

## PCB sector

### Sales of AI server PCB outperformed in August

#### Overweight · Maintained

##### Key message

1. Sales of server PCB hit a record high in August, driven by 800Gb switches & AI.
2. Research house Prismark forecasts 2H24F iPhone pull-in demand up by 10-20% YoY; handset PCB output value CAGR revised up to 6.2%, driven by AI.
3. Research house Prismark revised down 2024F automotive PCB output value to US\$9.3bn, up 1.7% YoY, and revised down their 2023-28F output value CAGR by 0.5ppts to 4.7%.

##### Event

Sales of server PCB were outstanding in August, while sales of handset PCB were in line with expectations, tail-winded by pull-in demand from new iPhone models. Overall performance was in line with 2024F PCB output value forecast of US\$73.3bn (up 5.5% YoY) released by research house Prismark, which has revised up YoY sales growth forecasts for server and handset PCB to a respective 19.3% and 6.2%. The agency, however, is conservative on PC, consumer and automotive PCB, and estimates YoY growth of those businesses at 3.9%, 2.1% and 1.7%, respectively.

##### Impact

**Record high sales for server PCB in August; driven by 800Gb switches & AI.** Prismark forecasts a 2023-28F server PCB output value CAGR of 11.6%, and an AI/ HPC server PCB output value CAGR at a record high of 32.5% over the same period. The agency estimates the 2024F server PCB output value will grow by 19.3% YoY, to US\$9.8bn, as demand is boosted by OAM (18L and 5-N-5), UBB (24+ML) and switch board PCB (20+ML) in the AI server segment, coupled with 800Gb switches entering mass production in 3Q24F. We note sales of Gold Circuit Electronics (2368 TT, NT\$196.5, OP) and Taiwan Union Technology (TUC; 6274 TT, NT\$172, NR) hit record highs in August. Gold Circuit, Elite Material (EMC; 2383 TT, NT\$458 OP), TUC and Tripod Technology's (3044 TT, NT\$191.5, OP) accumulated sales in the July-August period achieved a respective 68%, 69%, 70% and 69% of consensus and our forecasts for 3Q24F, beating expectations.

**Prismark raises 2023-28F handset PCB output value CAGR to 6.2%; driven by AI.** Zhen Ding Technology (ZDT; 4958 TT, NT\$116.5, N) guides 2H24F pull-in demand from new iPhone models will rise by 10-20% YoY, and is optimistic about iPhone sales benefiting from AI features. Prismark estimates the 2024F handset PCB output value will reach US\$13.9bn, up 6.9% YoY. We project ZDT's and Compeq Manufacturing's (2313 TT, NT\$70, OP) iPhone sales weightings will be 60-65% and 47-50%, respectively, with July-August accumulated sales achieving 67% and 63% of our 3Q24F forecasts. Compeq's performance was a slight miss as the firm strategically lowered SMT operations, while ZDT's sales were in line with expectations.

**Conservative on automotive PCB demand.** We project 2024F global automobile shipments growth will be trimmed to 1% YoY from 3% YoY. We expect 2024-25F automobile shipments of 91.36mn and 93.98m units, up by 1.4% YoY and 2.9% YoY, respectively. Prismark also revised down 2024F automotive PCB output value to US\$9.3bn, up 1.7% YoY, and cut its 2023-28F CAGR by 0.5ppts to 4.7%. We note July-August accumulated sales of Chin-Poon Industrial (2355 TT, NT\$40.1, NR), Dynamic Holding (3715 TT, NT\$62.7, NR) and Unitech Printed Circuit Board (2367 TT, NT\$32.7, NR) achieved 62%, 69% and 64% of consensus in 3Q24F, respectively, with only Dynamic in line with expectations.

##### Stocks for Action

We believe high-speed PCB material demand will be boosted by AI server and 800Gb switch demand. We are upbeat about EMC, Gold Circuit, TUC, and Tripod being bolstered by the aforementioned trends, while Compeq will be bolstered by new iPhone models and satellite demand.

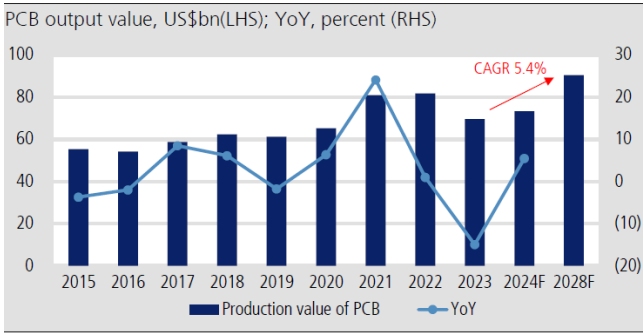
##### Risks

Weak demand; further ASP and margin contraction.

**Prismark 2024F global PCB output value up 5.5%YoY; 2023-28F PCB output value CAGR of 5.4%**

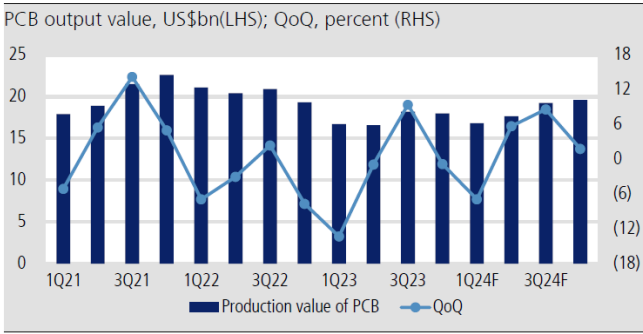
Prismark estimates 2Q-3Q24F global PCB output value, including substrates, will edge up a respective 5.7% QoQ and 8.6% QoQ and global 2024F PCB output value will increase 5.5% YoY to US\$73.1bn. Driven by AI server demand, the 2023-28F PCB output value CAGR will reach 5.4% (Figures 1-2). In terms of PCB technology growth, the 2023-28F substrate and HDI CAGR will reach a respective 8.8% and 7.1%, leading the sector.

**Figure 1: 2023-28F PCB output value CAGR of 5.4%**



Source: Prismark; KGI Research

**Figure 2: 2Q-3Q24F PCB output value up by a respective 5.7% QoQ and 8.6% QoQ**



Source: Prismark; KGI Research

**Figure 3: 2023-28F substrate CAGR to reach 8.8%, followed by HDI (7.1%)**

Production value of PCB (US\$mn)	2022	2023E	2024F	2028F	2024E YoY (%)	2023-28F CAGR (%)
Substrate	17,415	12,498	13,168	19,065	5.4	8.8
HDI	11,763	10,536	11,628	14,826	10.4	7.1
Flexible	13,842	12,191	12,779	15,117	4.8	4.4
Multilayer	29,846	26,534	27,607	32,483	4.0	4.1
Commodity	8,875	7,757	7,844	8,923	1.1	2.8
<b>Total</b>	<b>81,741</b>	<b>69,516</b>	<b>73,026</b>	<b>90,414</b>	<b>5.0</b>	<b>5.4</b>

Source: Prismark; KGI Research

**Prismark 2023-28F sales CAGR for server & handset applications revised up; automotive, consumer & infrastructure revised down**

For PCB end-application growth, in descending order, Prismark forecasts server/ storage PCB to post the strongest performance with a 2023-28F CAGR of 11.6% (Figure 4), with the weighting of PCB of more than 18 layers rising by 3ppts to 18% in 2028F (Figure 5). The 2023-28F handset PCB CAGR is revised up to 6.2%, from 5.2%, bolstered by the AI trend. As the automotive shipments forecast was cut to 1% YoY from 3% YoY in early-2024, the 2023-28F automotive PCB CAGR was lowered to 4.7% from 5.2%. The wired and wireless infrastructure PCB CAGRs were cut to a respective 4.9% and 2.8% from 5.9% and 4.1%, while the consumer PCB CAGR was revised down to 3.5% from 4.8%.

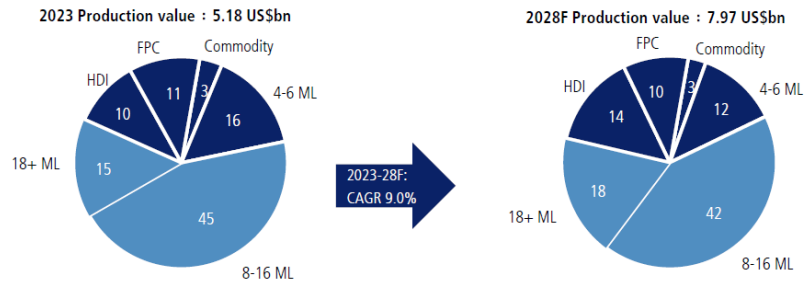
**Figure 4: 2023-28F server & storage PCB CAGR to reach 11.6%, leading the pack**

US\$m	2023	2024F	YoY (%)	2028F	2023-28F CAGR (%)	Market share (%)	2023	2024F	2028F
Server/Data storage	8,201	9,781	19.3	14,221	11.6	Server/Data storage	12	13	16
Mobile phones	13,085	13,993	6.9	17,685	6.2	Mobile phones	19	19	20
Military/Aerospace	3,514	3,792	7.9	4,524	5.2	Military/Aerospace	5	5	5
Industrial	2,871	2,886	0.5	3,659	5.0	Industrial	4	4	4
Wired infrastructure	5,955	6,113	2.7	7,576	4.9	Wired infrastructure	9	8	8
Automotive	9,153	9,308	1.7	11,518	4.7	Automotive	13	13	13
Medical	1,440	1,512	5.0	1,771	4.2	Medical	2	2	2
Consumer	9,129	9,320	2.1	10,816	3.5	Consumer	13	13	12
PC	9,391	9,760	3.9	11,020	3.3	PC	14	13	12
Wireless Infrastructure	3,118	3,085	(1.1)	3,574	2.8	Wireless Infrastructure	4	4	4
Other computer	3,661	3,797	3.7	4,049	2.0	Other computer	5	5	4
<b>Total</b>	<b>69,518</b>	<b>73,346</b>	<b>5.5</b>	<b>90,413</b>	<b>5.4</b>	<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Prismark; KGI Research

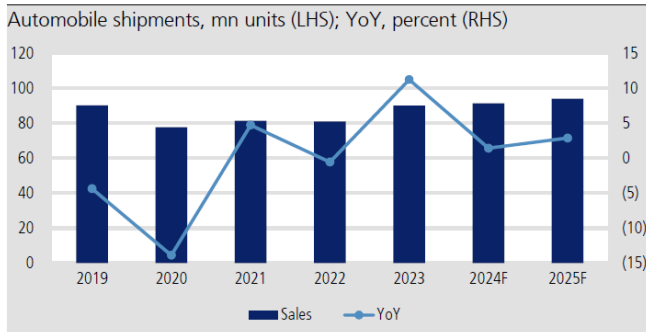
**Figure 5: The weighting of PCB with more than 18 layers to rise by 3ppts to 18% in 2028F**

Market share of server and electronic-related PCB (by technology application), percent



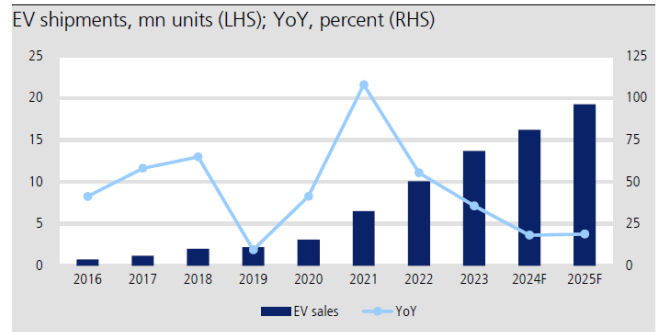
Source: Prismark; KGI Research

**Figure 6: 2024F automobile shipments up by 1%**



Source: LMC Automotive; KGI Research

**Figure 7: Global 2022-25F EV shipments CAGR of 24%**



Source: EV-Volumes; KGI Research

**Sales of AI server PCB outperformed in August; automotive, PC and consumer PCB sales below expectations**

Among four major segments, server-related PCB sales were relatively decent, while handset-related PCB sales were in line with expectations, and tail-winded by pull-in demand from new iPhone models. Automotive, PC and consumer PCB sales were slightly below expectations.

Sales of Gold Circuit, TUC, and Dynamic Holding hit record highs in August. Accumulated sales of Gold Circuit, EMC, TUC and Tripod in the July-August period achieved a respective 68%, 69%, 70% and 69% of consensus or our 3Q24F forecasts, beating expectations, while those of ITEQ (6213 TT, NT\$71.2, OP) missed expectations, achieving only 64% of our forecast.

Sales of ZDT, Compeq, Unimicron (3037 TT, NT\$139.5, OP) and Kinsus (3189 TT, NT\$98.4, N) achieved a respective 67%, 63%, 70% and 68% of our 3Q24F forecasts in July-August. Compeq's performance was a slight miss as it strategically lowered SMT operations, while others were in line with expectations. Longer term, we are positive on Gold Circuit, EMC, TUC and Tripod to benefit from AI server demand. In the near term, we are upbeat about ZDT and Compeq benefiting from pull-in demand for new iPhone models.

**Figure 8: Breakdown of 1H24 Taiwanese PCB companies' sales weightings**

Sector	Company	Ticker	Sales Weightings (%)											TTL	
			AI server	server	Infrastructure/Networking	Automotive	Handset	PC/NB	Memory	Consumer	Optoelectronics	Industrial/Medical/Military	Satellite		Others
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

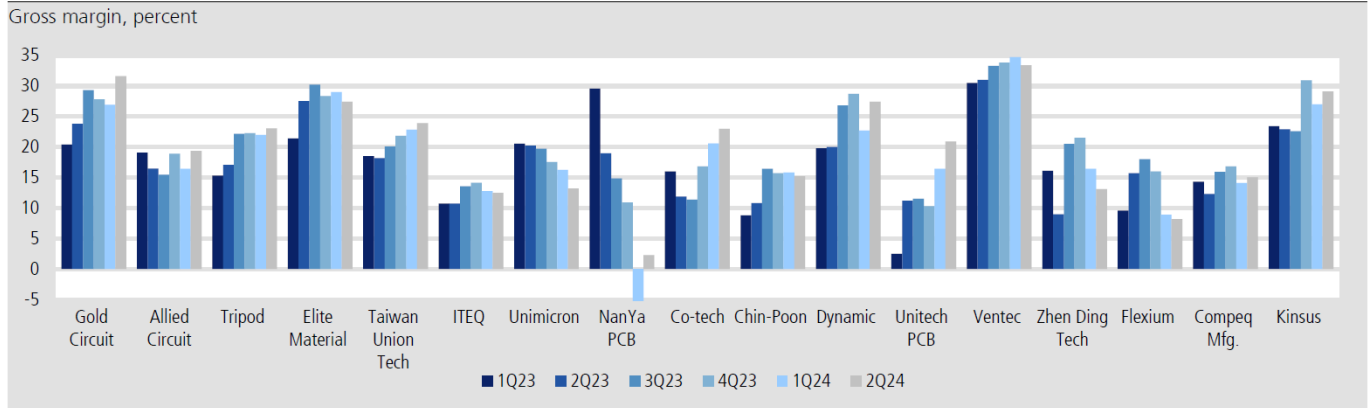
Source: Bloomberg; KGI Research

**Figure 9: Taiwanese PCB companies' sales in August and 3Q-4Q24 forecasts**

Sector	Company	Ticker	Monthly sales (NT\$mn)			Jan-Aug sales (NT\$mn)		Sales QoQ (%)	
			Aug-24	MoM (%)	YoY (%)	Jan~Aug-24	YoY (%)	3Q24	4Q24
Server	Gold Circuit	2368 TT	3,572	1.0	29.9	25,618	37.3	9.1	2.9
	Allied Circuit	8155 TT	313	0.4	31.9	2,277	23.8		
	ITEQ	6213 TT	2,487	(8.8)	9.2	18,964	18.3	7.1	3.8
	Taiwan Union Tech	6274 TT	2,212	3.3	59.9	14,490	43.6	9.0	3.0
	Co-tech	8358 TT	607	0.4	32.8	4,533	17.7		
	Tripod	3044 TT	5,940	1.1	7.8	42,899	11.9	9.7	(1.4)
	Elite Material	2383 TT	5,741	(0.7)	47.5	39,874	65.6	7.5	(2.7)
	Unimicron	3037 TT	10,823	7.7	17.4	75,155	8.0	7.1	7.8
	New Era	4909 TT	419	13.0	494.0	1,953	357.6		
	NanYa PCB	8046 TT	3,098	(0.9)	(8.2)	21,444	(27.1)	19.8	9.7
First Hi-tec	5439 TT	352	0.9	(0.4)	2,626	(8.5)			
Automotive	Chin-Poon	2355 TT	1,384	5.8	(6.9)	10,962	0.8	5.0	(3.0)
	Dynamic	3715 TT	1,620	5.2	13.1	11,561	14.9	8.0	8.0
	Ventec	6672 TT	318	(9.5)	(26.0)	2,864	(12.2)		
	Unitech PCB	2367 TT	1,607	(0.9)	20.8	12,521	24.2	(2.0)	
Handset	Zhen Ding Tech	4958 TT	17,814	32.4	29.2	96,194	21.5	43.8	21.8
	Flexium	6269 TT	2,109	(9.5)	(20.2)	18,794	(11.4)	7.0	8.0
	Compeq Mfg.	2313 TT	7,005	4.2	8.4	46,169	15.9	29.0	(2.7)
	Kinsus	3189 TT	2,858	6.2	34.0	19,845	14.3	11.0	9.6
	Taiflex	8039 TT	965	(5.1)	15.6	6,835	33.6		
PC/NB	Career	6153 TT	646	(15.4)	(33.4)	4,959	(25.5)		
	HannStar Board	5469 TT	4,007	1.0	1.2	27,621	(4.9)		
	Apex	4927 TT	1,101	(17.7)	5.6	8,391	(3.1)		
	TPT	8213 TT	1,566	(7.8)	(12.6)	12,186	(7.1)		

Source: Bloomberg; KGI Research

Figure 10: 1Q23-2Q24 PCB gross margin trends



Source: Bloomberg; KGI Research

Figure 11: Peer comparison – Valuations

Sector	Company	Ticker	Rating	Mkt Cap (US\$m)	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	469	59.80	2.11	N.A.	N.A.	28.3	N.A.	N.A.	2.5	N.A.	N.A.	8.8	N.A.	N.A.	3.9	N.A.	N.A.
Fiberglass cloth/yarn	Fulltech	1815 TT	NR	317	22.10	(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	4,905	458.00	16.35	28.22	32.78	28.0	16.2	14.0	5.9	5.2	4.5	22.5	33.9	34.7	2.2	3.7	4.4
	ITEQ	6213 TT	OP	803	71.20	1.86	3.30	5.30	38.2	21.6	13.4	1.3	1.3	1.2	3.4	6.1	9.3	2.1	2.8	4.5
	Taiwan Union Tech	6274 TT	NR	1,454	172.00	3.05	10.58	13.63	56.4	16.3	12.6	4.0	3.5	3.0	7.0	22.9	25.9	2.2	4.0	4.9
	Ventec	6672 TT	NR	150	67.50	6.08	N.A.	N.A.	11.1	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	62	20.40	0.37	N.A.	N.A.	55.1	N.A.	N.A.	1.3	N.A.	N.A.	2.4	N.A.	N.A.	2.3	N.A.	N.A.
	Taiflex	8039 TT	NR	458	63.00	2.02	N.A.	N.A.	31.2	N.A.	N.A.	1.6	N.A.	N.A.	5.3	N.A.	N.A.	1.9	N.A.	N.A.
Micro drill bit	Topoint Tech	8021 TT	NR	152	34.45	(0.25)	1.89	2.33	N.M.	18.2	14.8	1.1	N.A.	N.A.	(0.8)	5.4	6.2	2.6	N.A.	N.A.
PCB	Compeq Mfg.	2313 TT	OP	2,593	70.00	3.50	5.47	6.98	20.0	12.8	10.0	2.1	1.9	1.7	10.7	15.8	18.3	2.1	3.1	4.0
	Wus Printed Circuit	2316 TT	NR	250	44.00	4.61	N.A.	N.A.	9.5	N.A.	N.A.	0.9	N.A.	N.A.	9.9	N.A.	N.A.	1.1	N.A.	N.A.
	Chin-Poon	2355 TT	NR	495	40.10	1.92	3.33	3.43	20.9	12.0	11.7	1.0	0.9	0.9	4.8	7.6	8.2	3.0	6.0	6.3
	Unitech PCB	2367 TT	NR	680	32.70	(0.51)	2.38	3.51	N.M.	13.7	9.3	2.2	1.8	1.5	(3.4)	16.7	16.6	N.A.	N.A.	N.A.
	Gold Circuit	2368 TT	OP	3,004	196.50	7.25	12.96	17.22	27.1	15.2	11.4	5.7	5.5	4.6	22.7	37.1	43.8	1.8	3.3	4.4
	Tripod	3044 TT	OP	3,129	191.50	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	313	53.00	(4.20)	N.A.	N.A.	N.M.	N.A.	N.A.	1.5	N.A.	N.A.	(10.7)	N.A.	N.A.	N.A.	N.A.	N.A.
	First Hi-tec	5439 TT	NR	260	90.00	5.07	N.A.	N.A.	17.8	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	831	50.60	5.07	N.A.	N.A.	10.0	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	541	62.70	3.61	4.76	5.98	17.4	13.2	10.5	2.6	2.3	1.8	15.7	17.8	17.9	2.3	3.3	4.0
Allied Circuit	8155 TT	NR	180	113.50	4.08	N.A.	N.A.	27.8	N.A.	N.A.	2.7	N.A.	N.A.	9.3	N.A.	N.A.	2.4	N.A.	N.A.	
TPT	8213 TT	NR	303	35.95	4.03	3.60	4.11	8.9	10.0	8.7	0.7	N.A.	N.A.	7.4	5.2	6.7	2.5	N.A.	N.A.	
FPCB	Zhen Ding Tech	4958 TT	N	3,464	116.50	6.55	8.52	10.45	17.8	13.7	11.1	1.2	1.1	1.1	6.4	8.3	9.7	2.8	3.6	4.3
	Career	6153 TT	NR	387	20.90	(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	792	79.00	6.45	3.51	5.36	12.2	22.5	14.7	1.0	1.0	1.0	8.2	4.0	6.4	5.1	3.8	3.5
IC carrier	Unimicron	3037 TT	OP	6,613	139.50	7.88	5.87	13.72	17.7	23.7	10.2	2.3	2.2	1.9	13.6	9.6	20.4	2.2	1.7	3.9
	Kinsus	3189 TT	N	1,390	98.40	0.11	1.98	7.27	936.5	49.8	13.5	1.4	1.9	(10.5)	0.1	3.2	33.4	1.0	1.0	4.1
	NanYa PCB	8046 TT	N	2,450	122.00	9.00	3.84	11.41	13.6	31.8	10.7	1.6	1.8	1.9	11.4	5.5	17.6	4.5	1.9	5.6
High-frequency microwave communication substrate	New Era	4909 TT	NR	366	126.00	0.42	N.A.	N.A.	300.0	N.A.	N.A.	4.9	N.A.	N.A.	1.6	N.A.	N.A.	0.6	N.A.	N.A.
Equipment	Machvision	3563 TT	NR	445	320.00	8.21	N.A.	N.A.	39.0	N.A.	N.A.	3.7	N.A.	N.A.	10.6	N.A.	N.A.	2.8	N.A.	N.A.
	Symtek	6438 TT	NR	280	119.50	8.89	N.A.	N.A.	13.4	N.A.	N.A.	2.2	N.A.	N.A.	16.8	N.A.	N.A.	4.2	N.A.	N.A.

Source: Bloomberg; KGI Research

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