price 10/29/2026	Rating	Price Target (LC)	Market Cap (US$mn)	EPS (Local Dollar) 26E	EPS (Local Dollar) 27E	P/E (X) 26E	P/E (X) 27E	P/B (X) 26E	P/B (X) 27E	P/S (X) 26E	P/S (X) 27E	EV/EBITDA 26E	EV/EBITDA 27E	ROE (%) 26E	ROE (%) 27E	ROA (%) 26E	ROA (%) 27E	Trading Volume (US$ mn)	Div. 26E
PC / Data Center / Cyclical Components																					
Taiwan																					
2324.TW	Compal	36.65	U	23.00	5,158	1.98 e	2.23 e	18.5	16.5	1.1 e	1.0 e	0.2	0.2	8.1	7.7	5.7	6.2	1.9	2.0	61.8	2%
2327.TW	Yageo	543.00	O	1050.0	34,805	20.14 e	32.48 e	27.0	16.7	5.1 e	4.3 e	5.9	4.3	18.1	11.1	21.1	28.0	9.8	13.5	640.1	1%
2353.TW	Acer	32.00	U	23.50	3,074	1.81 e	1.83 e	17.7	17.5	1.2 e	1.1 e	0.3	0.3	10.3	8.3	6.1	6.6	2.2	2.1	29.7	4%
2357.TW	Asustek	950.00	U	700.0	22,633	65.16 e	68.06 e	14.6	14.0	2.3 e	2.2 e	0.8	0.7	11.2	10.7	16.3	16.3	7.8	7.3	100.5	5%
2368.TW	GCE	1,115.00	O	1450.00	19,392	43.23 e	70.43 e	25.8	15.8	11.1 e	7.5 e	5.4	3.8	18.0	10.9	51.2	56.3	22.4	25.3	276.0	1%
2376.TW	Gigabyte	343.00	E	405.0	7,489	33.82 e	34.37 e	10.1	10.0	3.1 e	2.9 e	0.4	0.3	7.3	7.7	33.4	30.1	12.5	10.4	70.5	4%
2382.TW	Quanta	318.00	O	385.00	41,806	24.66 e	28.80 e	12.9	11.0	4.0 e	3.3 e	0.3	0.3	10.6	8.9	33.6	32.3	5.6	5.1	211.6	4%
3231.TW	Wistron	188.50	O	275.0	20,574	16.67 e	23.32 e	11.3	8.1	2.0 e	1.7 e	0.2	0.1	3.9	2.7	18.6	22.3	4.0	4.3	243.1	2%
3533.TW	Lotes	1,900.00	O	2350.00	6,785	79.63 e	106.88 e	23.9	17.8	4.7 e	4.0 e	5.1	4.2	14.3	10.4	20.8	24.3	16.4	19.0	81.9	2%
4938.TW	Pegatron	104.50	E	96.0	8,912	5.70 e	7.71 e	18.3	13.5	1.0 e	1.0 e	0.2	0.1	5.7	4.3	5.9	7.6	2.3	2.6	34.6	0%
8046.TW	Nan Ya PCB	1,250.00	O	2000.00	25,907	18.72 e	48.25 e	66.8	25.9	14.2 e	10.1 e	13.5	8.3	39.4	18.2	23.5	45.6	17.5	33.2	361.1	0%
3037.TW	Unimicron	1,040.00	O	1775.0	55,682	23.99 e	43.46 e	43.3	23.9	11.4 e	8.4 e	8.2	5.6	28.3	13.9	29.8	40.4	12.8	18.1	633.8	0%
6669.TW	Wiwynn	1,885.00	O	2515.00	33,691	119.86 e	156.50 e	15.7	12.0	6.4 e	4.8 e	0.7	0.4	10.7	8.4	46.0	45.6	17.3	16.4	311.2	3%
2383.TW	EMC	5,010.00	O	8800.0	55,532	136.26 e	293.86 e	36.8	17.0	19.9 e	10.8 e	7.8	4.4	25.9	11.8	69.5	82.1	32.7	41.4	365.2	0%
6274.TWO	TUC	1,375.00	O	2550.00	12,699	41.36 e	90.06 e	33.2	15.3	14.2 e	8.5 e	5.9	3.2	20.7	9.5	51.5	69.7	23.4	31.1	295.2	1%
8358.TWO	Co-Tech	460.00	O	730.0	3,464	9.34 e	18.59 e	49.2	24.8	12.4 e	9.0 e	10.4	7.3	38.2	19.2	28.0	42.1	22.2	33.7	174.7	0%
HK/ China																					
000977.SZ	Inspur	56.03	E	96.50	12,328	4.00 e	3.99 e	14.0	14.1	3.0 e	2.5 e	0.4	0.3	12.1	12.0	23.7	19.5	6.6	5.6	681.2	0%
600183.SS	Shengyi	102.49	E	170.0	37,341	3.12 e	4.82 e	32.8	21.3	10.2 e	7.9 e	5.3	3.7	23.9	15.0	35.1	41.9	21.8	27.7	864.5	1%
002916.SZ	Shennan Circuit	280.04	E	415.00	28,611	8.18 e	12.71 e	34.2	22.0	6.4 e	4.9 e	5.0	3.8	24.5	17.5	28.3	34.2	16.6	21.0	493.6	1%
0992.HK	Lenovo	23.78 HKD	O	49.0	38,877	3.08 e	3.84 e	7.7	6.2	4.4 e	2.6 e	0.3	0.3	6.8	2.8	18.0	55.7	2.8	10.2	264.9	3%
1888.HK	Kingboard Laminates	40.30	O	75.00	16,188	2.73 e	4.51 e	14.7	8.9	5.5 e	4.3 e	3.5	2.7	9.9	6.1	43.7	54.0	29.3	38.5	231.2	2%
6088.HK	FIT Hong Teng	3.71 HKD	O	8.0	3,459	0.27 e	0.39 e	13.7	9.6	1.1 e	1.0 e	0.6	0.5	7.3	4.5	8.8	11.4	4.0	5.4	40.4	0%
Smartphone & Wireless Equipment																					
Taiwan																					
3008.TW	Largan	5,815.00	O	9040.00	25,555	162.90 e	172.30 e	35.7	33.7	3.6 e	3.2 e	12.4	11.0	21.7	19.8	10.6	10.1	9.4	9.3	198.0	1%
3406.TW	Genius	1,200.00	E	1070.00	4,625	44.35 e	50.88 e	27.1	23.6	4.3 e	3.6 e	4.5	4.2	11.4	10.3	17.3	16.7	11.1	11.6	51.0	9%
HK/ China																					
000063.SZ	ZTE (A Shr)	28.20	E	34.30	18,991	0.83 e	1.16 e	34.0	24.4	1.7 e	1.6 e	0.8	0.7	17.5	16.0	5.2	6.9	1.8	2.3	744.6	2%
002036.SZ	LCE	5.67	U	8.50	899	0.20 e	0.24 e	28.4	23.2	2.0 e	1.9 e	0.6	0.6	7.9	7.0	7.5	8.5	1.3	1.6	62.5	0%
002236.SZ	Dahua	14.47	E	20.80	7,096	1.35 e	1.50 e	10.7	9.7	1.2 e	1.1 e	1.3	1.2	7.9	6.8	11.1	11.6	8.0	8.1	102.8	4%
002273.SZ	Crystal	22.94	O	32.00	4,785	0.91 e	1.22 e	25.2	18.8	3.0 e	2.9 e	4.0	3.5	15.8	12.3	12.3	15.8	9.7	12.3	227.8	3%
002373.SZ	TransInfo	8.00	E	9.70	1,653	0.44 e	0.50 e	18.3	16.0	1.0 e	0.9 e	1.5	1.4	8.1	6.5	5.6	6.0	3.9	4.2	40.8	0%
002415.SZ	Hikvision	34.15	E	35.80	46,946	1.75 e	1.87 e	19.5	18.3	3.2 e	2.9 e	3.1	2.9	13.5	12.1	16.9	16.7	11.2	11.2	303.8	3%
002456.SZ	SZ O-Film	6.30	U	8.00	3,292	0.06 e	0.11 e	114.5	55.1	4.0 e	3.7 e	1.0	0.9	20.5	16.8	3.6	6.9	0.8	1.6	123.8	1%
300098.SZ	Gosuncn	4.24	U	4.80	981	0.08 e	0.10 e	56.5	42.0	2.6 e	2.4 e	3.0	2.6	32.2	23.3	4.6	5.9	2.5	3.0	44.9	0%
300394.SZ	TFC	201.43	E	265.00	32,958	3.16 e	4.39 e	63.8	45.9	26.1 e	17.9 e	21.4	15.0	48.3	35.0	49.5	46.3	41.9	39.2	1,732.0	0%
002281.SZ	Accelink	123.60	U	166.00	14,573	2.30 e	3.38 e	53.7	36.6	8.6 e	7.3 e	6.3	4.7	34.0	24.3	17.1	21.6	10.6	13.1	932.6	0%
300502.SZ	Eoptolink	256.79	O	507.14	53,722	13.31 e	24.03 e	19.3	10.7	10.0 e	5.3 e	6.6	3.9	13.8	8.0	69.1	65.3	49.3	48.3	2,951.0	0%
603297.SS	Yongxin	99.17	E	120.00	1,647	2.81 e	3.37 e	35.3	29.4	4.9 e	4.5 e	9.5	7.7	34.0	25.3	14.5	16.0	12.3	13.6	28.1	1%
688036.SS	Transsion	54.41	E	60.00	9,775	0.54 e	2.14 e	100.2	25.4	3.1 e	2.8 e	0.9	0.8	126.0	17.2	3.0	11.5	1.4	5.1	129.9	0%
601869.SS	YOFC-A	300.35	U	250.00	24,303	9.07 e	15.38 e	33.1	19.5	9.9 e	7.0 e	5.7	4.5	15.5	9.8	35.1	42.1	18.0	23.8	683.4	0%
603236.SS	Quectel	71.46	E	55.00	4,356	1.98 e	2.84 e	36.1	25.2	3.8 e	3.3 e	1.0	0.8	21.0	15.1	11.0	14.0	4.4	5.4	119.3	0%
0285.HK	BYDE	22.54 HKD	O	33.00	6,474	0.64 e	1.62 e	35.2	13.9	1.2 e	1.1 e	0.2	0.2	6.7	3.9	4.1	9.8	1.7	4.2	40.5	1%
0763.HK	ZTE (H Shr)	20.28 HKD	O	39.00	18,991	0.83 e	1.16 e	24.5	17.5	1.1 e	1.0 e	0.8	0.7	17.5	16.0	5.2	6.9	1.8	2.3	60.9	4%
1478.HK	Q-Tech	4.78 HKD	U	7.20	727	0.72 e	0.91 e	6.6	5.2	0.7 e	0.6 e	0.2	0.2	4.3	2.9	12.8	14.7	4.2	4.8	7.2	5%
1810.HK	Xiaomi	25.62 HKD	O	33.00	69,776	0.94 e	1.26 e	27.3	20.3	2.0 e	1.8 e	1.3	1.2	27.1	16.1	8.2	8.4	4.4	4.6	684.8	0%
2018.HK	AAC	38.82 HKD	O	50.00	5,930	2.23 e	2.70 e	17.4	14.4	1.4 e	1.3 e	1.1	1.0	6.0	4.2	10.1	11.1	5.2	5.9	27.7	0%
2382.HK	Sunny Optical	65.80 HKD	E	75.00	9,182	3.73 e	4.43 e	17.6	14.9	1.8 e	1.5 e	1.3	1.1	6.1	4.3	12.7	13.1	6.3	6.4	107.4	2%
6869.HK	YOFC-H	111.60 HKD	O	230.00	24,303	9.07 e	15.38 e	12.3	7.3	3.1 e	2.2 e	5.7	4.5	15.5	9.8	35.1	42.1	18.0	23.8	458.1	0%

Note: Prices as of the close, October 29, 2026.

Hardware Technology Valuation Comparison

Ticker	Company	Closing Price 10/29/2026	Rating	Price Target (LC)	Market Cap (US$mn)	EPS (Local Dollar) 26E	EPS (Local Dollar) 27E	P/E (X) 26E	P/E (X) 27E	P/B (X) 26E	P/B (X) 27E	P/S (X) 26E	P/S (X) 27E	EV/EBITDA 26E	EV/EBITDA 27E	ROE (%) 26E	ROE (%) 27E	ROA (%) 26E	ROA (%) 27E	Trading Volume (US$ mn)	Div. 26E
Tech conglomerate & Enablers																					
Taiwan																					
2301.TW	Lite-On Tech	252.00	E	315.00	18,679	11.07 e	15.97 e	22.8	15.8	6.0 e	5.6 e	2.6	1.9	15.28	10.42	27.19	36.65	11.22	13.73	169.50	3%
2308.TW	Delta	1,480.00	O	2500.0	124,173	39.77 e	64.77 e	37.2	22.9	8.9 e	6.8 e	5.0	3.4	21.53	13.28	28.54	36.83	14.32	18.14	618.55	1%
2317.TW	Hon Hai	248.00	O	310.00	109,180	16.38 e	19.90 e	15.1	12.5	1.7 e	1.6 e	0.4	0.3	6.64	5.61	11.30	12.87	4.32	4.83	460.39	4%
2455.TW	VPEC	484.00	E	290.0	2,953	4.88 e	7.60 e	99.2	63.7	24.1 e	20.4 e	21.5	16.9	67.54	45.64	25.73	34.64	18.26	25.06	99.66	1%
2474.TW	Catcher	196.50	U	160.00	3,307	12.03 e	12.52 e	16.3	15.7	0.8 e	0.8 e	6.2	5.8	27.76	26.86	4.65	4.81	3.23	3.32	28.63	6%
3017.TW	AVC	3,105.00	O	3333.0	38,935	96.50 e	145.03 e	32.2	21.4	15.3 e	10.1 e	5.4	4.1	18.84	12.58	57.33	55.61	19.71	22.07	363.16	1%
3324.TWO	Auras	1,435.00	E	1025.00	4,119	58.09 e	66.06 e	24.7	21.7	8.4 e	6.8 e	3.2	2.8	16.54	14.44	39.64	34.72	17.35	15.65	122.40	1%
6805.TW	Fositek	2,425.00	O	2426.0	5,201	67.54 e	92.07 e	35.9	26.3	15.0 e	10.5 e	8.6	6.7	27.18	19.51	50.61	46.84	25.85	25.70	106.84	0%
HK/ China																					
002241.SZ	GoerTek	23.20	E	27.00	10,947	0.99 e	1.10 e	23.6	21.1	2.1 e	1.9 e	0.9	0.8	15.18	14.13	9.10	9.52	3.78	3.98	356.20	1%
002475.SZ	Luxshare	49.70	O	70.27	57,289	2.65 e	3.14 e	18.8	15.8	3.0 e	2.6 e	0.9	0.8	9.53	8.10	17.23	17.58	6.21	6.88	1,242.10	1%
002600.SZ	Lingyi	11.69	U	10.00	13,227	0.39 e	0.46 e	29.8	25.3	3.1 e	2.8 e	1.3	1.2	12.60	10.92	11.01	11.61	4.88	5.47	359.52	0%
601138.SS	FII	48.64	O	82.8	144,779	3.08 e	4.04 e	15.8	12.0	5.6 e	5.4 e	0.7	0.6	10.81	8.64	36.07	45.92	11.11	11.57	1,551.83	6%
Display & Industrial Automation																					
Taiwan																					
1590.TW	Airtac	1,150.00	O	2000.0	7,032	60.77 e	68.77 e	18.9	16.7	3.9 e	3.5 e	5.1	4.5	12.81	11.24	21.82	21.94	19.70	19.60	34.74	2%
2049.TW	Hiwin	337.00	O	450.0	3,279	9.77 e	11.77 e	34.5	28.6	2.2 e	2.0 e	4.0	3.4	18.01	15.33	8.90	9.97	5.97	6.42	44.59	1%
2360.TW	Chroma	1,945.00	O	2800.0	26,689	48.57 e	70.77 e	40.0	27.5	18.1 e	13.3 e	13.4	9.3	32.63	21.88	52.84	55.89	34.15	34.41	182.51	1%
2395.TW	Advantech	673.00	O	720.0	18,467	20.27 e	23.77 e	33.2	28.3	9.4 e	8.5 e	5.7	5.0	26.96	22.40	29.99	31.46	20.84	20.97	45.79	2%
2409.TW	AUO	34.05	E	27.0	8,275	(0.13) e	0.21 e	NM	160.4	1.7 e	1.7 e	0.9	0.9	7.76	5.70	(0.67)	1.08	(0.24)	0.37	189.41	0%
3481.TW	Innolux	46.00	E	60.0	11,938	1.57 e	1.67 e	29.3	27.5	1.6 e	1.5 e	1.4	1.3	7.75	6.71	5.50	5.66	3.21	3.33	396.84	2%
3665.TW	Bizlink	1,705.00	O	3665.0	11,141	69.77 e	120.77 e	24.4	14.1	5.8 e	4.4 e	3.2	2.2	15.36	9.16	25.98	34.99	14.98	20.98	211.11	1%
8069.TWO	E Ink	156.00	E	150.0	5,555	11.57 e	12.57 e	13.5	12.4	2.4 e	2.2 e	4.5	3.9	10.76	9.17	18.19	18.25	12.04	12.36	42.00	5%
2059.TW	King Slide	9,880.00	O	15000.0	29,832	382.77 e	502.77 e	25.8	19.7	17.9 e	11.0 e	17.0	12.7	19.86	14.42	90.37	69.25	71.60	55.63	146.70	1%
2345.TW	Accton	1,755.00	O	3500.0	31,410	83.77 e	115.77 e	21.0	15.2	10.5 e	6.9 e	2.4	1.8	14.39	9.96	61.94	54.68	25.98	25.24	259.59	1%
8210.TW	Chenbro	756.00	O	1600.0	3,026	47.77 e	58.77 e	15.8	12.9	6.2 e	4.8 e	2.9	2.2	10.47	8.27	44.50	41.35	21.31	20.19	71.39	2%
HK/ China																					
000050.SZ	Tianma	5.76	U	5.4	2,104	0.19 e	0.21 e	31.0	26.8	0.5 e	0.5 e	0.3	0.3	5.01	4.10	1.53	1.74	0.61	0.71	45.10	0%
000100.SZ	TCL Corp.	4.51	E	4.7	14,846	0.32 e	0.37 e	14.3	12.1	1.6 e	1.6 e	0.4	0.4	4.79	4.47	11.45	13.54	1.48	1.70	407.59	4%
000725.SZ	BOE Tech	4.83	O	9.3	26,752	0.20 e	0.27 e	24.7	18.2	1.3 e	1.2 e	0.9	0.8	4.54	4.52	5.33	6.92	1.59	1.98	1,019.38	1%
300433.SZ	Lens Tech	27.97	E	31.0	21,455	0.82 e	1.39 e	34.0	20.1	2.6 e	2.3 e	1.8	1.4	11.62	8.73	7.47	11.75	4.85	7.47	570.60	2%

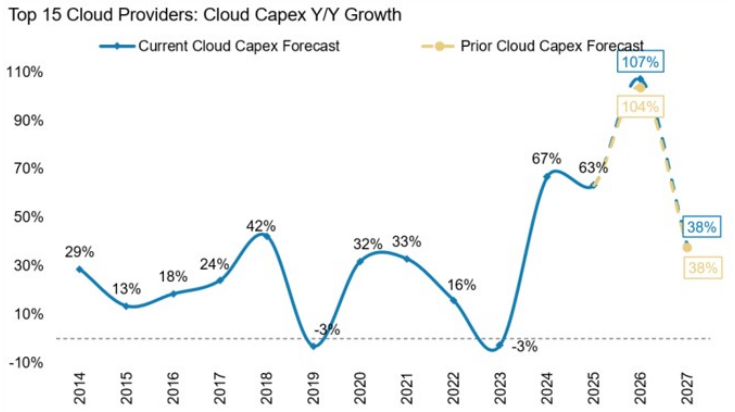
Note: Prices as of the close, October 29, 2026.

Demand Forecasts

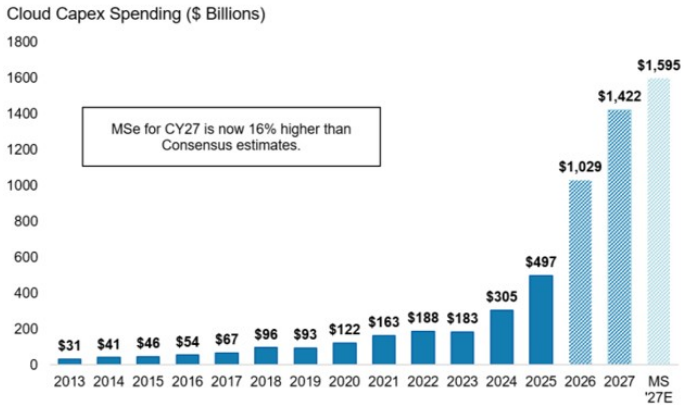
(mn units)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026e	2027e
Server	**8.4**	**7.1**	**8.3**	**8.6**	**8.7**	**9.0**	**9.2**	**9.7**	**9.6**	**10.2**	**11.8**	**11.8**	**12.7**	**13.5**	**14.9**	**12.4**	**14.6**	**16.8**	**19.9**	**21.9**
YoY % Change		*-16%*	*17%*	*4%*	*0%*	*3%*	*3%*	*5%*	*-2%*	*7%*	*16%*	*0%*	*7%*	*7%*	*10%*	*-17%*	*18%*	*15%*	*19%*	*10%*
PC	**297**	**312**	**355**	**360**	**346**	**312**	**305**	**272**	**256**	**261**	**260**	**268**	**307**	**354**	**294**	**253**	**262**	**289**	**249**	**221**
YoY % Change	*11%*	*5%*	*14%*	*2%*	*-4%*	*-10%*	*-2%*	*-11%*	*-6%*	*2%*	*0%*	*3%*	*15%*	*15%*	*-17%*	*-14%*	*3%*	*10%*	*-14%*	*-11%*
Desktop	**155**	**144**	**155**	**152**	**146**	**134**	**131**	**111**	**101**	**101**	**96**	**96**	**86**	**96**	**86**	**72**	**73**	**84**	**75**	**69**
YoY % Change	*-4%*	*-7%*	*7%*	*-2%*	*-4%*	*-8%*	*-2%*	*-16%*	*-9%*	*0%*	*-5%*	*0%*	*-11%*	*12%*	*-11%*	*-16%*	*1%*	*15%*	*-11%*	*-8%*
Notebook	**142**	**168**	**200**	**208**	**200**	**178**	**173**	**161**	**155**	**161**	**164**	**172**	**221**	**258**	**208**	**181**	**189**	**205**	**175**	**152**
YoY % Change	*33%*	*19%*	*19%*	*4%*	*-4%*	*-11%*	*-2%*	*-7%*	*-4%*	*3%*	*2%*	*5%*	*29%*	*17%*	*-19%*	*-13%*	*4%*	*9%*	*-15%*	*-13%*
Tablet			**19**	**76**	**144**	**220**	**230**	**207**	**175**	**164**	**146**	**144**	**164**	**168**	**162**	**129**	**145**	**148**	**151**	**154**
YoY % Change				*294%*	*89%*	*52%*	*5%*	*-10%*	*-16%*	*-6%*	*-11%*	*-1%*	*13%*	*3%*	*-4%*	*-20%*	*12%*	*2%*	*2%*	*2%*
Smartphone	**151**	**173**	**305**	**494**	**727**	**1,019**	**1,301**	**1,438**	**1,469**	**1,465**	**1,403**	**1,373**	**1,281**	**1,360**	**1,206**	**1,165**	**1,237**	**1,264**	**1,094**	**1,133**
YoY % Change	*22%*	*15%*	*76%*	*62%*	*47%*	*40%*	*28%*	*10%*	*2%*	*0%*	*-4%*	*-2%*	*-7%*	*6%*	*-11%*	*-3%*	*6%*	*2%*	*-13%*	*4%*
iPhone	**14**	**25**	**47**	**93**	**136**	**153**	**193**	**232**	**215**	**216**	**205**	**199**	**203**	**236**	**227**	**236**	**234**	**252**	**252**	**267**
YoY % Change	*269%*	*84%*	*89%*	*96%*	*46%*	*13%*	*26%*	*20%*	*-7%*	*0%*	*-5%*	*-3%*	*2%*	*16%*	*-4%*	*4%*	*-1%*	*7%*	*0%*	*6%*
iPad			**15**	**40**	**66**	**74**	**63**	**50**	**43**	**44**	**43**	**50**	**53**	**58**	**60**	**49**	**51**	**54**	**46**	**47**
YoY % Change				*174%*	*62%*	*13%*	*-15%*	*-22%*	*-14%*	*3%*	*-1%*	*15%*	*7%*	*8%*	*5%*	*-20%*	*4%*	*8%*	*-16%*	*2%*

AI Server Momentum Continues To Be Strong

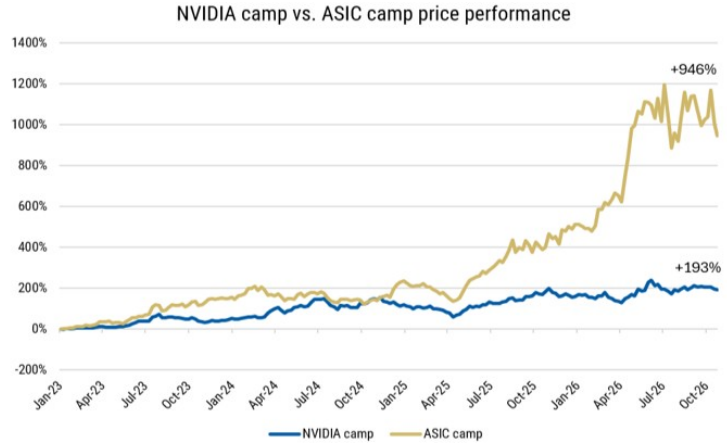
Total Cloud Capex Up Y/Y in CY26-27



Cloud Capex Could See Upside for CY27



GPU vs. ASIC Share Price Movement



Agentic AI – Hardware Beneficiaries (ABF Substrates, CPU Sockets, MLCCs)

Every 1M Units of total CPU upside	
Server CPU ABF Substrate ASP (US$)	77.8
Revenue upside to Unimicron per 1M CPUs (US$ M)	12.6
Revenue upside to Unimicron per 1M CPUs (NT$ M)	397
Unimicron 2026 total revenue estimate (NT$ M)	169,246
Unimicron ABF revenue upside per 1M CPUs	**0.2%**

If CPU TAM grows 10-15M units…	
Server CPU ABF Substrate ASP (US$)	77.8
Revenue upside to Unimicron if CPU TAM grows 10-15M units (US$ M)	157.6
Revenue upside to Unimicron if CPU TAM grows 10-15M units (NT$ M)	4,964
Unimicron 2026 ABF revenue estimate (NT$ M)	169,246
Unimicron ABF revenue upside if CPU TAM grows 10-15M units	**2.9%**

Every 1M Units of total CPU upside	
Server CPU Socket ASP (US$)	21.9
Revenue upside to Lotes per 1M CPUs (US$ M)	7.7
Revenue upside to Lotes per 1M CPUs (NT$ M)	241
Lotes 2026 total revenue estimate (NT$ M)	41,065
Lotes CPU Socket upside per 1M CPUs	**0.6%**

If CPU TAM grows 10-15M units…	
Server CPU Socket ASP (US$)	21.9
Revenue upside to Lotes if CPU TAM grows 10-15M units (US$ M)	95.7
Revenue upside to Lotes if CPU TAM grows 10-15M units (NT$ M)	3,015
Lotes 2026 total revenue estimate (NT$ M)	41,065
Lotes CPU Socket upside if CPU TAM grows 10-15M units	**7.3%**

Every 1M Units of total CPU upside	
Server CPU Socket ASP (US$)	21.9
Revenue upside to FIT per 1M CPUs (US$ M)	8.8
FIT 2026 total revenue estimate (US$ M)	5,483
FIT CPU Socket upside per 1M CPUs	**0.2%**

If CPU TAM grows 10-15M units…	
Server CPU Socket ASP (US$)	21.9
Revenue upside to FIT if CPU TAM grows 10-15M units (US$ M)	109.4
FIT 2026 ABF revenue estimate (NT$ M)	5,483
FIT CPU Socket upside if CPU TAM grows 10-15M units	**2.0%**

Every 1M Units of total CPU upside	
Server MLCC Content (US$)	30.0
Revenue upside to Yageo per 1M CPUs (US$ M)	4.5
Revenue upside to Yageo per 1M CPUs (NT$ M)	142
Yageo 2026 total revenue estimate (NT$ M)	158,893
Yageo MLCC revenue upside per 1M CPUs	**0.1%**

If CPU TAM grows 10-15M units…	
Server MLCC Content (US$)	30.0
Revenue upside to Yageo if CPU TAM grows 10-15M units (US$ M)	56.3
Revenue upside to Yageo if CPU TAM grows 10-15M units (NT$ M)	1,772
Yageo 2026 total revenue estimate (NT$ M)	158,893
Yageo MLCC revenue upside if CPU TAM grows 10-15M units	**1.1%**

NVIDIA GPU Roadmap

Recent updates

- 2025 came in at 26-27K NVL72-equivalent racks, and we forecast 81-82K racks for 2026 and 90-91K racks for 2027.
- VR200 rack production is delayed by 1-2 months vs original schedule due to component issues (i.e., Midplane PCB), so rack ramp will start in 4Q26.
- Hon Hai should be a share gainer for VR200 racks in CY27.

NVIDIA	H100	H200	B200	GB200 NVL72	GB300 NVL72 (RENAMED FROM GB200 Ultra)	VR200 NVL144	VR200 NVL144 CPX	VR300
Launch timing	4Q22	2Q24	1Q25	4Q24	3Q25	2H26	End of 2026	2H27
CPU	x86	x86	x86	Grace	Grace	Vera	Vera	Vera
Back-end	CoWoS-S	CoWoS-S	CoWoS-L	CoWoS-L	CoWoS-L	CoWoS-L	CoWoS-L	CoWoS-L
GPU Cooling	Air	Air & Liquid	Air & Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
GPU Max TDP	700W	700W	1,000W	1,200W	1,400W	2,300W	800W	3,600W
Product Form Factor	DGX/HGX 8x GPU PCIe	DGX/HGX 8x GPU PCIe	DGX/HGX 8x GPU PCIe	Oberon GB 2:4 board NVSwitch tray NVL backplane	Oberon GB 2:4 board NVSwitch tray NVL backplane	Oberon VR 2:4 board NVSwitch tray NVL backplane	Oberon VR 2:4 board NVSwitch tray NVL backplane	Kyber
GPU Memory	80/96GB | HBM2e/3 | 8H	141GB | HBM3e | 8H	192GB | HBM3e | 8H	192GB | HBM3e | 8H	288GB | HBM3e | 8H	288GB | HBM4 | 8H	128GB GDDR7	1TB | HBM4e | 16H
HBM Vendor	Hynix	Hynix/Micron	Hynix/Micron/Samsung	Hynix/Micron/Samsung	Hynix/Micron/Samsung	Hynix/Micron/Samsung	Hynix/Micron/Samsung	Hynix/Micron/Samsung
NVLink B/W per GPU	900GB/s	900GB/s	1,800 GB/s	1,800 GB/s	1,800 GB/s	3,600 GB/s	3,600 GB/s	3,600 GB/s
CPU-GPU Interface	128 GB/s PCIe5	128 GB/s PCIe5	128 GB/s PCIe5	450 GB/s C2C	450 GB/s C2C	1.8TB/s C2C	1.8TB/s C2C	1.8TB/s C2C
Network Adapter	400G CX7 | BF3	400G CX7 | BF3	400G CX7 | BF3	400G CX7 | BF3	800G CX8	1,600G CX9	1,600G CX9	1,600G CX9

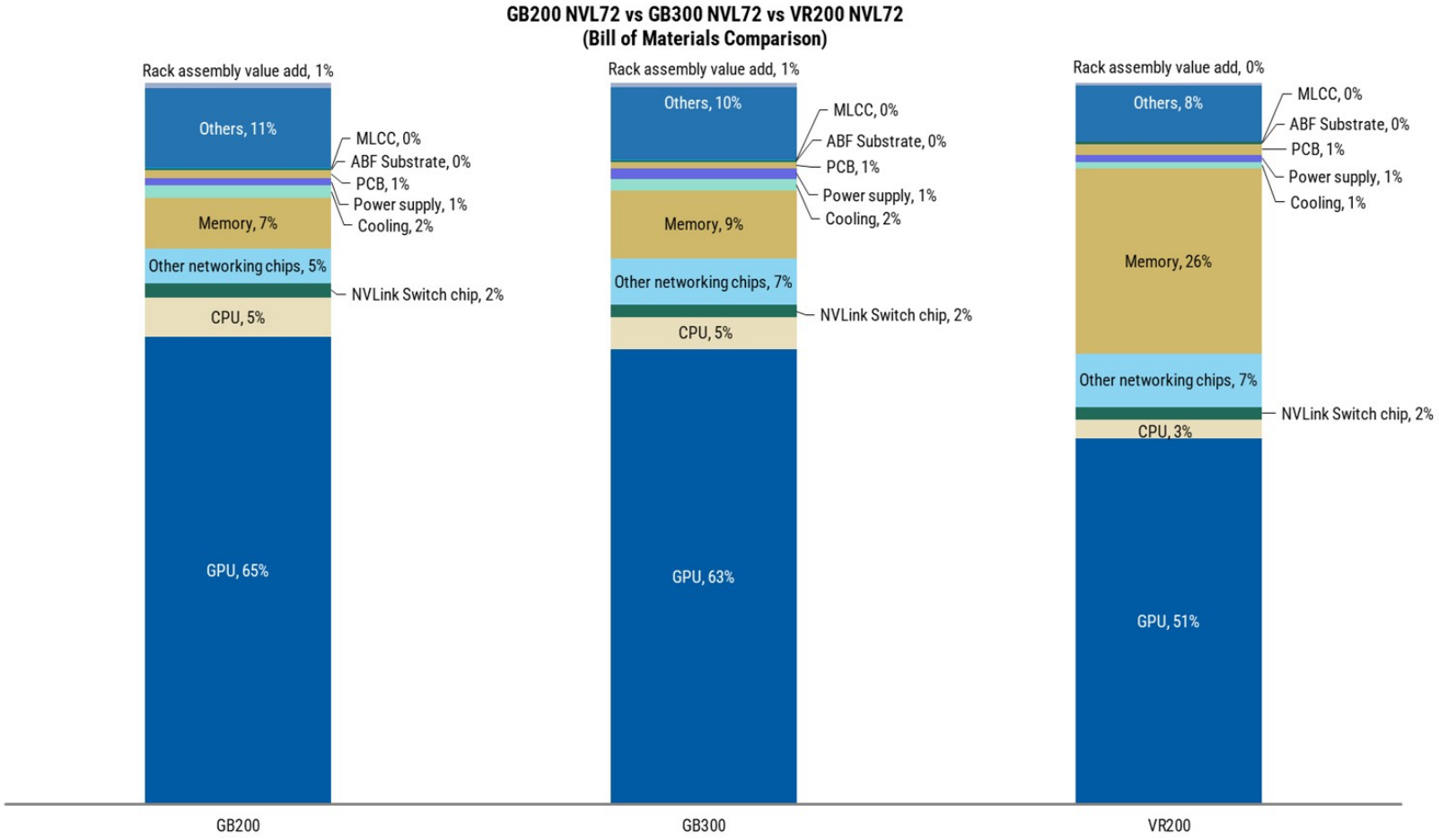
AMD GPU Roadmap

Recent updates

- MI400-series Helios rack OAM/UBB are produced by Wistron
- Wiwynn will be the main ODM partner for Meta for MI400-series Helios rack, and should be main beneficiary from Meta/AMD's multi-year, multi-generation partnership to deploy up to 6 gigawatts of AMD Instinct GPUs

AMD	MI250X	MI300A	MI300X	MI325X	MI350X
Launch timing	4Q21	4Q23	4Q23	4Q24	3Q25
CPU	x86	x86	x86	x86	x86
Back-end	SoIC + CoWoS-S	SoIC + CoWoS-S	SoIC + CoWoS-S	SoIC + CoWoS-S	SoIC + CoWoS-S
GPU Cooling	Air	Air	Air	Air	Air
GPU Max TDP	560W	760W	750W	750W	750W
Product Form Factor	4x GPU	4x APU	8x GPU	8x GPU	N/A
GPU Memory	128GB | HBM2e	128GB | HBM3	192GB | HBM3	288GB | HBM3e	288GB | HBM3e
HBM Vendor	Samsung	Samsung	Samsung	N/A	N/A
B/W per GPU	200GB/s	384GB/s	896GB/s	N/A	N/A
CPU-GPU Interface	64 GB/s PCIe4	N/A	128 GB/s PCIe5	128 GB/s PCIe5	128 GB/s PCIe5

Memory To Become 25%+ of Rubin BOM, Owing To Recent Memory Price Increases



We Estimate A Single VR200 NVL72 Rack Costs Hyperscalers ~US$7.8mn

Nvidia NVL72 Bill of Materials	GB300	VR200	*Diff.*
GPU	$2,520,000	$3,960,000	*57%*
CPU	$180,000	$198,000	*10%*
NVLink Switch chip	$64,800	$144,000	*122%*
Other networking chips	$261,000	$576,000	*121%*
Memory	$373,939	$2,001,600	*435%*
Cooling	$64,610	$72,080	*12%*
Power supply	$57,600	$76,000	*32%*
PCB	$37,476	$91,227	*143%*
ABF Substrate	$11,160	$20,340	*82%*
MLCC	$4,664	$12,411	*166%*
Others	$404,821	$583,087	*44%*
Rack assembly value add	$22,400	$28,800	*29%*
Total	**$4,002,471**	**$7,763,545**	***94%***

Our Bottom-up Analysis Shows ODM Value-added Per Rack Increasing ~38% For VR200

ODM Value-Add per rack	GB300	VR200
Compute Board Assembly/Test	$12,096	$16,200
Compute Tray Assembly/Test	$28,800	$32,400
Switch Board Assembly/Test	$2,475	$3,150
Switch Tray Assembly/Test	$2,700	$3,150
Rack Assembly/Test	$22,400	$28,800
BF DPU Assembly/Test	$1,170	$1,170
CX/Orchid Module Assembly/Test	$0	$3,600
Other peripheral boards	$3,150	$1,260
Cooling components	$12,922	$14,416
Others	$22,500	$45,500
Total ODM Value-Add	**$108,213**	**$149,646**

Our Bottom-up Analysis Shows PCB Content Increasing ~143% For VR200

PCB ASP per board (US$)	GB300	VR200
Compute PCB	$780	$1,060
Switch PCB	$544	$1,719
Midplane PCB	$0	$1,214
BlueField PCB	$0	$150
ConnectX PCB	$0	$150
Other peripheral PCB	$50	$50
PCB Units per rack	**GB300**	**VR200**
Compute PCB	36x	36x
Switch PCB	9x	9x
Midplane PCB	0x	18x
BlueField PCB	18x	18x
ConnectX PCB	0x	72x
Other peripheral PCB	90x	45x
Total PCB Content per rack	**GB300**	**VR200**
Compute PCB	$28,080	$38,160
Switch PCB	$4,896	$15,471
Midplane PCB	$0	$21,846
BlueField PCB	$0	$2,700
ConnectX PCB	$0	$10,800
Other peripheral PCB	$4,500	$2,250
Total PCB Content per rack	**$37,476**	**$91,227**

Our Bottom-up Analysis Shows MLCC Content Increasing ~166% For VR200

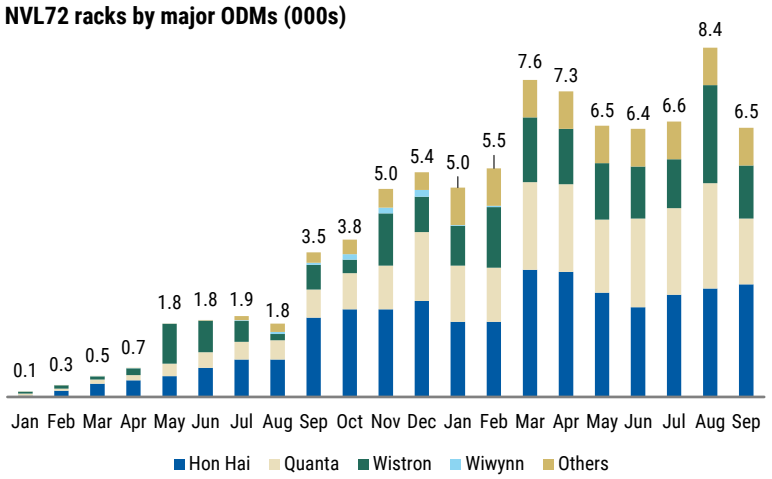
MLCC content per board (US$)	GB300	VR200
Compute PCB	$98	$257
Switch PCB	$57	$222
BlueField DPU Module	$7	$20
ConnectX Orchid Module	$7	$7
Other peripheral PCB	$7	$7
Units per rack	**GB300**	**VR200**
Compute PCB	36x	36x
Switch PCB	9x	9x
BlueField DPU Module	0x	18x
ConnectX Orchid Module	0x	72x
Other peripheral PCB	90x	45x
Total MLCC Content per rack	**GB300**	**VR200**
Compute PCB	$3,527	$9,239
Switch PCB	$515	$1,997
BlueField DPU Module	$0	$366
ConnectX Orchid Module	$0	$498
Other peripheral PCB	$622	$311
Total MLCC Content per rack	**$4,664**	**$12,411**

Our Bottom-up Analysis Shows ABF Substrate Content Increasing ~82% For VR200

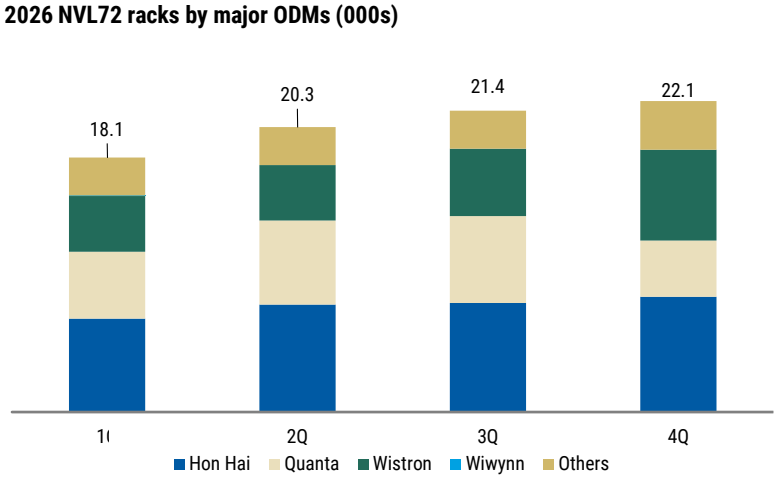
ABF Substrate ASP per chip (US$)	GB300	VR200
GPU	$100	$200
CPU	$50	$60
NVSwitch ASIC	$30	$30
BlueField DPU	$30	$30
ConnectX chip	$30	$30
ABF Units per rack	**GB300**	**VR200**
GPU	72x	72x
CPU	36x	36x
NVSwitch ASIC	18x	36x
BlueField DPU	18x	18x
ConnectX chip	36x	72x
Total ABF Content per rack	**GB300**	**VR200**
GPU	$7,200	$14,400
CPU	$1,800	$2,160
NVSwitch ASIC	$540	$1,080
BlueField DPU	$540	$540
ConnectX chip	$1,080	$2,160
Total ABF Content per rack	**$11,160**	**$20,340**

We Forecast 2026e GB200/300 Racks To Be 81-82K; 2027e Racks To Be 90-91K

GB200/300 NVL72-equivalent monthly rack output



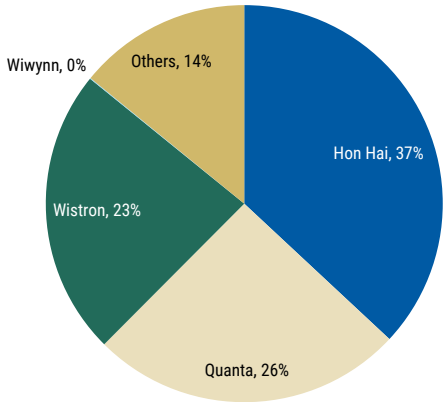
GB200/300 NVL72-equivalent quarterly rack output (2026e)



We Estimate Hon Hai To Be An ODM NVL72 Rack Share Gainer In 2027

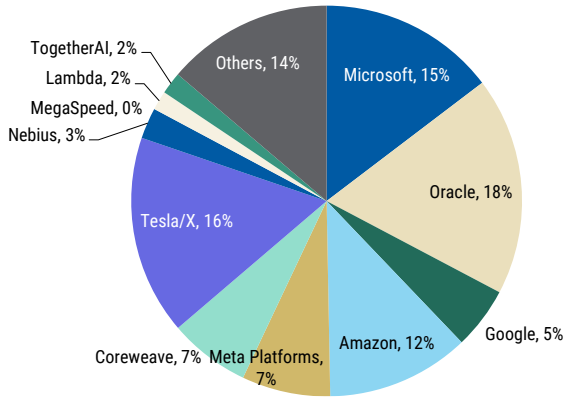
GB200/300 NVL72-equivalent monthly rack output

NVL72-equivalent rack supply share (2026)



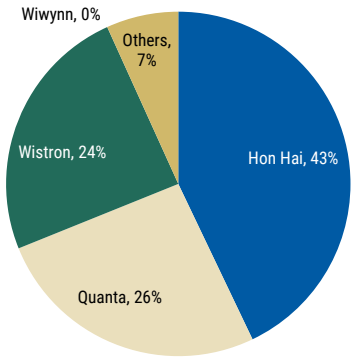
GB200/300 NVL72-equivalent quarterly rack output (2026e)

Nvidia GB200/300 server demand share, 2026e



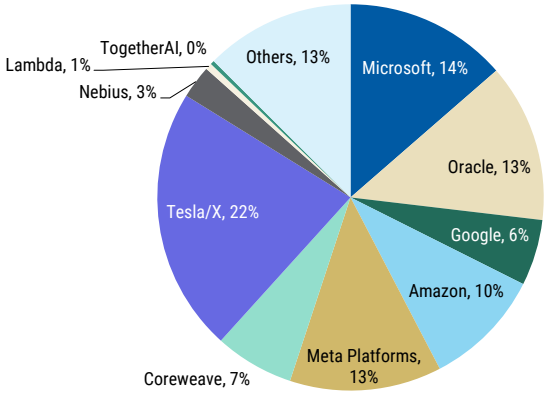
GB200/300 rack supply share by major ODMs (2027e)

NVL72-equivalent rack supply share (2027)



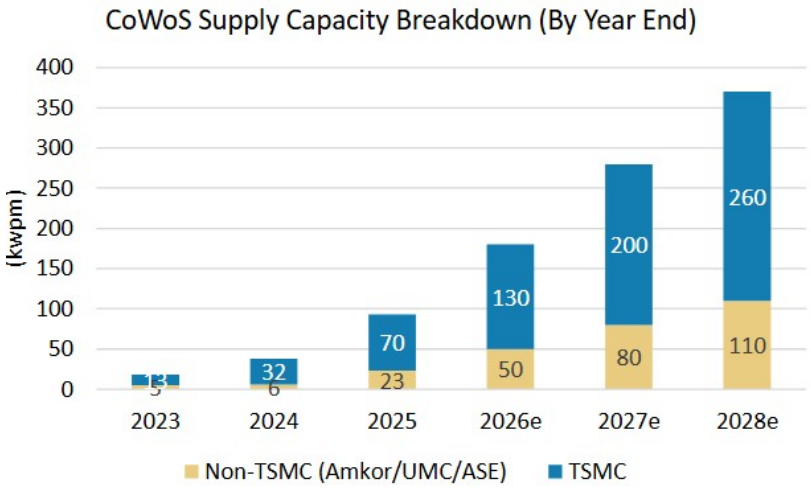
GB200/300 rack demand share (2027e)

Nvidia NVL72 server demand share, 2027e

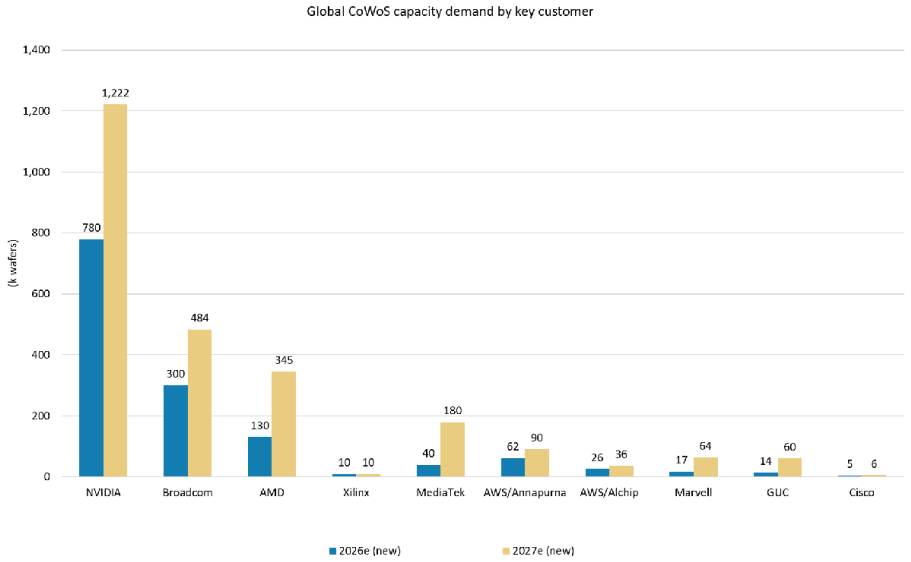


TSMC May Expand CoWoS Capacity To 200Kwpm By 2027 Given Strong AI Demand

CoWoS Supply Capacity Breakdown (By Year End)



Global CoWoS Capacity Demand by Key Customer



AI Computing Wafer Consumption Could Rise To US$55bn In CY27

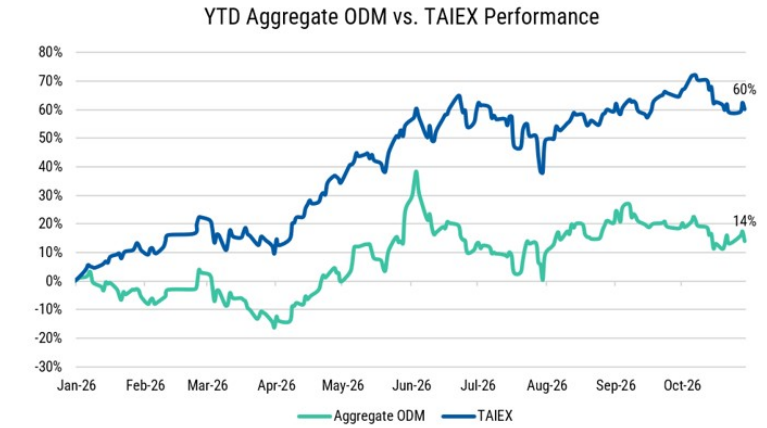
AI chip vendor	Product name	CoWoS capacity allocation (k wafers)	Chips per CoWoS wafer	Implied shipments (k)	Compute die size	Geometry	Compute die units	Wafer consumption (k wafers)	Wafer price (US$)	Wafer revenue TAM (US$ mn)
AI GPU (2027e)										
NVIDIA	B300	40	14	560	850	4nm	2	44	23,042	1,024
	Vera CPU	250	23	5,750	850	3nm	1	228	27,300	6,229
	Rubin R200	740	8	5,920	850	3nm	2	470	27,300	12,827
	Rubin Ultra	130	8	1,040	850	3nm	2	83	27,300	2,253
AMD	MI350 series	5	12	60	110	3nm	8	2	27,300	48
	MI455	75	7	525	850	2nm	2	56	30,000	1,667
	MI450 (for Meta)	45	14	630	850	2nm	1	33	30,000	1,000
	MI500 (Arcadia)	10	4	40	850	2nm	2	4	30,000	127
	Venice CPU	210	21	4,410	155	2nm	8	176	30,000	5,292
AI ASIC (2027e)										
Google	TPU v7p (Ironwood; AVGO)	13	16	208	700	3nm	2	14	27,300	371
	TPU v8i (Sunfish; AVGO)	330	12	3,960	800	3nm	2	296	27,300	8,075
	TPU v8t (Zebrafish; MediaTek)	180	20	3,600	800	3nm	2	269	27,300	7,341
	TPU v9 (Humufish; MediaTek)			400	850	2nm	4	63	30,000	1,905
AWS	Trainium 3	140	17	2,380	700	3nm	2	127	27,300	3,465
Microsoft	Maia 200	5	29	145	700	3nm	1	3.8	27,300	103
	Maia 300	50	11	550	850	2nm	1	29.1	30,000	873
Meta	MTIA 3 (Iris)	55	10	550	850	3nm	2	44	27,300	1,192
US AI Lab	Nexus (Titan 1)	25	13	325	750	3nm	4	45.5	26,000	1,183
	Titan 2	5	8	40	850	2nm	4	8.5	30,000	254
Others		18								
Total		**2,454**						**1,996**		**55,230**

More ASIC Projects Are Coming, According To Each CSP Plan

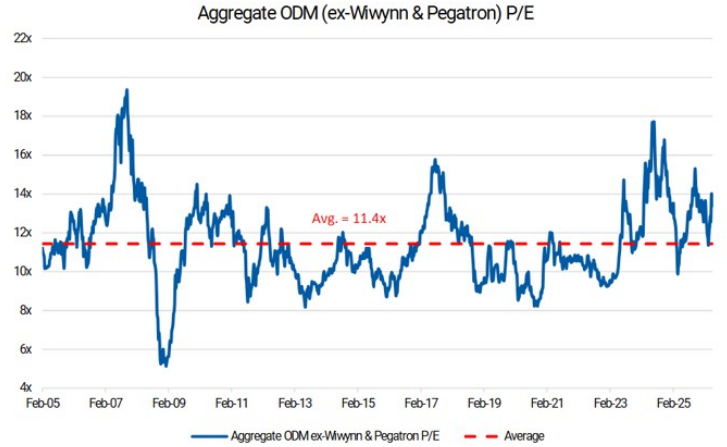
k Units	2023	2024	2025e	2026e	2027e	2028e
v5	500	2,400	250			
v6 (Trillium)			1,200			
v8t (Zebrafish; 3nm, by MediaTek)				500	3,000	2,000
v9 (Humufish; 2nm EMIB-T, by MediaTek)						3,000
v10 (Icefish; 1.4nm, by MediaTek)						unknown
Total	**500**	**2,400**	**1,750**	**3,300**	**7,500**	**>9000**

ODMs Have Underperformed YTD

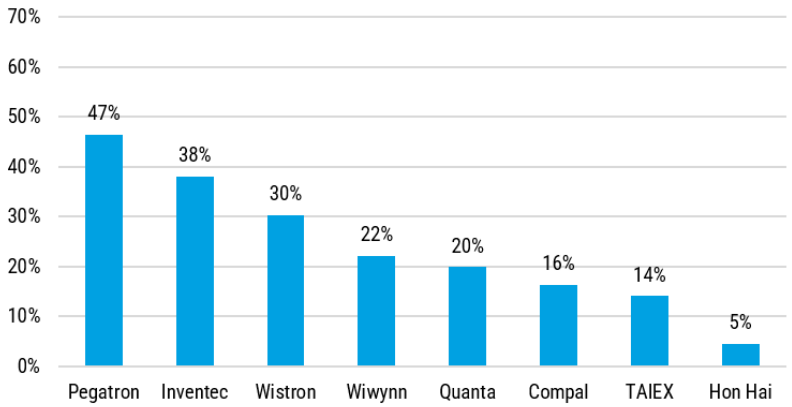
ODM Cohort Has Underperformed TAIEX by more than 30ppts YTD



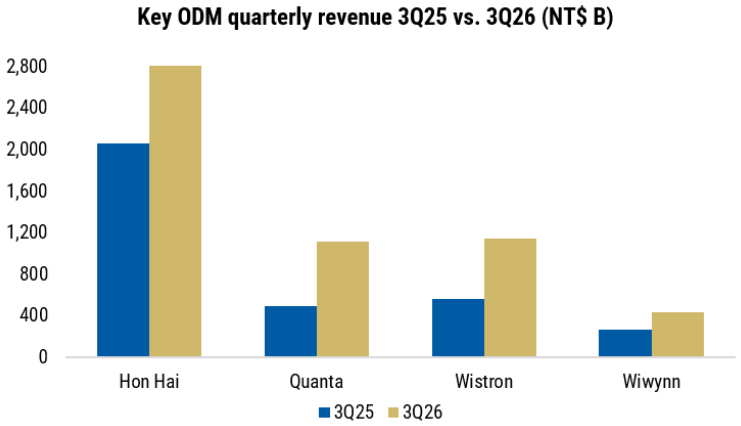
ODM Cohort Is Trading At Avg Historical P/E



YTD Price Performance – Individual ODMs vs TAIEX



…While Revenue Continues to Grow y/y

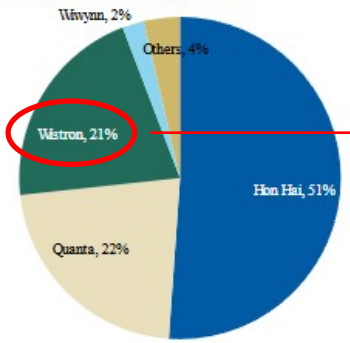


Wistron Is A Share Winner From VR200 Onward As Well As MI400-series

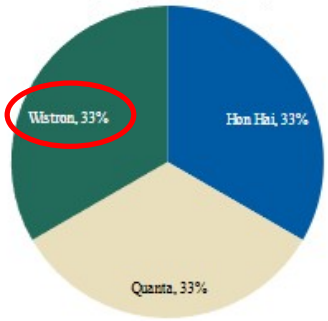
GB200/300	Foundry/CoWoS	L6 Board Assembly	Nvidia	L7 - 10 Server Assembly	L11 Server Rack	Transport/Install
	TSMC	Foxconn Wistron		Foxconn Wistron Quanta Wiwynn Giga-Byte Pegatron Asustek ...	Foxconn Wistron Quanta Wiwynn Giga-Byte Pegatron Asustek ...	

VR200	Foundry/CoWoS	L6 Board Assembly	L7 - 10 Server Assembly	L11 Server Rack	Transport/Install
	TSMC	Foxconn Wistron	Foxconn Wistron Quanta	Foxconn Wistron Quanta Wiwynn Giga-Byte Pegatron Asustek ...	

GB200/300 NVL72-equivalent rack supply share



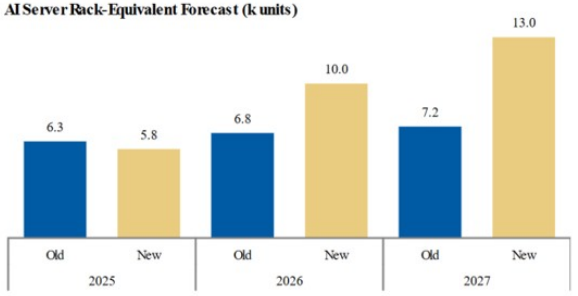
Morgan Stanley Estimate of Compute Tray Share (VR200)



Wistron Sensitivity Analysis for GB300

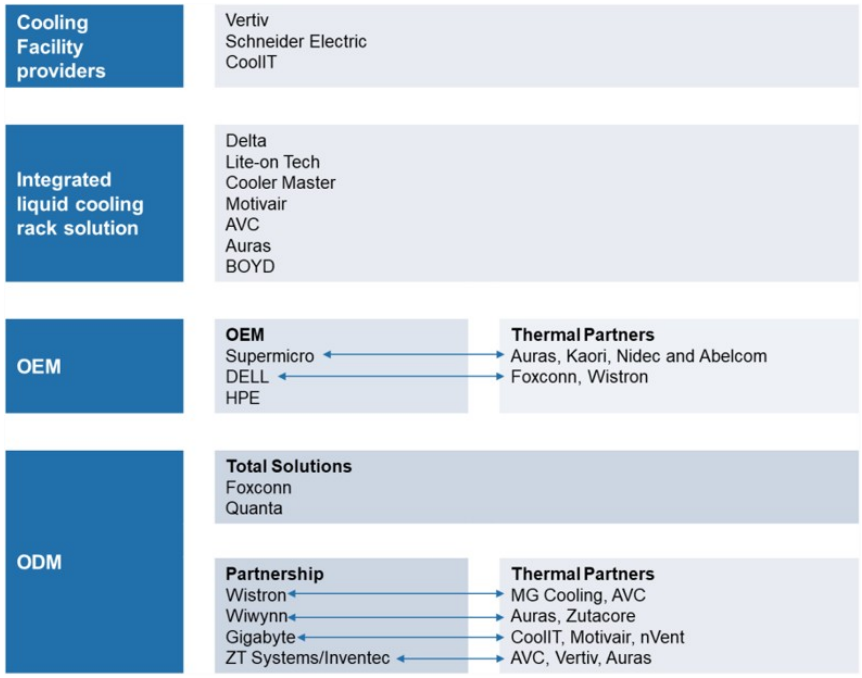
EPS contribution	Rack shipment (000s)						
Rack ASP (US$ M)	1	2	3	4	5	6
2.6	0.36	0.73	1.09	1.46	1.82	2.18
2.8	0.39	0.78	1.18	1.57	1.96	2.35
3.0	0.42	0.84	1.26	1.68	2.10	2.52
3.2	0.45	0.90	1.34	1.79	2.24	2.69
3.4	0.48	0.95	1.43	1.90	2.38	2.85
3.6	0.50	1.01	1.51	2.01	2.52	3.02

AI Server Rack-Equivalent Forecast (k units)



Suppliers With Integration Capability And A Proven Shipment Record Stand Out

Liquid cooling solution supply dynamics for GB200 server rack system



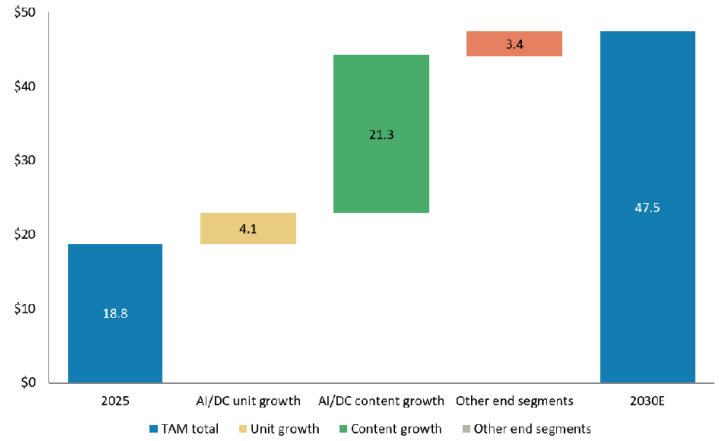
GB200 / ASIC server rack ODM partners

GB200/300	ODM Partner(s)
Microsoft	Foxconn/Quanta
Oracle	Foxconn/Wistron/Wiwynn/Quanta
Google	Quanta/Foxconn/Inventec
Amazon	Quanta/Foxconn
Meta Platforms	Quanta/Foxconn
Dell	Wistron
HPE	Foxconn/Wistron
Others	SMCI / etc

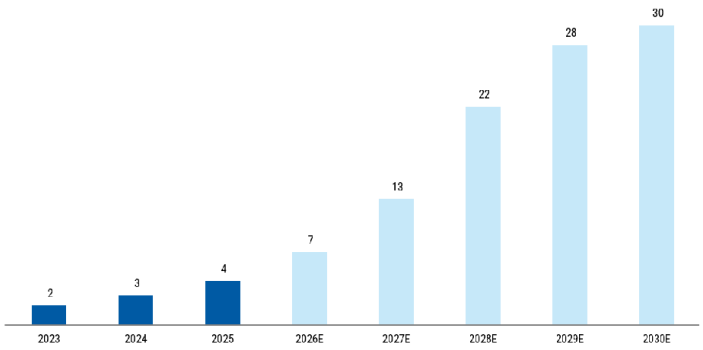
ASIC	ODM Partner(s)
Amazon	Wiwynn/Jabil
Google	Celestica/Foxconn/Inventec
Meta Platforms	Quanta/Celestica/Wiwynn

CCL: The Backbone Of Electronic Inter-connectivity

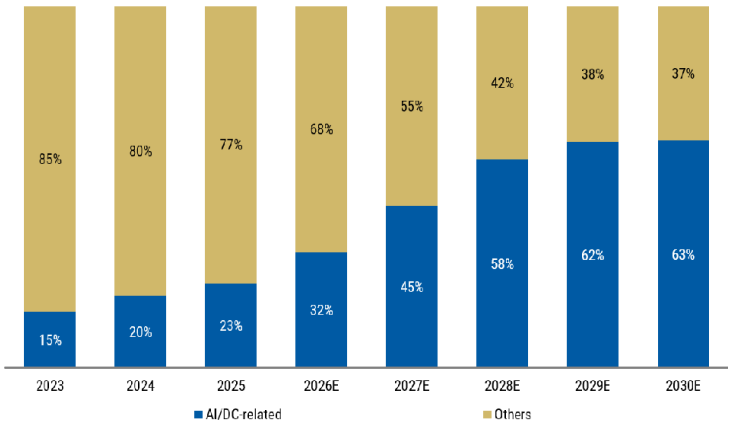
CCL TAM is primarily driven by content, rather than units (US$ B)



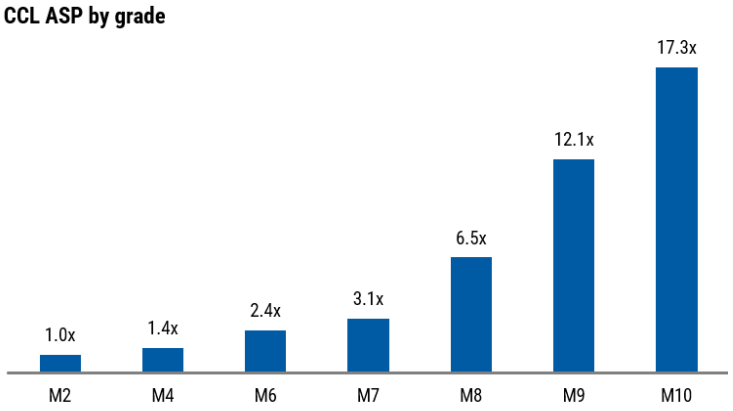
AI/data center-related CCL TAM to rise at a 47% CAGR (2025-30)



AI/data center-related CCL mix will rise to 63% by 2030

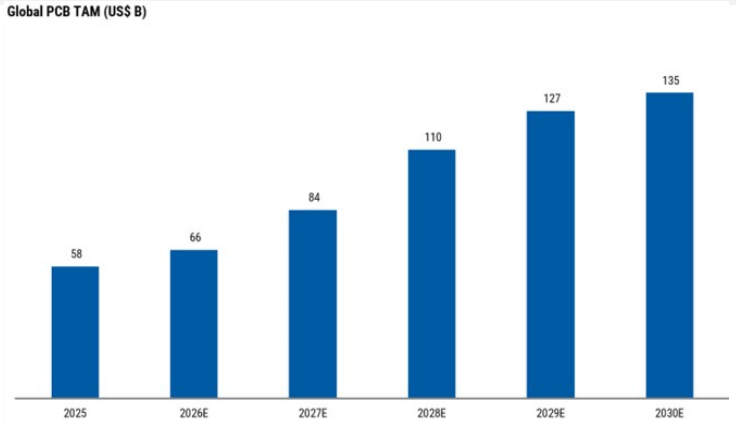


CCL ASP Comparison by Grade

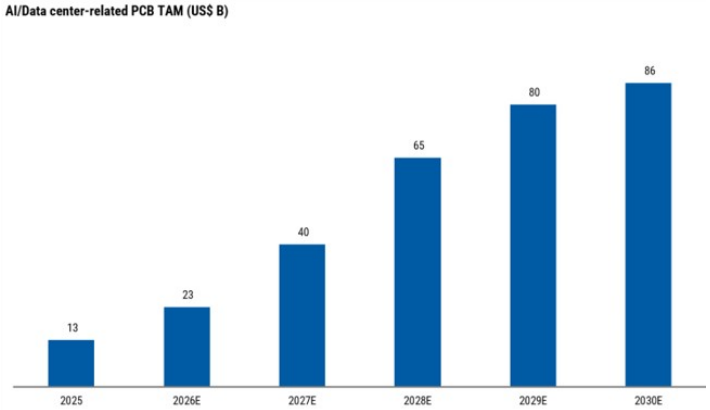


PCB: AI-Related Demand Will Add More Than US$70bn To The PCB Market

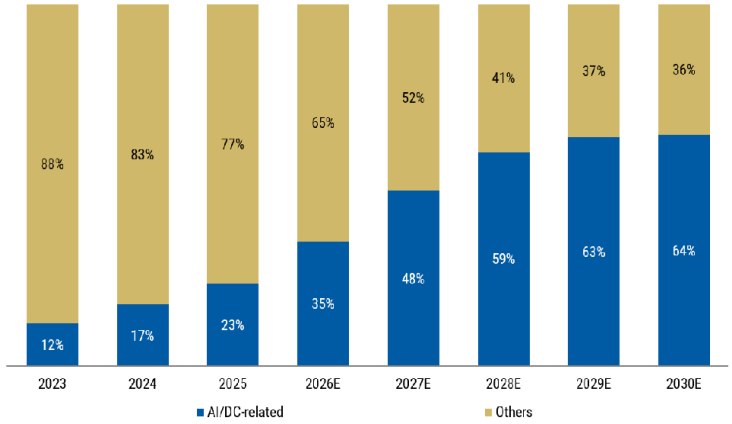
Global PCB TAM to rise at an 18% CAGR (2025-30e)



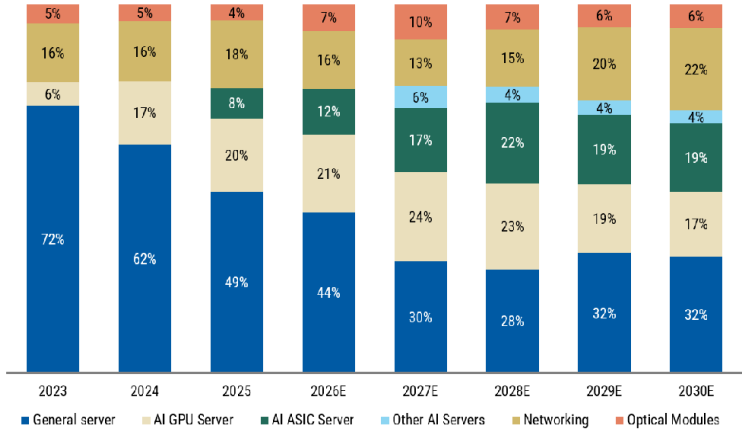
AI/data center-related PCB TAM to rise at an 45% CAGR (2025-30e)



AI/data center-related PCB mix will rise to 64% by 2030e

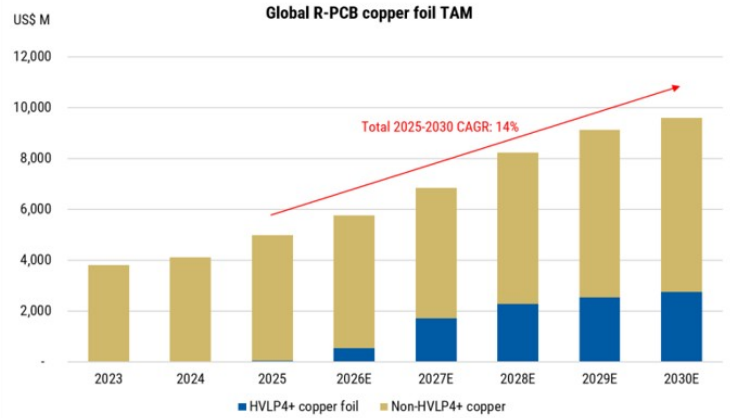


Breakdown of the AI/data center-related PCB TAM by segment

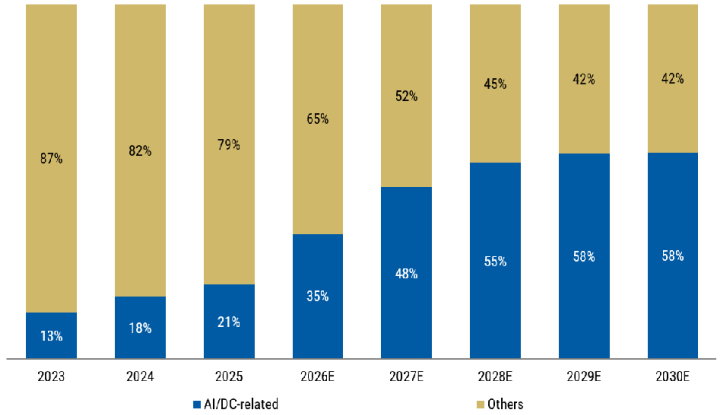


Copper Foil: HVLP4 Copper Foil Undersupply Gap To Reach ~31% In 2027e

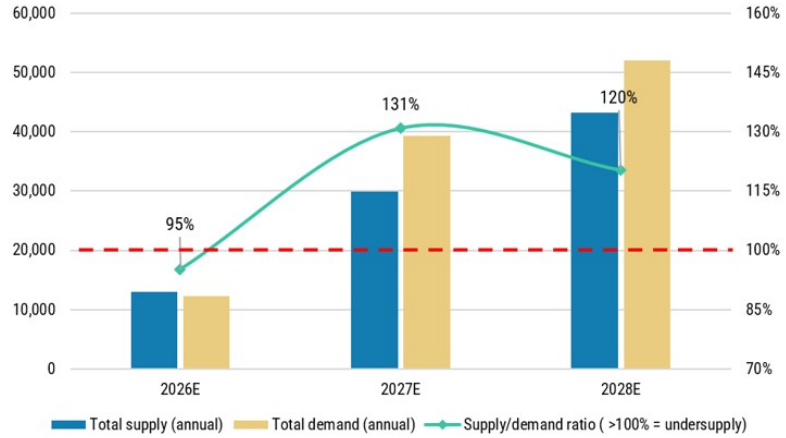
Global R-PCB copper foil TAM to rise at a 14% CAGR (2025-30e)



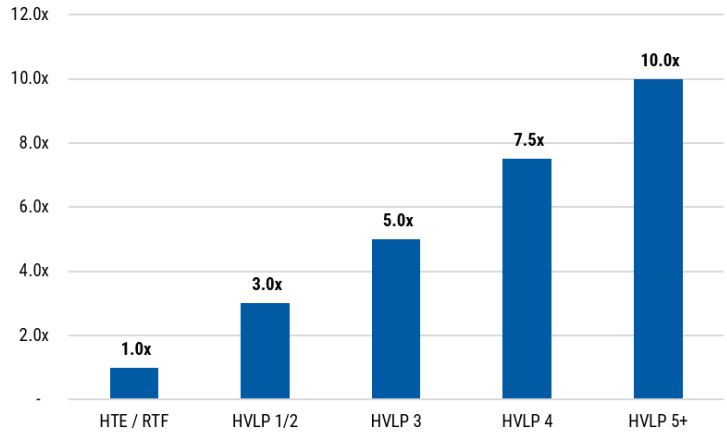
AI/DC-related to account for 58% of total RPCB copper foil market by 2030e



HVLP4+ undersupply gap to reach ~31%/~20% in 2027e/2028e



Copper foil processing fee by grade



Copper Foil/CCL/PCB Content Per Rack

Nvidia (US$)	GB300	VR200	VR300
Total Copper Foil Content per rack	$1,697	$5,164	$5,705
Total CCL Content per rack	$6,695	$18,750	$35,601
Total PCB Content per rack	$37,491	$91,227	$154,377
Gen/Gen	**GB300**	**VR200**	**VR300**
Total Copper Foil Content per rack	15%	204%	10%
Total CCL Content per rack	1%	180%	90%
Total PCB Content per rack	0%	143%	69%

AMD (US$)	MI4XX	MI5XX
Total Copper Foil Content per rack	$9,610	$9,734
Total CCL Content per rack	$20,099	$37,268
Total PCB Content per rack	$66,143	$114,188
Gen/Gen	**MI4XX**	**MI5XX**
Total Copper Foil Content per rack	--	1%
Total CCL Content per rack	--	85%
Total PCB Content per rack	--	73%

TPU (US$)	TPUv7	TPUv8	TPUv9
Total Copper Foil Content per rack	$1,783	$4,457	$4,657
Total CCL Content per rack	$6,550	$13,009	$32,288
Total PCB Content per rack	$19,474	$37,861	$87,906
Gen/Gen	**TPUv7**	**TPUv8**	**TPUv9**
Total Copper Foil Content per rack	--	150%	4%
Total CCL Content per rack	--	99%	148%
Total PCB Content per rack	--	94%	132%

Trainium (US$)	T2	T3	T4
Total Copper Foil Content per rack	$1,423	$3,266	$6,855
Total CCL Content per rack	$9,599	$10,218	$32,789
Total PCB Content per rack	$24,500	$26,287	$84,770
Gen/Gen	**T2**	**T3**	**T4**
Total Copper Foil Content per rack	--	129%	110%
Total CCL Content per rack	--	6%	221%
Total PCB Content per rack	--	7%	222%

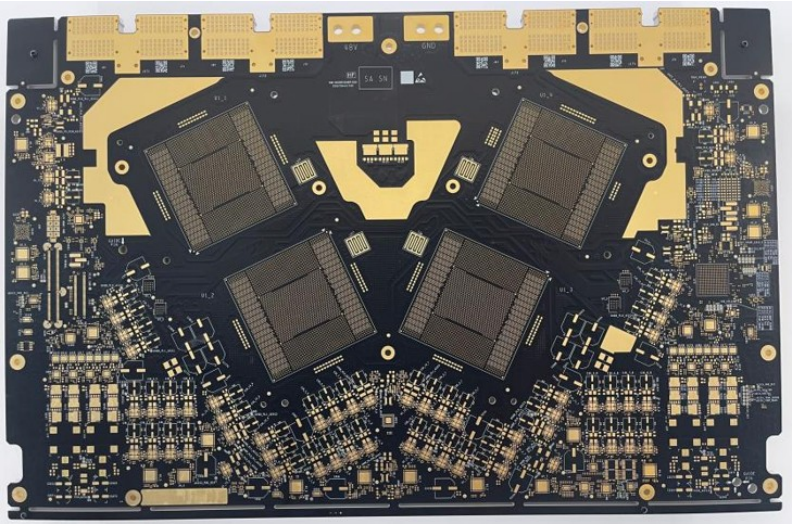
Advanced AI PCB Takes 2.2x More Time To Produce Than A Normal PCB



Global CCL Supply By Company (M Sheets/Y)

Total Supply (M Sheets/Y)	2023	2024	2025E	2026E	2027E	2028E	2029E	2030E
Elite Material	50	52	70	70	108	125	143	183
TUC	25	24	28	31	46	64	69	69
ITEQ	65	65	61	68	76	99	110	110
Panasonic	32	32	32	37	43	49	56	65
Doosan	14	14	16	16	16	28	40	40
KB Laminates	132	137	132	132	136	140	140	140
Shengyi	102	107	132	142	152	152	152	152
Nan Ya Plastics	83	83	83	83	83	83	83	83
Nan Ya New Materials	42	43	48	48	48	48	48	48
Huazheng New Materials	38	35	35	35	35	35	35	35
Isola	20	20	20	20	20	20	20	20
Chang Chun	22	18	13	13	13	13	13	13
Others	120	120	127	127	127	127	127	127
Total	**747**	**751**	**797**	**823**	**902**	**983**	**1,037**	**1,085**

Nvidia's NVLink PTFE Board



Flexium
Kinwong
SCC
SYTECH
Taiflex
TTM
VGT

Advantages of PTFE

- Best signal performance
- Stable electricals
- Less dependence on Q glass

Disadvantages of PTFE

- Mechanically soft
- Difficult lamination
- Difficult drilling
- Higher cost and qualification risk

What's the latest?

- Chinese CCL suppliers are pushing forward with PTFE. In response, Taiwanese CCL suppliers are also exploring other materials that could deliver M10-and-beyond performance, including hydrocarbon (HC)-based, HC+PTFE hybrid and benzocyclobutene (BCB)-based CCLs.

- We expect the CCL material for the next-gen AI server rack to be confirmed by mid-2027 at the latest.

- We think probably of PTFE being used in Rubin Ultra generation is <50%.

Next-generation Liquid Cooling Quick Disconnect Connector



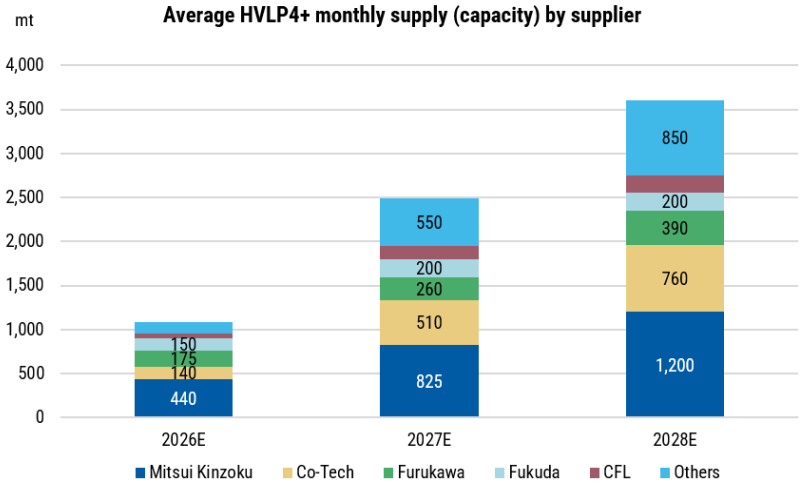
At COMPUTEX in Taipei earlier this year, we noted that our checks indicated Nvidia was planning to introduce a new quick disconnect (QD) design for next-generation server racks to achieve higher flow rates per unit area as cooling requirements rise. At this year's OCP Summit, Nvidia showcased that design, called ZQD, with 14 suppliers in total. Our checks indicate the supply chain is also working to improve yields and optimize costs to bring ZQD ASPs down. However, given the greater complexity of the design, we expect ZQD ASPs to remain above current QD pricing of US$20–30 per set.

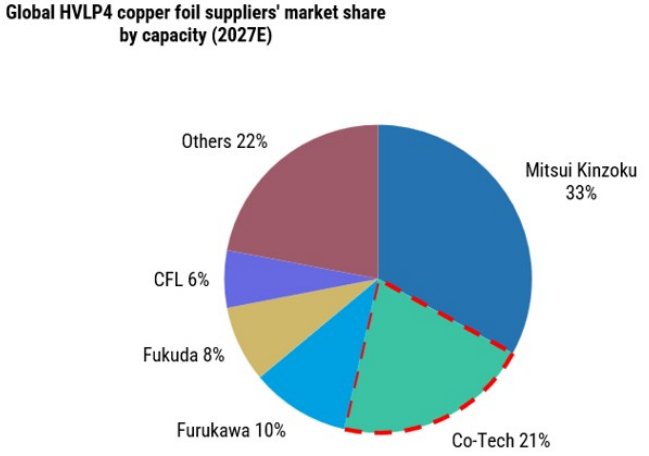
Next-generation Ultra Dense Interconnect



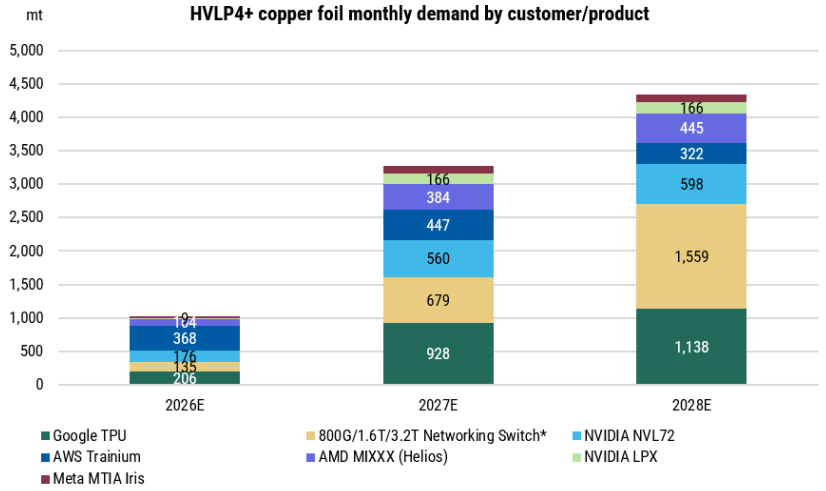
Ultra Dense Interconnect: Currently, Nvidia's NVL72 racks are using Amphenol's Paladin HD2 connectors for VR200 NVL72 midplanes and cable cartridges. Our previous checks done around Computex 2026 in June, indicate ASP could reach US$70-90+ per set. For the next-generation Kyber racks, our checks have previously indicated that a new midplane connector called "Voronoi" will be introduced, and FIT is the key design partner for this new board-to-board connector. At this year's OCP Summit, Nvidia showcased a new connector it calls the "Ultra Dense Interconnect", with six suppliers in total. This was our first in-person look at the design. We believe adoption is still two years out, and the supply chain is currently focused on improving yields and optimizing costs to bring the ASP below US$100. Our checks suggest that pogo pin supply is currently a bottleneck for this connector.

Global HVLP4 Copper Foil Supply/Demand By Supplier/Customer (tons/M)

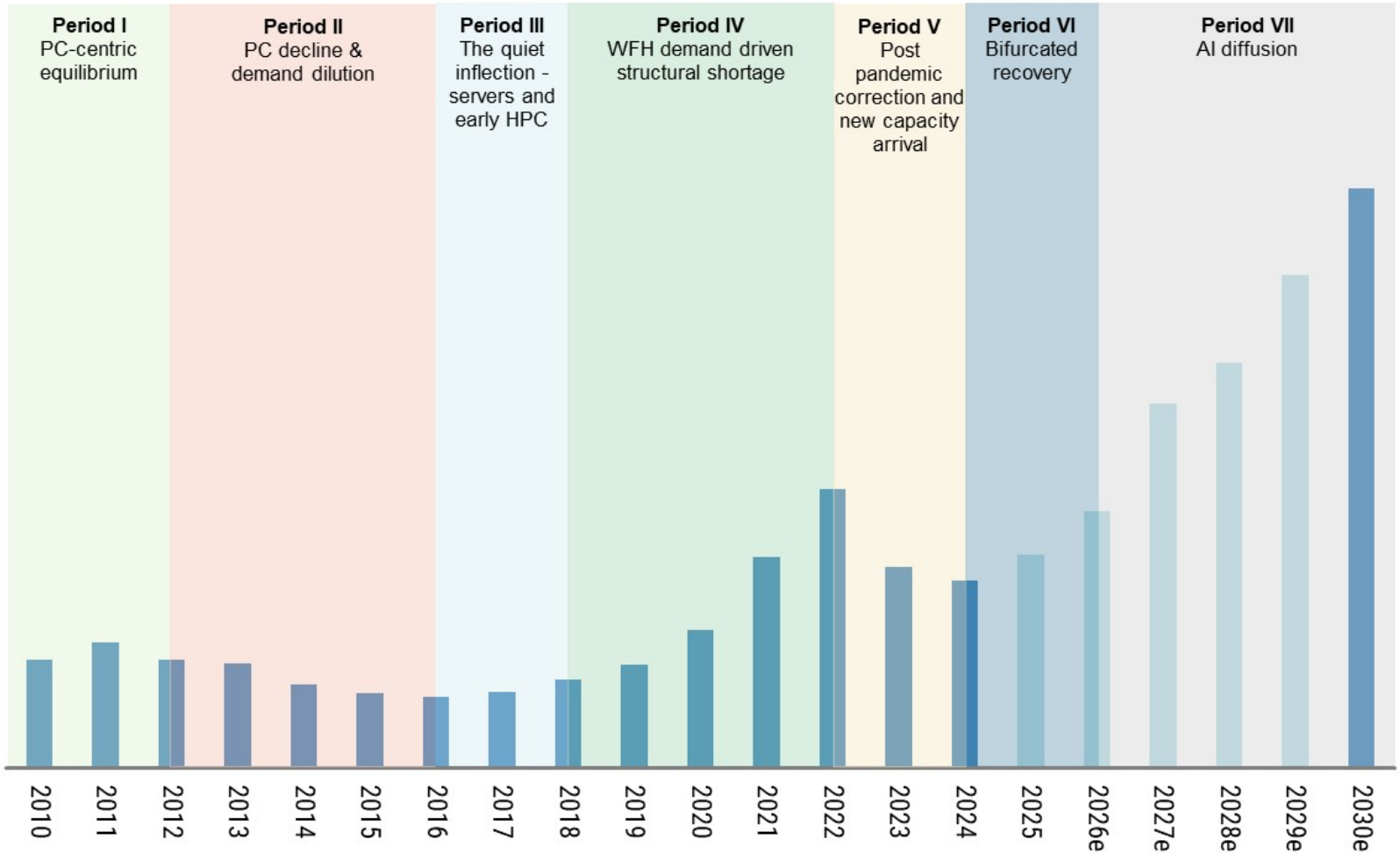




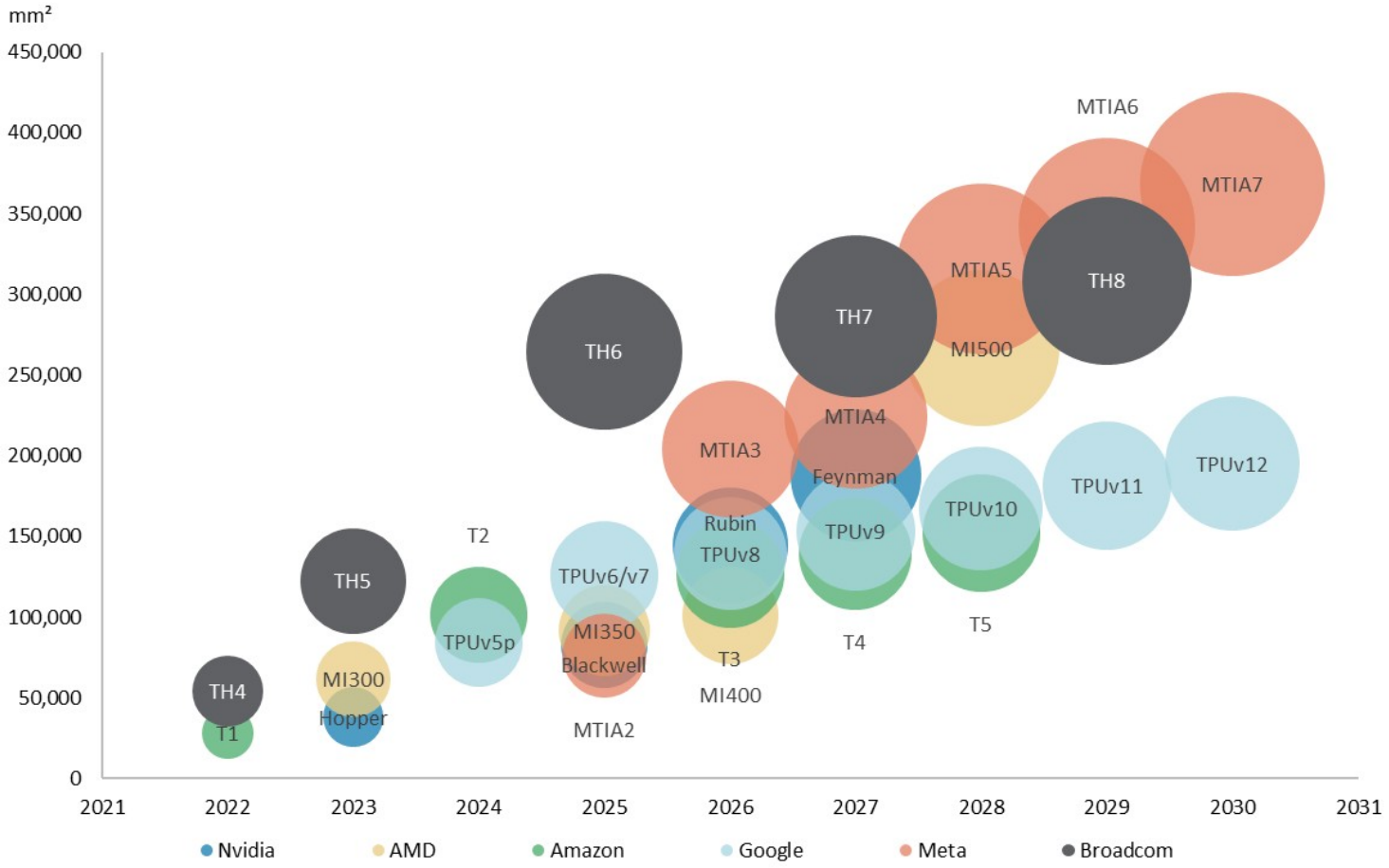
Copper Foil	Applications
HVLP5+	NVIDIA Kyber midplane? 1.6T/3.2T switch? etc.
HVLP4	NVIDIA Rubin, AWS Trainium3, NVIDIA LPX, Google TPU v8, AMD MI450, Meta MTIA Iris, 800G switch, 1.6T switch, etc.
HVLP3	NVIDIA Blackwell, Google TPUv7, 800G switch, etc.
HVLP2	AWS Trainium2, Google TPUv5/v6, LEO satellite, etc.
HVLP1	General server, switch, LEO satellite, etc.



ABF Substrate: We Are Entering The AI Diffusion Era

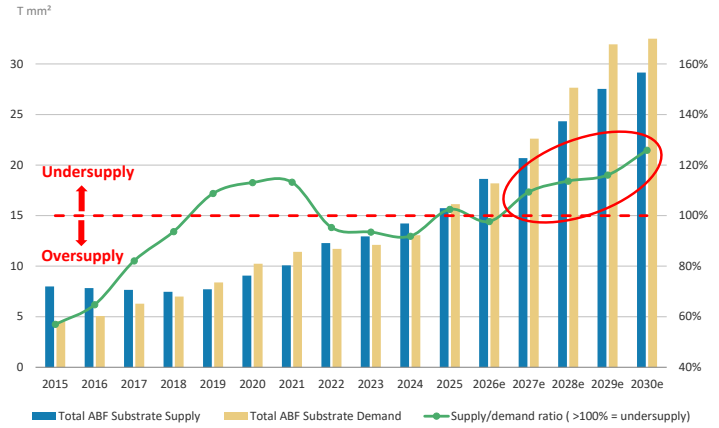


ABF Substrate Body Size And Layer Count Continues To Increase

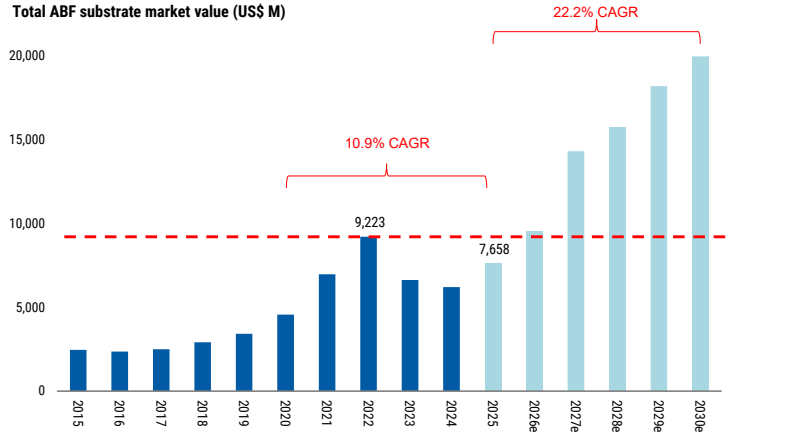


ABF Substrates: Undersupply From 2027 Onward

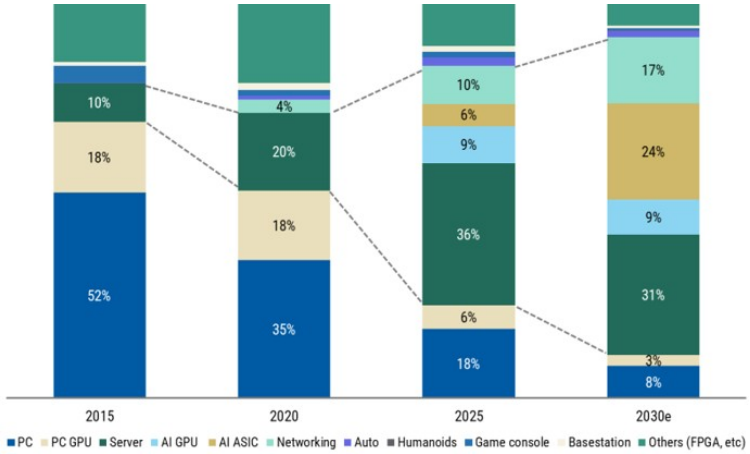
Expect ABF substrate undersupply from 2027 onwards



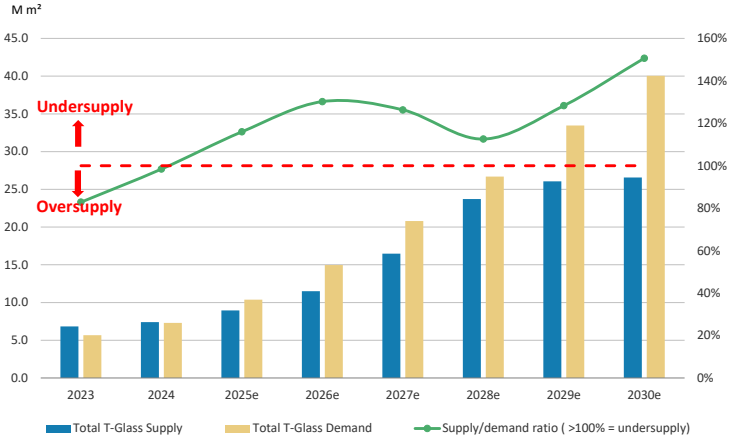
We are in early innings of an AI-driven upcycle



AI-related applicated expected to rise to 75%+ by 2030

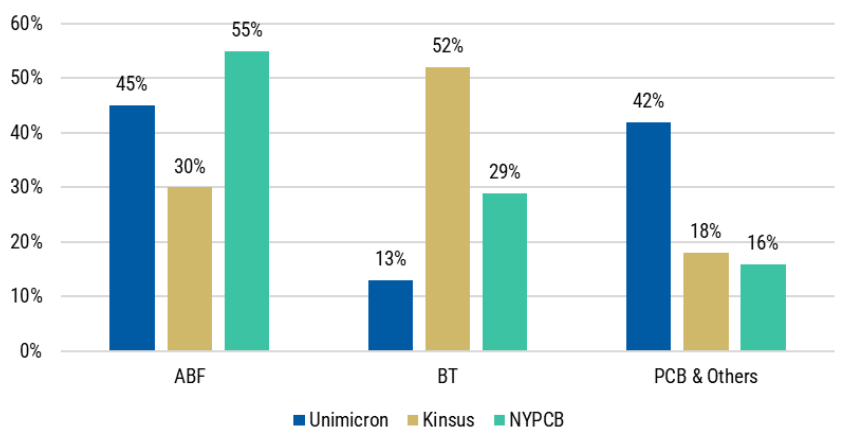


Expect T glass to remain undersupplied but easing into CY27-28

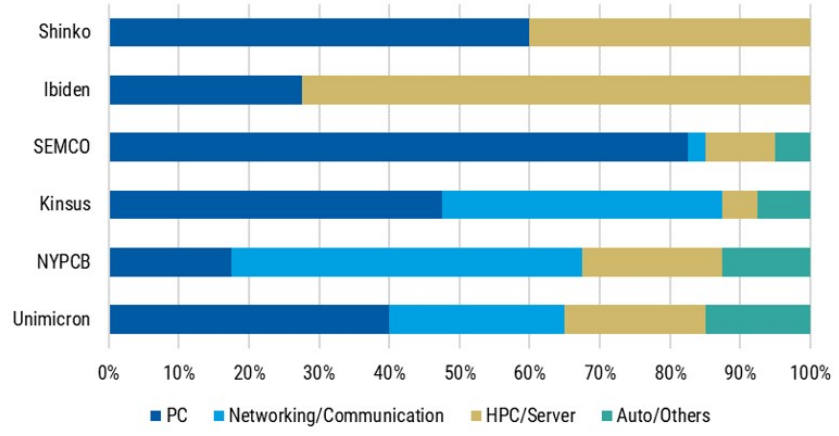


ABF Substrates: Sales Mix By Product And End Segment

Unimicron, NYPCB, Kinsus sales mix (2025)



ABF names end segment exposure (2025)

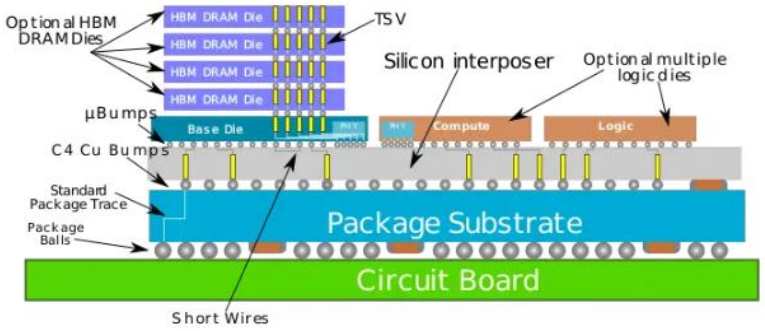


NVIDIA GPU ABF/CCL/PCB Roadmap

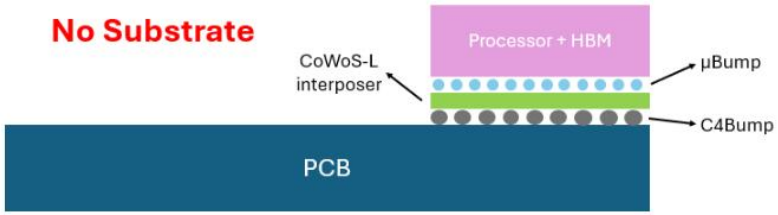
NVIDIA	H100	H200	B200	GB200 NVL72	GB300 NVL72	VR200 NVL144	VR300
ABF Substrate							
Substrate size	55mm x 58mm	55mm x 58mm	73mm x 81mm	73mm x 81mm	73mm x 81mm	83mm x 97mm	83mm x 97mm
Layer count	12L	12L	14L	14L	14L	18L	18L
Supplier	Ibiden	Ibiden	Ibiden/Unimicron	Ibiden/Unimicron	Ibiden/Unimicron	Ibiden/Unimicron	Ibiden/Unimicron
OCP Accelerator Module (OAM)							
CCL Spec.	Very low-loss (M6)	Very low-loss (M6)	Ultra low-loss (M7)	Extreme low-loss (M8) + Low-loss (M4)	Extreme low-loss (M8) + Low-loss (M4)	Extreme low-loss (M8) + Low-loss (M4)	Extreme low-loss (M8) + Low-loss (M6) ?
CCL supplier	EMC	EMC	Doosan	Doosan	Doosan	Doosan	Doosan
PCB Size	152mm x 80.5mm	152mm x 80.5mm	170mm x 86.5mm	305.5mm x 222mm	305.5mm x 222mm	320.8mm x 233.1mm	?
PCB Spec.	18L HDI (5+8+5)	18L HDI (5+8+5)	20L HDI (5+10+5)	22L HDI (5+12+5)	22L HDI (5+12+5)	26L HDI (6+14+6)	?
PCB Supplier	UMTC, TTM, WUS	UMTC, TTM, WUS	UMTC, TTM, WUS, VGT	VGT, UMTC	VGT, UMTC	VGT, UMTC, ZDT, etc.	VGT, UMTC, ZDT, ?
Universal Baseboard (UBB)							
CCL Spec.	Ultra low-loss (M7)	Ultra low-loss (M7)	Extreme low-loss (M8) + Low-loss (M4)	NA	NA	NA	NA
CCL supplier	EMC, Doosan	EMC, Doosan	Doosan, EMC	NA	NA	NA	NA
PCB Spec.	24L PTH	24L PTH	18L PTH	NA	NA	NA	NA
PCB Supplier	WUS, TTM, ISU	WUS, TTM, ISU	WUS, TTM, ISU, UMTC	NA	NA	NA	NA
Switch board							
CCL Spec.	Ultra low-loss (M7)	Ultra low-loss (M7)	Ultra low-loss (M7), Extreme low-loss (M8)	Extreme low-loss (M8) + Standard loss (M2)	Extreme low-loss (M8) + Standard loss (M2)	Extreme low-loss (M8)	PTFE + HC (hybrid)
CCL supplier	EMC, TUC	EMC, TUC	EMC, TUC, Doosan	EMC, Shengyi	EMC, Shengyi	EMC, Shengyi	EMC+Taiflex, Shengyi?
PCB Spec.	26-28L	26-28L	28-30L	24L PTH	24L PTH	32L PTH	32L PTH
PCB Supplier	WUS, TTM, ISU, GCE	WUS, TTM, ISU, GCE	WUS, TTM, ISU, GCE	WUS, TTM, VGT	WUS, TTM, VGT	WUS, TTM, VGT	WUS, SCC, VGT, TTM, ?
Motherboard							
CCL Spec.	Very low-loss (M6)	Very low-loss (M6)	Very low-loss (M6)	NA	NA	NA	NA
CCL supplier	EMC, TUC, ITEQ, Panasonic	EMC, TUC, ITEQ, Panasonic	EMC, TUC, ITEQ, Panasonic	NA	NA	NA	NA
PCB Spec.	16-18L	16-18L	16-20L	NA	NA	NA	NA
PCB Supplier	GCE, WUS, TTM, ISU, Tripod	GCE, WUS, TTM, ISU, Tripod	GCE, WUS, TTM, ISU, Tripod	NA	NA	NA	NA
Midplane (in-tray)							
CCL Spec.						M8	M9?
CCL supplier						EMC	EMC, ?
PCB Spec.						44L PTH	?L PTH
PCB Supplier						WUS, TTM, Kinwong, VGT, etc.	WUS, TTM, Kinwong, VGT, ?

AI GPUs To Adopt CoWoP Instead Of CoWoS, Reducing Reliance On ABF Substrates?

TSMC CoWoS Package



A CoWoP Package



What is CoWoP? CoWoP stands for Chip on Wafer on PCB, in which a PCB (printed circuit board) replaces the ABF substrate in a CoWoS (Chip on Wafer on Substrate) IC package. Currently, all NVIDIA's data center GPUs adopt TSMC's CoWoS technology, and TSMC's CoWoS yield rate is close to 100%.

Why use CoWoP if CoWoS yield rate is so high? By adopting CoWoP, the aim is to resolve substrate warpage, increase NVLink reach on the PCB without substrate in between chip and PCB, achieve greater cooling efficiency without a package lid, and remove capacity bottleneck in certain package materials.

We don't think Rubin Ultra will use CoWoP: In order to adopt CoWoP, the L/S (line/space) of the PCB needs to shrink to <10/10µm, because that is where L/S for ABF substrates currently is. Average high-density interconnect (HDI) PCB is 40/50µm today. SLP (substrate-like PCB), which is used in iPhone mainboards today, is 20/35µm – hence the name SLP, because its L/S substrates. However, to get the PCB L/S from 20/35µm to below 10/10µm would be difficult, which is one reason for it will happen for Rubin Ultra. This is in line with our Japan electronics components analyst Shoji Sato's checks as we saying that Rubin Ultra's ABF substrate is much larger than Rubin's, with more layers. We believe shifting to CoWoP would entail significant yield risks and reshuffling of the related supply chain, which does not look rational to us for pr enter mass production in one year's time.



Optical Transceivers: PCB Beneficiaries Of AI Interconnect Build-out

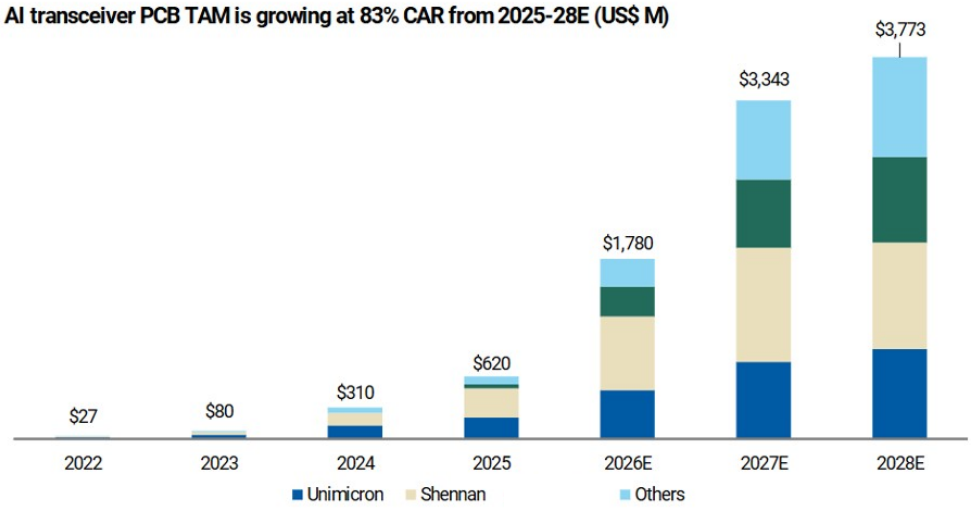
	400G	800G	1.6T	3.2T
Layers	10-12L 2-3 press HDI	12-14L, 4-8L mSAP or HDI	14-16L 6-10L mSAP	mSAP
Process	HDI	HDI or mSAP	mSAP	SAP (IC substrate)
CCL Spec	M6	M7(LDK1) / M7+ (LDK2)	M7+ / M8 (LDK2)	M8+ (M8.5) ?
ASP (US$)	$5-15	$15-25	$20-30	$50+ ?
GM Est.	20-30%	30-40%	40-50%+	60%+ ?
Suppliers	Unmicron, Shennan, WUS, other smaller suppliers.	Unimicron, Shennan, WUS, Compeq, etc.	Unimicron, Shennan, Compeq, WUS, etc.	Unimicron, Shennan, etc.

(mn units)

New Estimates	2026E	2027E	2028E
800G	44	63	64
1.6T	29	79	87
3.2T	0	0	8
Total	**73**	**141**	**158**

Previous Estimates	2026E	2027E	2028E
800G	34	48	54
1.6T	19	24	27
3.2T	0	0	5
Total	**53**	**71**	**85**

Pct. of change	2026E	2027E	2028E
800G	29%	31%	19%
1.6T	52%	233%	226%
3.2T	--	--	60%
Total	38%	98%	86%



ABF Substrates: M-series Chips



Chip	M1	M1 Pro	M1 Max	M1 Ultra	M2	M2 Ultra	M4
Dimensions	24 x 27mm	57 x 25mm	57 x 36mm	65 x 72mm	24 x 27mm	70.6 x 70mm	24 x 27.7mm
Size	648mm²	1,425mm²	2,052mm²	4,680mm²	648mm²	4,942mm²	665mm²
Layer count	8L	10L	10L	18L	8L	18L	8L

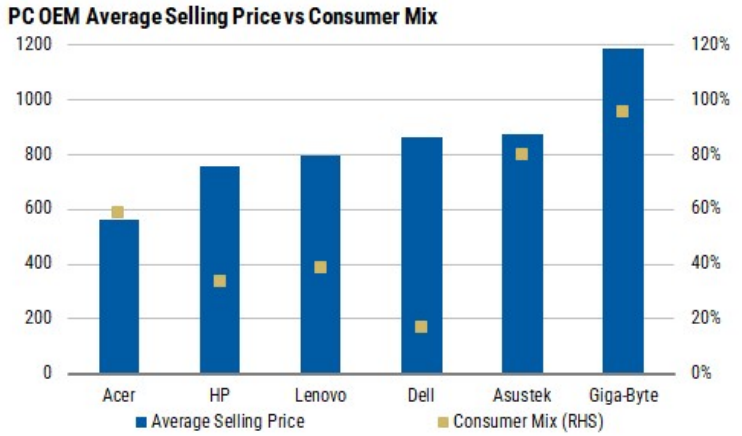
We Forecast 4Q26 NB Builds At 23.1mn Units (-8% q/q, -29% y/y)

Shipment (unit: k)	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Sep-26E	Diff.	Oct-26E
Quanta	2,700	2,000	5,300	3,500	3,500	4,500	2,800	2,600	4,200	3,600	17%	2,500
Wistron	1,700	1,600	2,800	1,800	1,700	2,000	1,600	1,400	1,500	1,700	-12%	1,200
Others	1,700	1,500	2,200	1,500	1,500	2,400	1,600	1,500	1,800	1,700	6%	1,300
Compal	1,600	1,500	2,800	1,800	2,000	2,400	1,800	1,400	1,700	2,300	-26%	1,400
Pegatron	700	425	675	525	575	650	400	425	460	575	-20%	375
Total	8,400	7,025	13,775	9,125	9,275	11,950	8,200	7,325	9,660	9,875	-2%	6,775
MoM %												
Quanta	-31%	-26%	165%	-34%	0%	29%	-38%	-7%	62%	38%		-40%
Wistron	-35%	-6%	75%	-36%	-6%	18%	-20%	-13%	7%	21%		-20%
Others	-15%	-12%	47%	-32%	0%	60%	-33%	-6%	20%	13%		-28%
Compal	-33%	-6%	87%	-36%	11%	20%	-25%	-22%	21%	64%		-18%
Pegatron	-24%	-39%	59%	-22%	10%	13%	-38%	6%	8%	35%		-18%
Total	-29%	-16%	96%	-34%	2%	29%	-31%	-11%	32%	35%		-30%
YoY%												
Quanta	-4%	-35%	8%	6%	-8%	-10%	-30%	-37%	-9%	-22%		-29%
Wistron	13%	7%	47%	6%	-6%	-17%	-20%	-36%	-32%	-23%		-43%
Others	13%	-6%	16%	-12%	-17%	14%	-6%	-17%	-5%	-11%		-19%
Compal	-20%	-29%	-3%	-18%	-17%	-4%	-22%	-39%	-32%	-8%		-33%
Pegatron	15%	-26%	-4%	-14%	-26%	-34%	-47%	-48%	-44%	-30%		-52%
Total	0%	-21%	12%	-4%	-12%	-8%	-24%	-35%	-20%	-18%		-33%

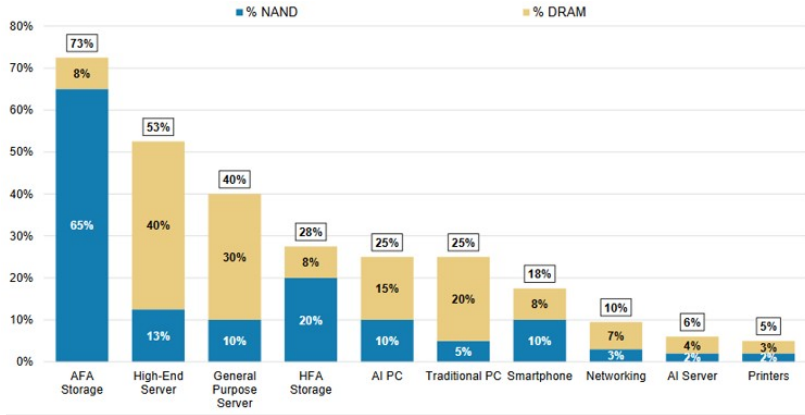
Shipment (unit: k)	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26	3Q26	3Q26E	Diff.	4Q26E
Quanta	10,800	12,100	12,700	10,900	10,000	11,500	9,600	9,000	7%	8,500
Wistron	4,900	5,900	6,400	6,900	6,100	5,500	4,500	4,700	-4%	4,000
Others	5,000	5,600	5,400	5,300	5,400	5,400	4,900	4,800	2%	4,500
Compal	7,000	7,100	7,100	6,800	5,900	6,200	4,900	5,500	-11%	4,800
Pegatron	1,885	2,375	2,400	2,410	1,800	1,750	1,285	1,400	-8%	1,250
Total	29,585	33,075	34,000	32,310	29,200	30,350	25,185	25,400	-1%	23,050
QoQ %										
Quanta	-3%	12%	5%	-14%	-8%	15%	-17%	-22%		-11%
Wistron	-8%	20%	8%	8%	-12%	-10%	-18%	-15%		-11%
Others	-7%	12%	-4%	-2%	2%	0%	-9%	-11%		-8%
Compal	-10%	1%	0%	-4%	-13%	5%	-21%	-11%		-2%
Pegatron	-3%	26%	1%	0%	-25%	-3%	-27%	-20%		-3%
Total	-6%	12%	3%	-5%	-10%	4%	-17%	-16%		-8%
YoY%										
Quanta	3%	3%	1%	-2%	-7%	-5%	-24%	-29%		-22%
Wistron	7%	16%	23%	30%	24%	-7%	-30%	-27%		-42%
Others	11%	14%	4%	-2%	8%	-4%	-9%	-11%		-15%
Compal	-7%	-18%	-14%	-13%	-16%	-13%	-31%	-23%		-29%
Pegatron	22%	17%	-3%	24%	-5%	-26%	-46%	-42%		-48%
Total	3%	2%	1%	2%	-1%	-8%	-26%	-25%		-29%

Memory Takes A Bite Out Of Hardware Margins

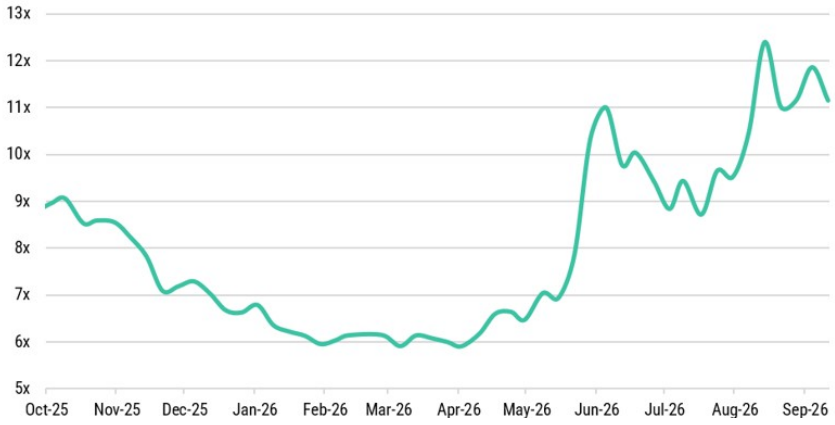
OEM Average Selling Price vs. Consumer Mix



Memory as a % of BOM



Greater China PC OEM Aggregate Forward P/E

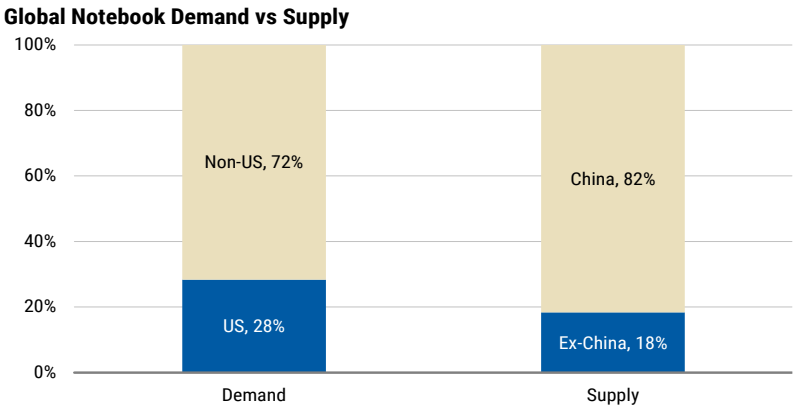


Asia IT Hardware OEM/ODM Scorecard

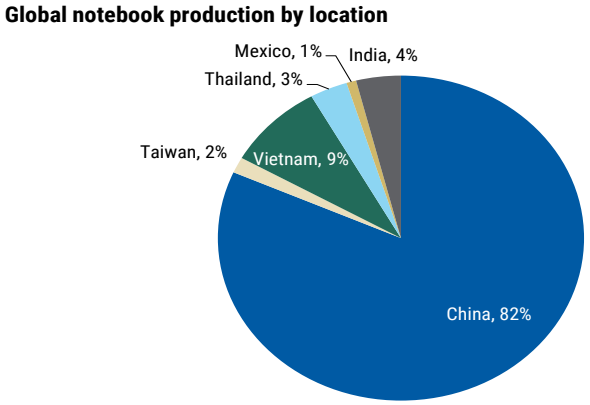
Asia IT Hardware OEM/ODM Scorecard	AI Beneficiary	Margins	Supply Chain Leverage	End-Market Demand	Special Situations	Memory Exposure	Ranking
wiwynn	4	4	4	4	1	4	3.5
wistron	4	3	4	3	1	4	3.2
Quanta Computer	4	3	4	3	1	4	3.2
Lenovo	2	2	4	2	4	1	2.5
GIGABYTE	3	3	3	2	1	2.5	2.4
ASUS	2	3	2	2	1	2.5	2.1
PEGATRON	2	1	2	2	1	4	2.0
COMPAL	2	2	1	2	1	4	2.0
acer	1	2	1	1	1	2.5	1.4

PC Market Overview

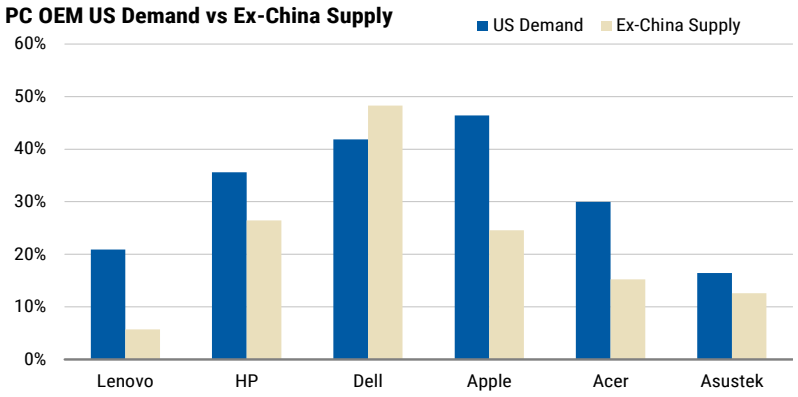
Global notebook demand vs. supply



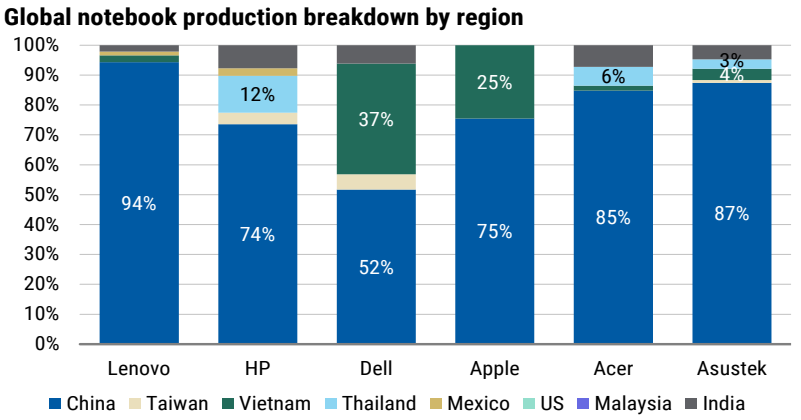
Global notebook production by location



Global PC OEM US demand vs. ex-China supply

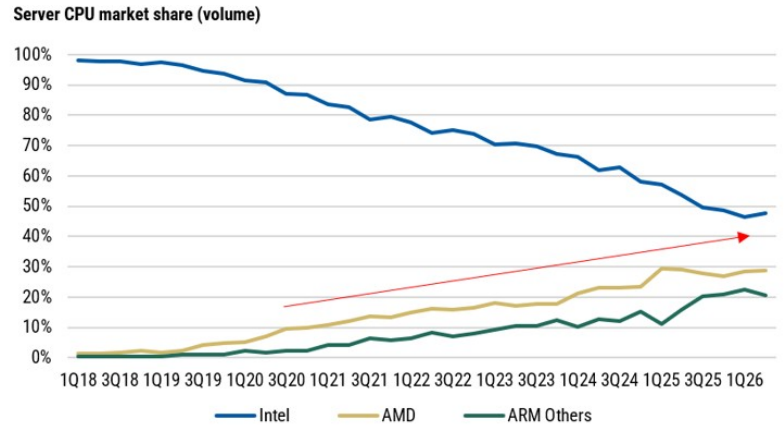


Global PC OEM production by location

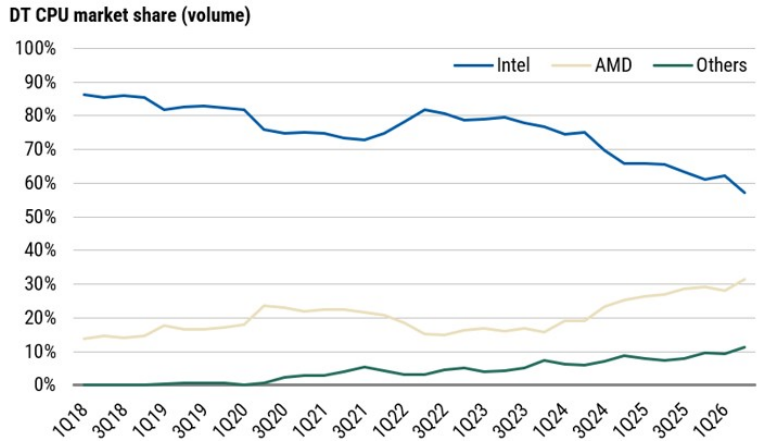


CPU Market Share Trends

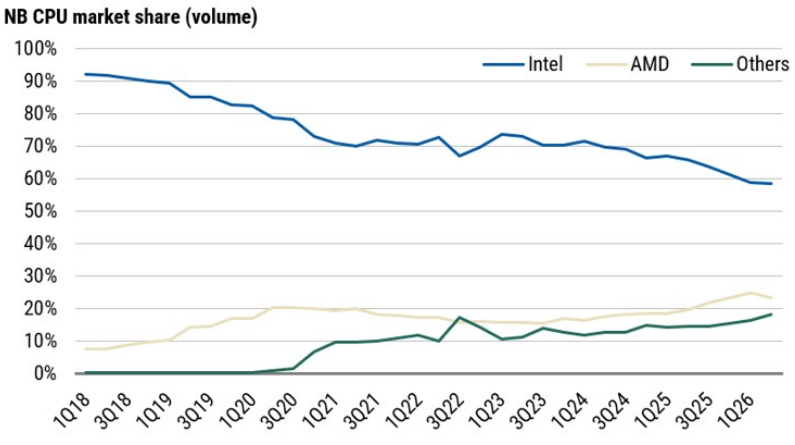
Server CPU market share



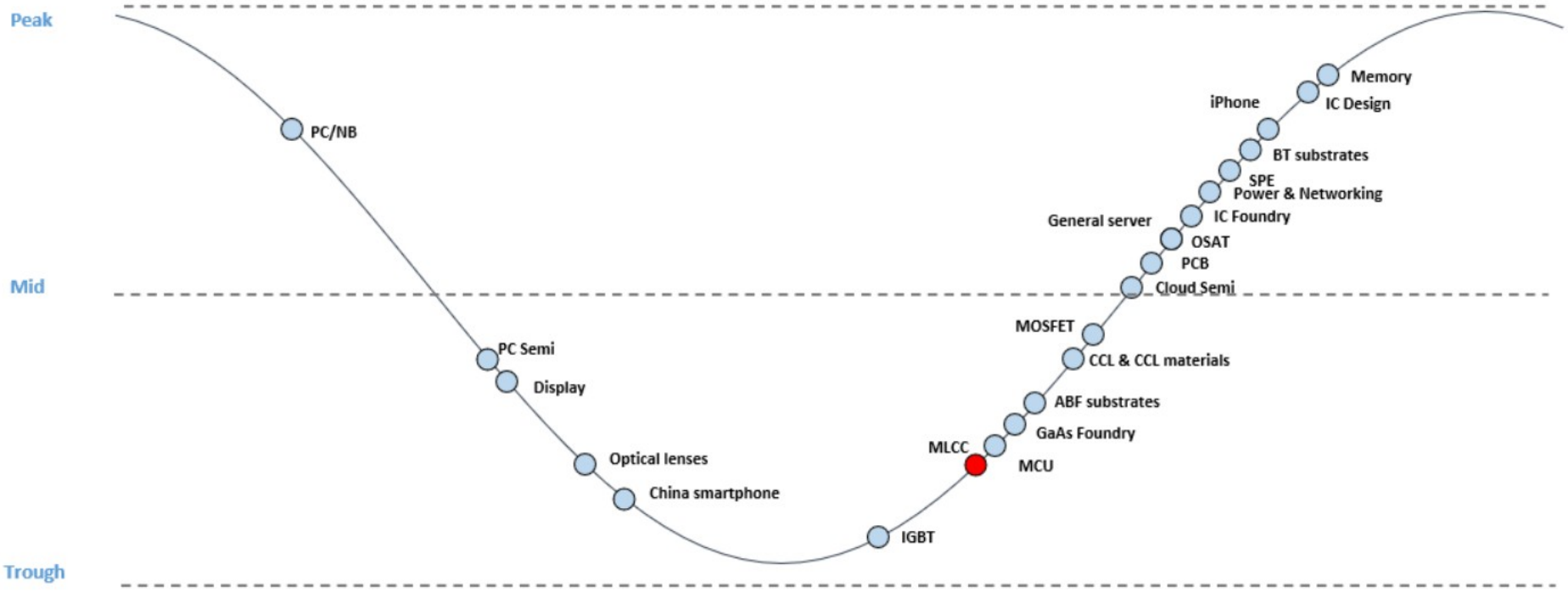
DT CPU market share



NB CPU market share

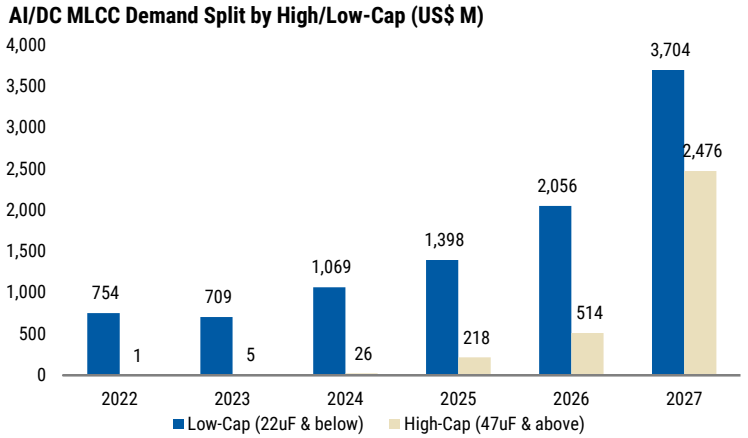


Sequencing The Technology Cycle – Still Early Cycle For MLCC

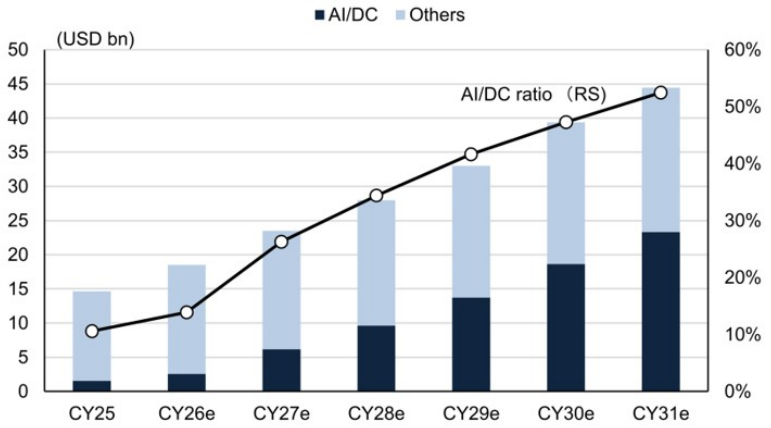


AI Will Add Significant TAM Growth To The Overall MLCC Market

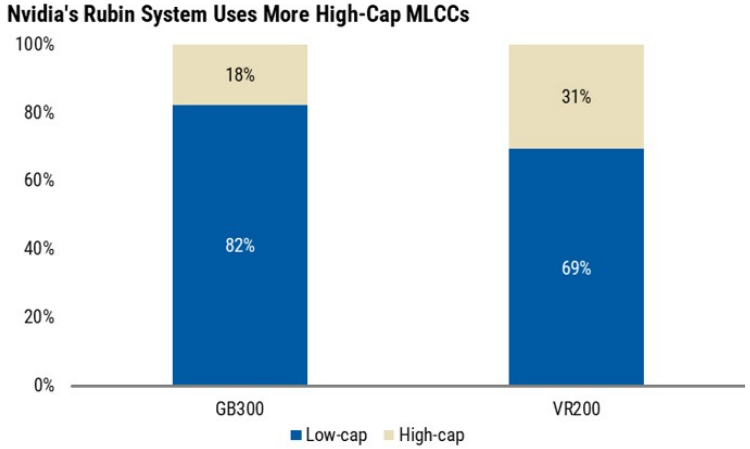
Cloud AI to drive ~US$1B TAM by 2026 (US$ B)



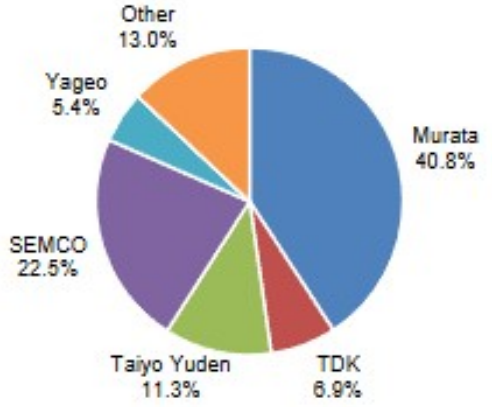
AI Servers to drive significant MLCC TAM growth



AI Server will use significantly more high-cap (47uF+) MLCCs



MLCC market share (CY25)

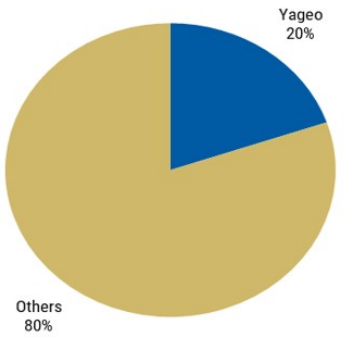


AI Servers To See The Largest MLCC Content Growth

Server Assumptions		# of MLCCs		US$	
General server			**2,000**		**30**
HGX Hopper AI server (8x GPU)			**22,000**		**190**
GPU module (OAM)	8x	1,300	10,400	10	80
GPU baseboard (UBB)	1x	4,900	4,900	45	45
CPU motherboard	1x	1,500	1,500	25	25
Peripheral boards	8x	650	5,200	5	40
HGX B200 AI server (8x GPU)			**36,000**		**317**
GPU module (OAM)	8x	3,000	24,000	24	192
GPU baseboard (UBB)	1x	5,300	5,300	60	60
CPU motherboard	1x	1,500	1,500	25	25
Peripheral boards	8x	650	5,200	5	40
HGX B300 AI server (8x GPU)			**48,000**		**435**
GPU module (OAM)	8x	4,400	35,200	40	320
GPU baseboard (UBB)	1x	6,100	6,100	50	50
CPU motherboard	1x	1,500	1,500	25	25
Peripheral boards	8x	650	5,200	5	40
GB200 (NVL72)			**337,500**		**5,370**
Bianca	36x	6,800	244,800	118	4,232
Switch board	9x	3,800	34,200	57	515
Peripheral boards	90x	650	58,500	7	622
GB300 (NVL72)			**319,500**		**4,664**
Bianca	36x	6,300	226,800	98	3,527
Switch board	9x	3,800	34,200	57	515
Peripheral boards	90x	650	58,500	7	622
VR200 (NVL72)			**571,050**		**12,411**
Strata	36x	11,000	396,000	257	9,239
Switch board	9x	7,000	63,000	222	1,997
BlueField Module	18x	2,000	36,000	20	366
CX9 Orchid Module	72x	650	46,800	7	498
Peripheral boards	45x	650	29,250	7	311
Vera Rack			**494,048**		**8,339**
Vera MGX	128x	3,316	424,448	56	7,131
Switch board	4x	7,000	28,000	222	888
Peripheral boards	64x	650	41,600	5	320
STX Rack			**326,256**		**3,184**
Mainboard	16x	4,791	76,656	79	1,264
Peripheral boards	384x	650	249,600	5	1,920
LPX Rack			**581,024**		**12,371**
LPX UBB	16x	5,374	85,984	103	1,646
LPX Module	256x	1,705	436,480	39	9,953
BF4	16x	2,000	32,000	20	326
x86 CPU Module	16x	1,660	26,560	28	446

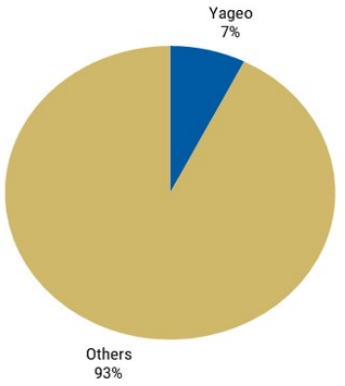
General server MLCC supplier share (value)

Yageo general server MLCC supplier share (value)



General PC MLCC supplier share (value)

Yageo general PC MLCC supplier share (value)

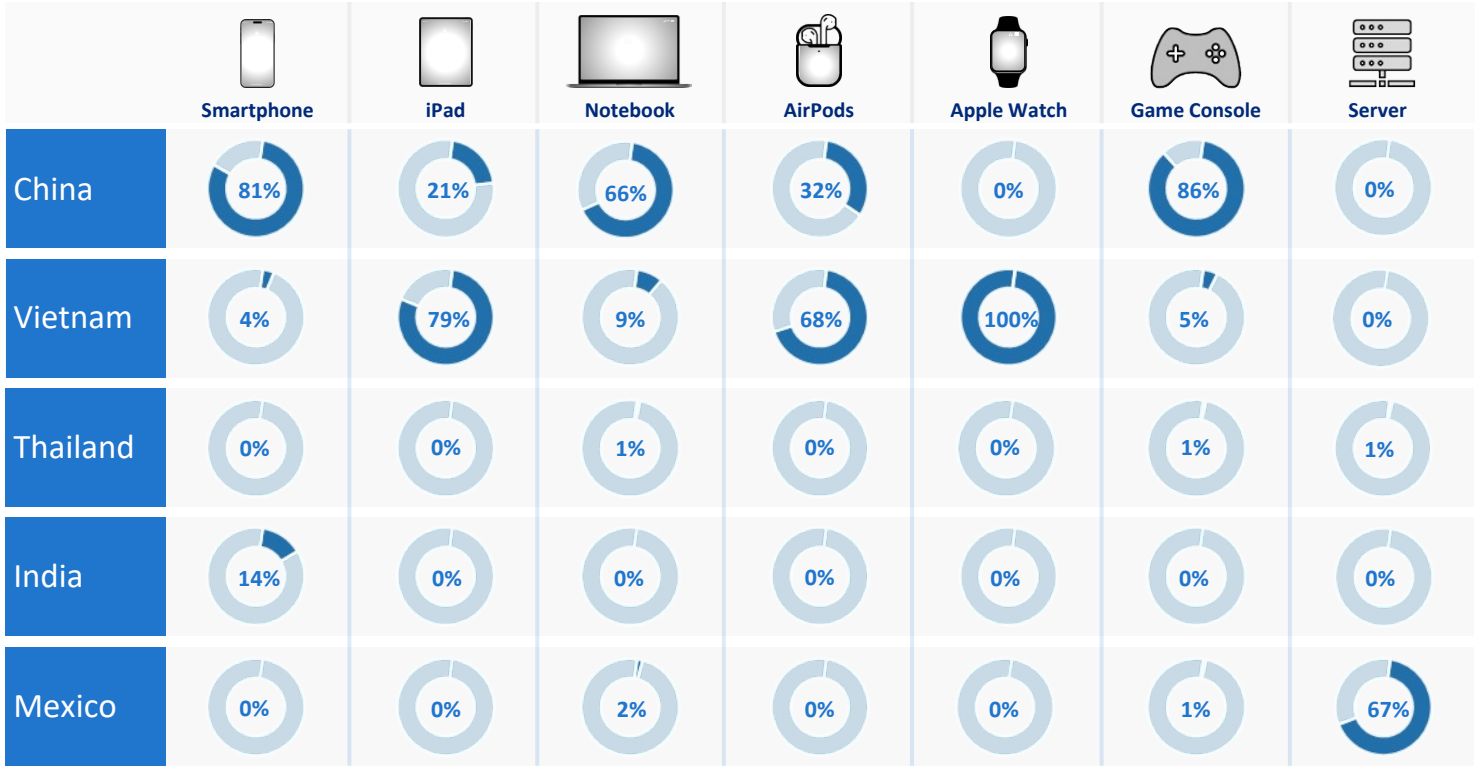


We Introduce Our 4Q26 iPhone Builds At 72mn Units (+33% q/q, -5% y/y)

mn units	1Q24	2Q24	3Q24	4Q24	2024	1Q25	2Q25	3Q25	4Q25	2025	1Q26	2Q26	3Q26e	4Q26e	2026e
iPhone Sell-in															
iPhone SE3 / SE 5G / 16e / 17e	1.0	2.0	5.0	3.0	11.0	4.0	9.0	4.0	1.0	18.0	2.0	10.0	8.0	4.5	24.5
iPhone XR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 12 mini (5.4")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 12 (6.1")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 12 Pro (6.1")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 12 Pro Max (6.7")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 13 mini (5.4")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 13 (6.1")	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iPhone 13 Pro (6.1")	0.5	0.5	-	-	1.0	-	-	-	-	-	-	-	-	-	-
iPhone 13 Pro Max (6.7")	0.5	0.5	-	-	1.0	-	-	-	-	-	-	-	-	-	-
iPhone 14 (6.1")	1.0	0.5	-	-	1.5	-	-	-	-	-	-	-	-	-	-
iPhone 14 Plus (6.7")	1.0	0.5	-	-	1.5	-	-	-	-	-	-	-	-	-	-
iPhone 14 Pro (6.1")	2.0	2.0	1.0	1.0	6.0	1.0	1.0	1.0	-	3.0	-	-	-	-	-
iPhone 14 Pro Max (6.7")	2.0	2.0	1.0	1.0	6.0	1.0	1.0	1.0	-	3.0	-	-	-	-	-
iPhone 15 (6.1")	6.0	5.0	4.0	1.0	16.0	1.0	0.5	0.5	0.5	2.5	-	-	-	-	-
iPhone 15 Plus (6.7")	4.0	3.0	1.0	1.0	9.0	1.0	0.5	0.5	0.5	2.5	-	-	-	-	-
iPhone 15 Pro (6.1")	12.0	10.0	8.5	2.0	32.5	2.0	2.0	2.0	1.0	7.0	1.0	1.0	-	-	2.0
iPhone 15 Pro Max (6.7")	18.0	13.0	10.5	3.0	44.5	3.0	3.0	2.0	1.0	9.0	1.0	1.0	-	-	2.0
iPhone 16 (6.1")	-	-	6.0	12.0	18.0	5.0	4.0	4.0	1.0	14.0	2.0	2.0	1.0	0.5	5.5
iPhone 16 Plus (6.7")	-	-	5.0	6.0	11.0	4.0	3.0	1.0	-	8.0	-	-	-	-	-
iPhone 16 Pro (6.3")	-	-	8.0	17.0	25.0	11.5	9.5	4.0	2.0	27.0	2.0	2.0	2.0	1.0	7.0
iPhone 16 Pro Max (6.9")	-	-	4.0	26.0	30.0	16.5	13.0	10.0	4.0	43.5	5.0	3.0	2.0	1.0	11.0
iPhone 17 (6.1")	-	-	-	-	-	-	-	6.0	16.0	22.0	10.0	8.0	6.0	2.0	26.0
iPhone Air (6.7")	-	-	-	-	-	-	-	4.0	4.0	8.0	-	-	-	-	-
iPhone 17 Pro (6.3")	-	-	-	-	-	-	-	8.0	22.0	30.0	18.0	13.0	9.0	4.0	44.0
iPhone 17 Pro Max (6.9")	-	-	-	-	-	-	-	7.0	23.0	30.0	15.0	12.0	9.0	5.0	41.0
iPhone 18 Pro (6.3")													8.0	24.0	32.0
iPhone 18 Pro Max (6.9")													8.5	23.5	32.0
iPhone Duo													0.5	6.5	7.0
Total	**48.0**	**39.0**	**54.0**	**73.0**	**214.0**	**50.0**	**46.5**	**55.0**	**76.0**	**227.5**	**56.0**	**52.0**	**54.0**	**72.0**	**234.0**
YoY	*-11%*	*-5%*	*8%*	*-3%*	*-3%*	*4%*	*19%*	*2%*	*4%*	*6%*	*12%*	*12%*	*-2%*	*-5%*	*3%*
QoQ	*-36%*	*-19%*	*38%*	*35%*		*-32%*	*-7%*	*18%*	*38%*		*-26%*	*-7%*	*4%*	*33%*	

- For full-year 2026, our supply-chain checks suggest total iPhone build volume could be up in the low single digits y/y.
- For foldable iPhone model in 2H26, we expect 7M units of iPhone Duo builds in 2H26.

How Much USA Imports From Different Countries By Major Tech Product



US still imports the majority of smartphones, notebooks, and game consoles from China, but Vietnam has become the main exporter of iPads, AirPods, and Apple Watches to the US. We are seeing more notebook production ramping up in Vietnam and Thailand, so these two countries will become more important for the US in the coming years. And for smartphones, we expect India to become a bigger contributor in the coming years as well. And for servers, we think Mexico will continue to be important as servers imported from Mexico into the US is USMCA-eligible for 0% tariff.

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