

## PCB sector

### Sales of CCL makers beat on strong server demand

#### Overweight · Maintained

##### Key message

1. 3Q24 sales of CCL makers beat on general server recovery, persistent AI server shipments and 800G switch ramp-up.
2. Design changes in GB200 switch tray PCB to make production ramp-up more difficult in 1Q25F.
3. Taiwanese 800G switch CCL makers to benefit most from higher-end switch adoption, due to their 80% market share.

##### Event

Sales of copper clad laminate (CCL) makers outperformed in September, hitting the highest mark in a year, with some achieving consecutive record highs. Taiwanese CCL makers enjoy a hefty 67% share of the global high speed CCL market, with their CCL market share exceeding 80% as higher-end 800G switches started ramping up in 3Q24. They stand to benefit the most from the adoption of the new switches.

##### Impact

**Sales of CCL makers hit a new high in September & beat in 3Q24.** Elite Material (2383 TT, NT\$420.0, OP) and Taiwan Union Technology (6274 TT, NT\$165, NR) grew sales by a respective 3.5% MoM and 2.6% MoM in September, both record highs, thanks to general server demand recovery, persistent AI server shipments and the 800G switch ramp-up. Consequently, the firms' sales reached NT\$17.46bn and NT\$6.62bn in 3Q24, up 47% YoY and 58% YoY, achieving 105% and 106% of our forecast or market forecasts, respectively. In contrast, ITEQ's (6213 TT, NT\$72.8, OP) sales of NT\$7.96bn missed our forecast slightly, with an achievement ratio of 98%, due to weaker-than-expected automotive demand.

**Production ramp-up harder in 1Q25F on GB200 switch tray PCB design changes.** In a bid to solve the problems between overpass flyover cables and liquid-cooling pipes, the design of GB200 NVL72 switch tray PCB has been changed from the original 6-N-6 (6-12-6) 24-layer M7 material mix-pressed HDI board to 22-layer M8 multilayer board. This move will benefit substrate supplier Elite Material, with the PCB supplier changed from Unimicron (3037 TT, NT\$144.5, OP) to Wus Printed Circuit (CN). Changes to the current design of 5-N-5 (5-12-5) 22-layer mix-pressed HDI board for compute trays are being considered.

**Taiwanese 800G switch CCL makers have 80% market share.** Research house Prismark forecasts AI/ HPC server PCB shipments will grow at a 32.5% CAGR in 2023-28F, with 18-plus-layer PCB shipments growing by 13.6%, with a weighting up 3ppts to 18% in 2028F. In 2023, shipments of Taiwanese companies' halogen-free base materials accounted for 65% of the market, and those for high speed base materials accounted for 67%. We believe that, as 800G switches (M8; 38-48L) started ramping up in 3Q24, Taiwanese CCL makers will be the largest beneficiary because of their high market share of 80% (Elite Material 60-70%, Taiwan Union Technology 15-20%).

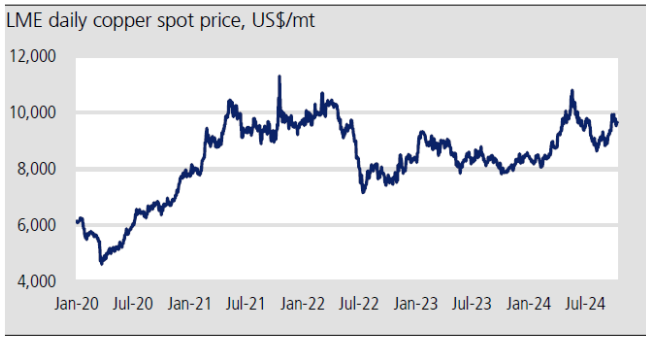
##### Stocks for Action

Growing AI server and 800G switch adoption will boost demand for high speed PCB materials. We are positive on CCL makers Elite Material, Taiwan Union Technology, and ITEQ, expecting them to benefit most due to a high market share.

##### Risks

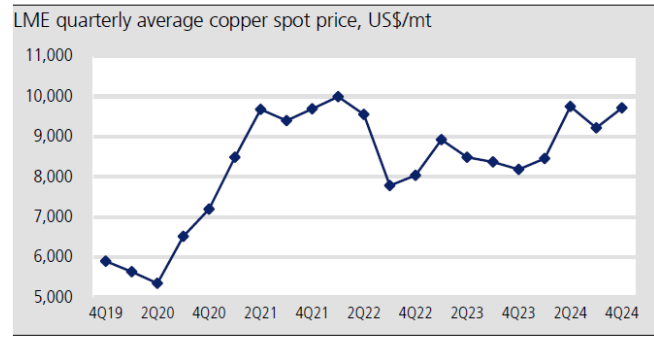
Weaker-than-expected market demand; deeper declines in ASP and profitability.

Figure 1: Copper prices in 2020-24F



Note: As of October 14  
Source: Bloomberg; KGI Research

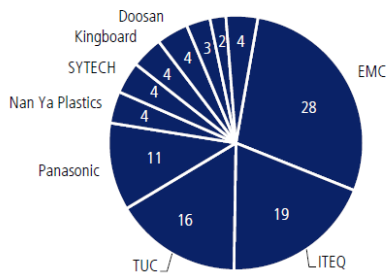
Figure 2: 3Q24 quarterly average copper price down 5.5% QoQ



Note: As of October 14  
Source: Bloomberg; KGI Research

Figure 3: Taiwanese firms led the high speed substrate market in 2023 with a share of 67%

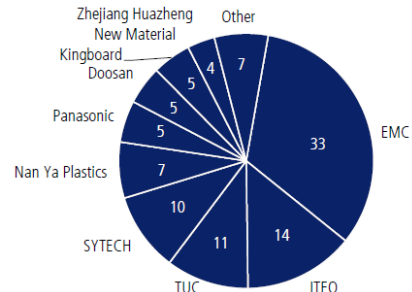
Market share, percent



Source: KGI Research

Figure 4: Taiwanese firms led the halogen-free substrate market in 2023 with a share of 65%

Market share, percent



Source: KGI Research

Figure 5: Server demand boosting 8-16-layer & 18-plus-layer PCB output value

Value (US \$mn)	Commodity	4-6 ML	8-16 ML	18+ ML	HDI	FPC	Total
2022E	218	973	2,796	733	515	633	5,868
2023E	179	804	2,326	777	530	561	5,177
2024F	186	859	2,586	1,053	784	603	6,071
2028F	217	986	3,380	1,469	1,131	792	7,975
2023-28F CAGR	4.0%	4.2%	7.8%	13.6%	16.3%	7.1%	9.0%

Source: Prismark; KGI Research

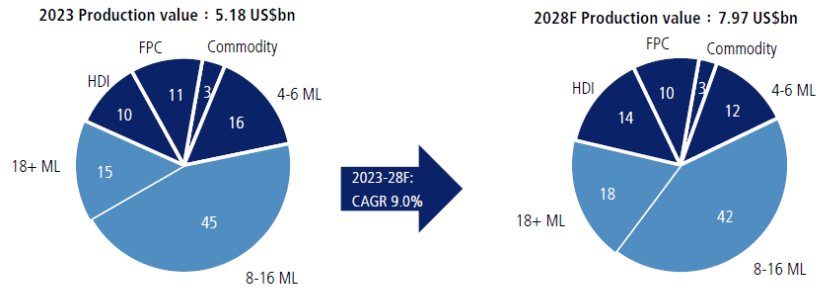
Figure 6: Server demand boosting PCB areas of 8-16-layer & 18-plus-layer board

Area (M m <sup>2</sup> )	Commodity	4-6 ML	8-16 ML	18+ ML	HDI	FPC	Total
2022E	4.2	7.3	6.3	0.5	0.8	2.4	21.8
2023E	3.8	6.7	5.6	0.5	1.0	2.5	20.2
2024F	4.1	7.4	6.3	0.7	1.5	2.7	22.8
2028F	5.4	9.6	9.1	1.1	2.5	4.1	31.7
2023-28F CAGR	7.2%	7.4%	10.0%	14.7%	19.9%	10.5%	9.4%

Source: Prismark; KGI Research

**Figure 7: 18-plus-layer board weighting to rise 3ppts to 18% by 2028**

Server and related electronics PCB market share by application, percent



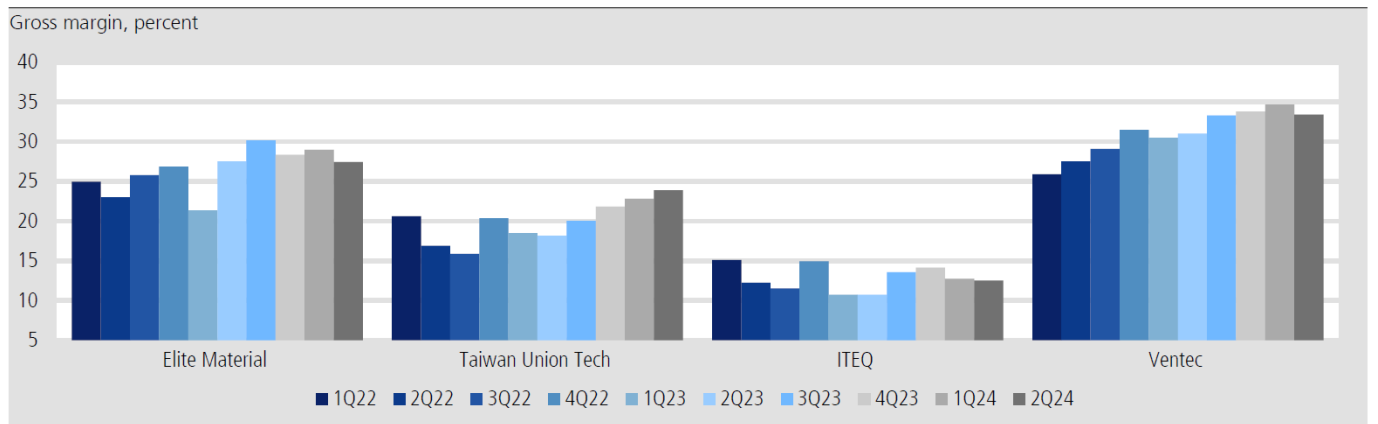
Source: Prismark; KGI Research

**Figure 8: Taiwanese PCB makers' sales by application in 1H24**

Sector	Company	Ticker	AI server	Infrastructure/Networking	Automotive	Handset	PC/NB	Memory	Consumer	Optoelectronics	Industrial/Medical/Military	Satellite	Others	TTL	
Server	Gold Circuit	2368	23	47	13		11						7	100	
	Allied Circuit	8155		65	1						33		1	100	
	ITEQ	6213		57	6	21	5		12					100	
	Taiwan Union Tech	6274		70-75			6						19-24	100	
	Co-tech	8358	15	30		20	8	17				5	5	100	
	Tripod	3044		27		26	6	6	22		7		6	100	
	Elite Material	2383	27		25	16	13	13					6	100	
	Unimicron	3037		37		5	20	27		11				100	
	New Era	4909			75	5								20	100
	NanYa PCB	8046	2	10	34	10		17		12				15	100
	First Hi-tec	5439	10		25	25						35		5	100
Automotive	Chin-Poon	2355			9	78			4			8	1	100	
	Dynamic	3715			6	68	3	8	2	13				100	
	Ventec	6672				58			8	9	15		11	100	
	Unitech PCB	2367				37	2	26		9		17	9	100	
Handset	Zhen Ding Tech	4958		2		2	67	28					0	100	
	Flexium	6269					51	38		11				100	
	Compeq Mfg.	2313			3		47	16		14		20		100	
	Kinsus	3189	1	2		12		32	17		13		23	100	
PC/NB	Career	6153				2	22	54		22				100	
	HannStar Board	5469		10	23	3		40		10	7		7	100	
	Apex	4927			14	24		16		47				100	
	TPT	8213				14		30			48		8	100	

Source: Bloomberg; KGI Research

**Figure 9: Gross margin trend of CCL makers in 1Q22-2Q24**



Source: Bloomberg; KGI Research

**Figure 10: Taiwanese PCB makers' September sales & 3Q24 sales achievement ratio**

Sector	Company	Ticker	Monthly sales (NT\$m)			Jan-Sep sales (NT\$m)		Quarterly sales (NT\$m)			
			Sep-24	MoM (%)	YoY (%)	Jan-Sep-24	YoY (%)	3Q24	QoQ (%)	YoY (%)	Achievement (%)
Server	Gold Circuit	2368 TT	3,333	(6.7)	16.8	28,951	34.6	10,441	10	27	100
	Allied Circuit	8155 TT	347	11.0	42.7	2,625	26.0	972	3	36	
	ITEQ	6213 TT	2,749	10.5	18.9	21,713	18.4	7,963	5	20	97.9
	Taiwan Union Tech	6274 TT	2,270	2.6	51.4	16,760	44.6	6,622	16	58	106
	Co-tech	8358 TT	582	(4.2)	2.3	5,115	15.7	1,793	(1.2)	27	
	Tripod	3044 TT	5,860	(1.3)	5.4	48,759	11.0	17,674	12	9	102
	Elite Material	2383 TT	5,941	3.5	37.0	45,815	61.2	17,464	13	47	105
	Unimicron	3037 TT	10,838	0.1	23.7	85,992	9.8	31,712	14	19	106
	New Era	4909 TT	286	(31.8)	367.3	2,239	359	1,076	75	422	
	NanYa PCB	8046 TT	2,969	(4.2)	(15.7)	24,413	(25.9)	9,192	13	(10.1)	94
First Hi-tec	5439 TT	357	1.6	2.4	2,983	(7.3)	1,057	5	(4.2)		
Automotive	Chin-Poon	2355 TT	1,373	(0.8)	(10.0)	12,335	(0.6)	4,065	(2.5)	(8.1)	
	Dynamic	3715 TT	1,589	(1.9)	5.8	13,150	13.7	4,750	12	12	104
	Ventec	6672 TT	335	5.2	(11.6)	3,199	(12.1)	1,005	(10.2)	(18.6)	
	Unitech PCB	2367 TT	1,531	(4.7)	22.4	14,052	24.0	4,759	(7.2)	24	
Handset	Zhen Ding Tech	4958 TT	19,337	8.6	8.5	115,531	19.1	50,609	56	21	109
	Flexium	6269 TT	1,976	(6.4)	(34.8)	20,770	(14.3)	6,416	(15.2)	(19.9)	
	Compeq Mfg.	2313 TT	6,463	(7.7)	(9.0)	52,632	12.1	20,191	20	3	93
	Kinsus	3189 TT	2,647	(7.4)	33.8	22,492	16.3	8,197	12	36	101
Taiflex	8039 TT	873	(9.5)	2.4	7,708	29.1	2,854	(0.9)	15		
PC/NB	Career	6153 TT	676	4.5	(27.6)	5,634	(25.7)	2,086	6	(28.7)	
	HannStar Board	5469 TT	3,834	(4.3)	(0.1)	31,455	(4.4)	11,808	14	0	
	Apex	4927 TT	987	(10.3)	11.6	9,378	(1.7)	3,426	9	11	
	TPT	8213 TT	1,384	(11.6)	(11.4)	13,570	(7.5)	4,647	(2.1)	(10.0)	

Source: Bloomberg; KGI Research

Figure 11: PCB peer comparison - Valuation

Sector	Company	Ticker	Rating	Mkt Cap (US\$mn)	Price (NT\$)	EPS (NT\$)			PE (x)			PB (x)			ROE (%)			YIELD (%)		
						2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F
Copper foil	Co-tech	8358 TT	NR	464	58.90	2.11	N.A.	N.A.	27.9	N.A.	N.A.	2.5	N.A.	N.A.	8.8	N.A.	N.A.	3.9	N.A.	N.A.
Fiberglass doth/yarn	Fulltech	1815 TT	NR	311	21.50	(1.44)	N.A.	N.A.	N.M.	N.A.	N.A.	1.5	N.A.	N.A.	(9.3)	N.A.	N.A.	0.5	N.A.	N.A.
CCL	Elite Material	2383 TT	OP	4,511	420.00	16.35	28.72	33.85	25.7	14.6	12.4	5.4	4.7	4.1	22.5	34.5	35.7	2.4	4.1	4.8
	ITEQ	6213 TT	OP	824	72.80	1.86	2.73	5.07	39.1	26.7	14.4	1.4	1.3	1.2	3.4	5.0	9.0	2.1	2.2	4.1
	Taiwan Union Tech	6274 TT	NR	1,399	165.00	3.05	10.52	13.52	54.1	15.7	12.2	3.9	3.3	2.9	7.0	23.1	26.0	2.2	4.1	5.0
	Ventec	6672 TT	NR	155	69.50	6.08	N.A.	N.A.	11.4	N.A.	N.A.	1.5	N.A.	N.A.	13.7	N.A.	N.A.	3.9	N.A.	N.A.
Flexible substrate	Asia Electronic Material	4939 TT	NR	65	21.35	0.37	N.A.	N.A.	57.7	N.A.	N.A.	1.4	N.A.	N.A.	2.4	N.A.	N.A.	2.3	N.A.	N.A.
	Taiflex	8039 TT	NR	405	54.60	2.02	N.A.	N.A.	27.0	N.A.	N.A.	1.4	N.A.	N.A.	5.3	N.A.	N.A.	1.9	N.A.	N.A.
Micro drill bit	Topoint Tech	8021 TT	NR	164	37.00	(0.25)	1.88	2.34	N.M.	19.7	15.8	1.2	1.1	N.A.	(0.8)	5.4	6.2	2.6	N.A.	N.A.
PCB	Compeq Mfg.	2313 TT	OP	2,307	62.10	3.50	4.92	6.13	17.8	12.6	10.1	1.9	1.7	1.6	10.7	14.3	16.4	2.4	3.2	3.9
	Wus Printed Circuit	2316 TT	NR	309	54.30	4.61	N.A.	N.A.	11.8	N.A.	N.A.	1.1	N.A.	N.A.	9.9	N.A.	N.A.	1.1	N.A.	N.A.
	Chin-Poon	2355 TT	NR	483	39.00	1.92	2.98	3.09	20.3	13.1	12.6	1.0	0.9	0.9	4.8	6.8	7.3	3.0	6.4	6.4
	Unitech PCB	2367 TT	NR	638	30.60	(0.51)	N.A.	N.A.	N.M.	N.A.	N.A.	2.1	N.A.	N.A.	(3.4)	N.A.	N.A.	N.A.	N.A.	N.A.
	Gold Circuit	2368 TT	OP	2,936	191.50	7.25	12.96	17.22	26.4	14.8	11.1	5.6	5.4	4.5	22.7	37.1	43.8	1.8	3.4	4.5
	Tripod	3044 TT	OP	3,145	192.00	11.53	15.69	18.44	16.6	12.2	10.4	2.3	1.9	1.6	14.1	17.3	17.1	3.9	5.2	6.3
	Apex	4927 TT	NR	306	51.10	(4.20)	N.A.	N.A.	N.M.	N.A.	N.A.	1.4	N.A.	N.A.	(10.7)	N.A.	N.A.	N.A.	N.A.	N.A.
	First Hi-tec	5439 TT	NR	257	88.80	5.07	N.A.	N.A.	17.5	N.A.	N.A.	3.3	N.A.	N.A.	19.4	N.A.	N.A.	4.2	N.A.	N.A.
	HannStar Board	5469 TT	NR	786	51.90	5.07	N.A.	N.A.	10.2	N.A.	N.A.	0.9	N.A.	N.A.	9.2	N.A.	N.A.	2.9	N.A.	N.A.
	Dynamic	3715 TT	NR	602	69.50	3.61	4.76	5.98	19.3	14.6	11.6	2.9	2.5	2.0	15.7	17.8	17.9	2.3	3.0	3.6
	Allied Circuit	8155 TT	NR	237	149.00	4.08	N.A.	N.A.	36.5	N.A.	N.A.	3.6	N.A.	N.A.	9.3	N.A.	N.A.	2.4	N.A.	N.A.
	TPT	8213 TT	NR	321	38.00	4.03	N.A.	N.A.	9.4	N.A.	N.A.	0.7	N.A.	N.A.	7.4	N.A.	N.A.	2.5	N.A.	N.A.
	FPCB	Zhen Ding Tech	4958 TT	N	3,340	112.00	6.55	8.52	10.45	17.1	13.2	10.7	1.1	1.1	1.0	6.4	8.3	9.7	2.9	3.8
Career		6153 TT	NR	374	20.15	(6.04)	N.A.	N.A.	N.M.	N.A.	N.A.	0.9	N.A.	N.A.	(24.6)	N.A.	N.A.	N.A.	N.A.	N.A.
Flexium		6269 TT	NR	769	76.50	6.45	1.00	4.69	11.9	76.9	16.3	1.0	1.0	1.0	8.2	3.1	5.4	5.1	0.7	7.7
IC carrier	Unimicron	3037 TT	OP	6,869	144.50	7.88	5.87	13.72	18.3	24.6	10.5	2.4	2.3	2.0	13.6	9.6	20.4	2.1	1.6	3.8
	Kinsus	3189 TT	N	1,495	105.00	0.11	1.98	7.27	999.3	53.2	14.5	1.5	2.0	(11.2)	0.1	3.2	33.4	1.0	1.0	3.8
	NanYa PCB	8046 TT	N	2,689	133.50	9.00	3.84	11.41	14.8	34.8	11.7	1.8	2.0	2.1	11.4	5.5	17.6	4.1	1.7	5.1
High-frequency microwave communication substrate	New Era	4909 TT	NR	423	145.50	0.42	N.A.	N.A.	346.4	N.A.	N.A.	5.7	N.A.	N.A.	1.6	N.A.	N.A.	0.6	N.A.	N.A.
Equipment	Machvision	3563 TT	NR	489	351.00	8.21	N.A.	N.A.	42.8	N.A.	N.A.	4.0	N.A.	N.A.	10.6	N.A.	N.A.	2.8	N.A.	N.A.
	Symtek	6438 TT	NR	500	213.00	8.89	N.A.	N.A.	24.0	N.A.	N.A.	4.0	N.A.	N.A.	16.8	N.A.	N.A.	4.2	N.A.	N.A.

Source: Bloomberg; KGI Research

All the above named KGI analyst(s) is SFC licensed person accredited to KGI Asia Ltd to carry on the relevant regulated activities. Each of them and/or his/her associate(s) does not have any financial interest in the respectively covered stock, issuer and/or new listing applicant.

**Disclaimer**

All the information contained in this report is not intended for use by persons or entities located in or residing in jurisdictions which restrict the distribution of this information by KGI Asia Limited ("KGI") or an affiliate of KGI. Such information shall not constitute investment advice, or an offer to sell, or an invitation, solicitation or recommendation to subscribe for or invest in any securities or investment products or services nor a distribution of information for any such purpose in any jurisdiction. In particular, the information herein is not for distribution and does not constitute an offer to sell or the solicitation of any offer to buy any securities in the United States of America, or to or for the benefit of United States persons (being residents of the United States of America or partnerships or corporations organised under the laws of the United States of America or any state, territory or possession thereof). All the information contained in this report is for general information and reference purpose only without taking into account of any particular investor's objectives, financial situation or needs. Such information is not intended to provide professional advice and should not be relied upon in that regard.

Some of KGI equity research and earnings estimates are available electronically on www.kgi.com.hk. Please contact your KGI representative for information. The information and opinions in this report are those of KGI internal research activity. KGI does not make any representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information and opinions contained in this report. The information and opinions contained in this report are subject to change without any notice. No person accepts any liability whatsoever for any loss however arising from any use of this report or its contents. This report is not to be construed as an invitation or offer to buy or sell securities and/or to participate in any investment activity. This report is being supplied solely for informational purposes and may not be redistributed, reproduced or published (in whole or in part) by any means for any purpose without the prior written consent of KGI. Members of the KGI group and their affiliates may provide services to any companies and affiliates of such companies mentioned herein. Members of the KGI group, their affiliates and their directors, officers and employees may from time to time have a position in any securities mentioned herein.