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Greater China Industrials (H/A)

AI PCB upgrade cycle => Boon for equipment & drill bit manufacturers

Industry Overview

PCB content value set to surge in the Rubin era

We believe strong AI cloud capex and accelerating server upgrades are driving a faster PCB upgrade cycle. According to our Greater China Technology team, the Rubin platform could boost PCB content value by c.3x vs. GB200/GB300 AI servers, while PCB content value could further double in the Rubin Ultra platform (see report: China PCB makers rise to the fore amid global AI super-cycle). We summarize the key PCB-related design changes in the next-generation Vera Rubin (2H26) and Rubin Ultra (2027) server racks vs. GB300: 1) the addition of a 44-layer midplane PCB within the Vera Rubin compute tray; 2) more HDI PCB; 3) increased use of HLC PCB; 4) CCL material upgrades (likely migration to M9 vs. M8/M8.5); and 5) the potential adoption of a backplane in Rubin Ultra (still uncertain).

PCB equipment: opportunities from HLC and HDI

The faster PCB upgrade cycle implies surging demand for PCB equipment. Within drilling equipment (21% of total equipment market), we expect demand to be supported not only by resilient growth in mechanical drilling (i.e., more HLC PCB), but also by Chinese OEMs' share gains in laser drilling equipment, supported by technological breakthroughs and more sufficient capacity. Indeed, rising HDI board volumes require more laser drilling equipment. Han's Laser (the parent company of Han's CNC) is China's largest AI PCB equipment manufacturer. We like its 1) edge in CCD drilling equipment; 2) upside from ultra-fast laser drilling equipment along with material upgrades; and 3) strong visibility on share gains from global peers, supported by high-quality products, shorter lead times, and comprehensive product lines. We also like its strong position in the Apple supply chain and see further opportunities in 3D printing equipment. We reiterate Buy on Han's Laser.

PCB drill bits: exponential demand growth; Buy Dtech

Compared with inherently more cyclical PCB equipment, PCB drill bits benefit from more sustainable demand driven by continued PCB shipment growth and design upgrades. This could provide a long growth runway for PCB drill bits. We estimate that the AI PCB drill bit market (NIVDIA related) would deliver a 96% CAGR over 2026-28E, reaching RMB14bn by 2028E. Growth would be driven mainly by 1) surging AI rack volumes; 2) the introduction of a compute-tray midplane in Vera Rubin; and 3) rising demand for HLC PCB, which require step-drilling and consumes more drill bits; and 4) introduction of new CCL material. We initiate coverage of Dtech, the world's largest PCB drill bit manufacturer, with a Buy rating. We like Dtech given its 1) direct leverage to AI PCB content growth; 2) high visibility for resilient earnings growth over 2026-28E; and 3) vertically integrated drill bit manufacturing platform, which enables faster capacity ramp-up and supports continued market-share gains. See report: Dtech Technology-Unsung hero in AI PCB; all set for strong growth in 26-28

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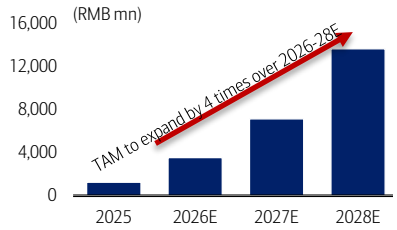
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Exhibit 1: AI PCB drill bit market size is expected to expand by 4 times over 2026-28E...
...driven by surging PCB & server upgrade



Source: BofA Global Research estimates, TAM indicates total addressable market

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Exhibit 2: Major PCB equipment & drill bit companies
We have Buy for Dtech and Han's Laser

Company	Rating	PO
PCB drill bit		
Dtech-H	Buy	430
Dtech-A	Buy	506
PCB equipment		
Han's Laser	Buy	185

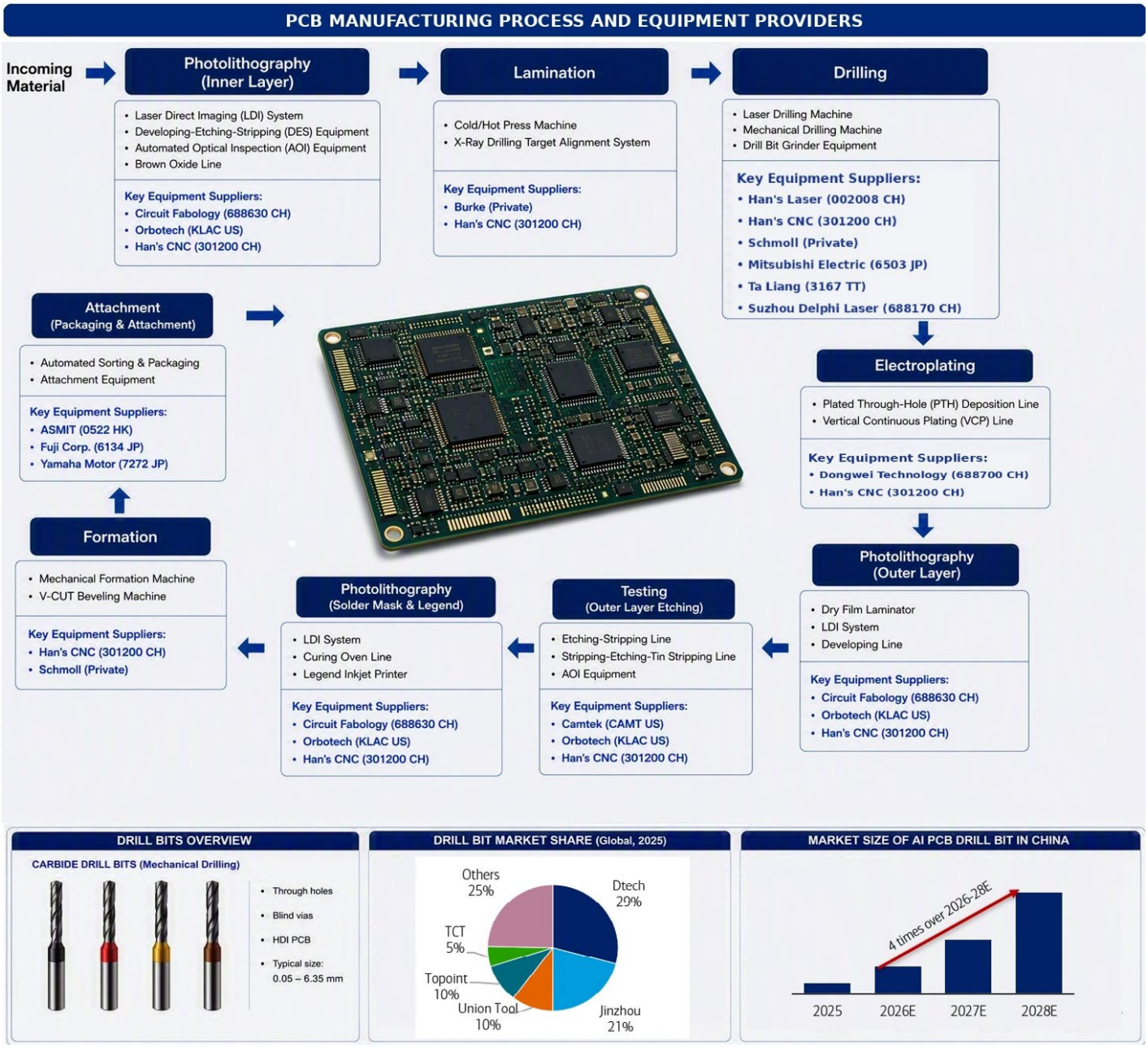
Source: BofA Global Research; note: PO for Dtech-H is HK$, PO for Dtech-A and Han's Laser is RMB

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PCB: Printed Circuit Board
AI: Artificial Intelligence
GB: Grace Blackwell
CCL: Copper Clad Laminate
HDI: High Density Interconnect
HLC: Higher Layer Count PCB
CCD: Camera Controlled Drilling
See page 19 for full abbreviation table

Focus charts

Exhibit 3: Manufacturing process of PCB and relevant equipment/drill bits providers
The PCB upgrade cycle triggers demand growth for PCB drilling equipment and drill bits



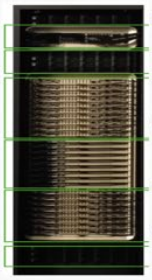
Source: Company data, BofA Global Research

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Exhibit 4: Next-generation server architecture changes=>PCB upgrades cycle=>opportunities for PCB equipment & drill bits
New generation servers require far more HDI/HLC PCB

GB300 (Current Gen)

System Overview



- Compute Tray: 4x GPU (4 per tray)
- Switch Tray: 2x NVLink Switch
- Overpass Cable connects compute tray to baseboard
- Midplane: No
- Backplane: No

Exploded View & PCB Stack-up

	PCB / Function	Layers	Material	Type
1	Compute Tray Baseboard PCB (4x GPU)	22L	M8	HDI
2	Switch Tray PCB (2x NVLink Switch)	22L	M8	HLC/HDI
3	Overpass Cable (High-speed)	N/A	N/A	FPC
4	Baseboard PCB (System Control & Power)	~20L	M8	HLC

Key Takeaways vs. Previous Gen

- 4x GPU per compute tray
- Overpass cable used for high-speed connection
- HDI used in compute tray for high density & fine routing
- No midplane or backplane in current design

Vera Rubin (2H26)
New Designs

System Overview



- Compute Tray: 4x GPU (4 per tray)
- Switch Tray: 2x NVLink Switch
- Midplane (44L HLC) added within compute tray
- Additional PCB for ConnectX NIC & BlueField DPU
- Backplane: No

Exploded View & PCB Stack-up

	PCB / Function	Layers	Material	Type
1	Compute Tray Baseboard PCB (4x GPU)	24L	M8.5	HDI
2	Additional PCB for ConnectX NIC & BlueField DPU (in Tray)	~14–16L	M8.5	HDI
3	Midplane PCB (44L HLC)	44L	M8.5	HLC
4	Switch Tray PCB (2x NVLink Switch)	32L	M8.5	HLC/HDI
5	Baseboard PCB (System Control & Power)	~22–24L	M8.5	HLC

Key Design Changes vs. GB300

- ☑ Adds Midplane (44L HLC) inside compute tray
- ☑ Additional PCB for ConnectX NIC & BlueField DPU in tray
- ☑ Higher layer count for switch tray (22L → 32L)
- ☑ More HDI boards across the system
- ☑ Migration to M8.5 CCL (more laser drilling)

Rubin Ultra (2027)
Next Leap

System Overview



- Compute Tray: 4x GPU (4 per tray)
- Switch Tray: 2x NVLink Switch
- Midplane (44L HLC)
- Additional PCB for ConnectX NIC & BlueField DPU
- Backplane (>70L HLC) added (possible, uncertainty exists)

Exploded View & PCB Stack-up

	PCB / Function	Layers	Material	Type
1	Compute Tray Baseboard PCB (4x GPU)	24L	M9	HDI
2	Additional PCB for ConnectX NIC & BlueField DPU (in Tray)	~14–16L	M9	HDI
3	Midplane PCB (44L HLC)	44L	M9	HLC
4	Switch Tray PCB (2x NVLink Switch)	32L	M9	HLC/HDI
5	CPX Board (in Tray)	~14–16L	M9	HDI
6	Backplane PCB (>70L HLC) (Rack-level)	>70L	M9	HLC
7	Baseboard PCB (System Control & Power)	~24L+	M9	HLC

Key Design Changes vs. Vera Rubin

- ☑ Retains Midplane & adds PCB for ConnectX NIC & BlueField DPU in tray
- ? Adds Backplane (>70L HLC) for higher interconnect density (possible, uncertainty exists)
- ☑ All key boards migrate to M9 material (possible)
- ☑ Higher layer count & density requirements across boards

PCB Type Guide

HDI (High Density Interconnect)

- High wiring density
- Fine lines / microvias
- Used in compute tray PCBs
- Better signal integrity
- Suitable for laser drilling

HLC (High Layer Count)

- Many signal / power layers
- Thick boards, high reliability
- Used in midplane, switch tray, backplane, baseboard
- Suitable for mechanical drilling

Material Evolution (CCL)

M8 → M8.5 → M9

- Higher performance & lower loss
- Supports higher layer count and finer drilling
- Requires more laser drilling equipment & drill bit usage

Why More & Better PCBs?

More Layers
Higher bandwidth, lower loss, better signal integrity

More Power
More power planes & layers to support next-gen GPUs/ASICs

System Integration
More PCB types improve modularity, reliability & serviceability

Advanced Materials
Migration to M9 CCL requires more laser drilling & drill bits

Impact on Supply Chain

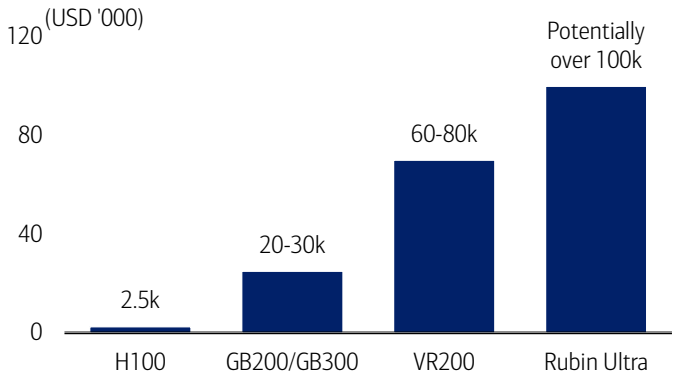
More PCBs & higher layers → More equipment → More drill bits demand

Source: BofA Global Research estimates

Faster GPU/ASIC upgrades accelerate the PCB upgrade cycle

Strong AI cloud capex and faster GPU/ASIC upgrades are accelerating the PCB upgrade cycle, in our view. According to our Greater China Technology team, the Rubin platform could boost PCB content value by c.3x vs. GB200/GB300 AI servers, while PCB content value could double again on the Rubin Ultra platform (see report: China PCB makers rise to the fore amid global AI super-cycle). We believe the key opportunities for PCB equipment OEMs include 1) incremental PCB use and, in turn, greater demand for PCB equipment; 2) rising HDI and HLC adoption, which drives demand for equipment and drill bits; and 3) CCL material upgrades, which require more laser drilling equipment and drill bit consumption.

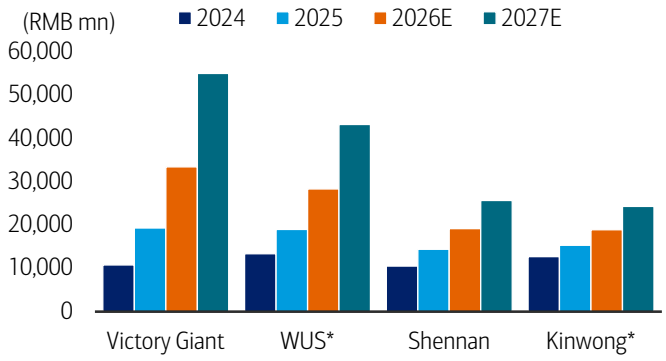
Exhibit 5: PCB value across different Nvidia AI server platforms
The Rubin platform could boost PCB content value by c.3x vs. GB200/GB300 AI servers



Source: BofA Global Research estimates

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Exhibit 6: PCB-related revenue trend of major Chinese PCB makers
Leading PCB makers are expected to deliver strong sales growth in 2026-27 amid AI upcycle



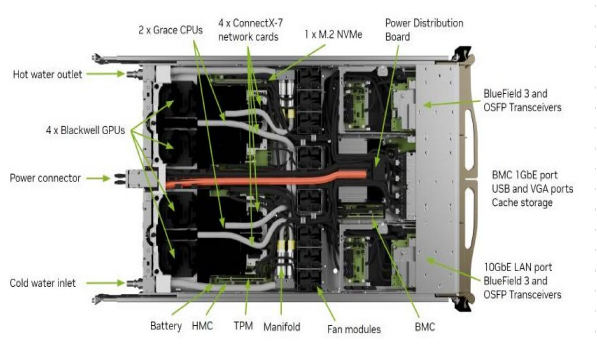
Source: BofA Global Research estimates, company reports. * per Bloomberg consensus

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Opportunity #1: Incremental usage of PCB=>more volume

We expect a wider variety of PCBs in next-generation AI servers. Nvidia's Rubin platform will include several additional PCB components: 1) a **midplane** (44-layer HLC with M8.5 CCL) replacing the overpass cable used in GB300; 2) an optional Rubin **CPX** board in the compute tray; and 3) additional PCBs in the **ConnectX** NIC/**BlueField** DPU. Into 2027-28, if backplane for Rubin Ultra is introduced, we are likely to see ongoing content value upside for PCB supply chain. Longer term, adoption of **CoWoP** could further increase PCB demand by using the PCB as the IC substrate within AI servers (see report: Technology-APAC-Overview of AI PCB)..

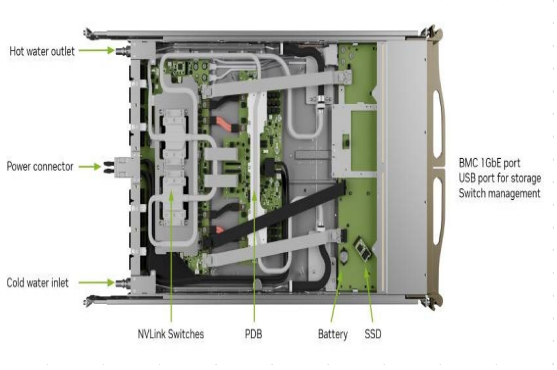
Exhibit 7: Illustration of GB200 compute tray
Compute tray is composed of two compute boards, and each compute board has one CPU and two GPUs atop



Source: BofA Global Research

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Exhibit 8: Illustration of switch tray
Switch tray is one of key elements in GB200 NVL36/72 system

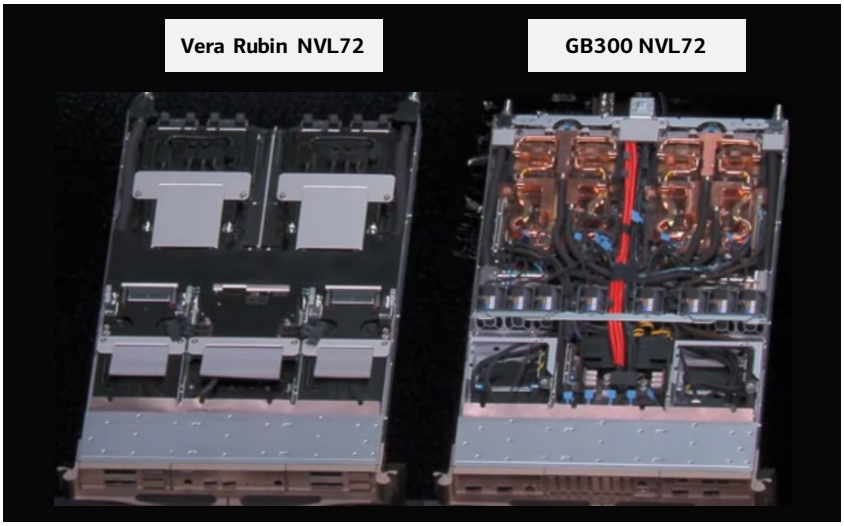


Source: BofA Global Research

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Beyond the higher-layer-count HDI/HLC boards used in the Bianca board and switch tray, the "cableless design" creates new content value for PCB makers through the addition of a midplane. The midplane uses a 22+22-layer HLC design to replace the overpass cable in the compute tray. We see possibility for the cableless trend to further extend to inter-tray connections on the Rubin Ultra platform, with four HLC backplanes of 78 or more than 100 layers likely to replace the cables in the cable cartridge (spec/value trend in Exhibit 3). See report: Technology-APAC-Nvidia Vera Rubin AI rack implications.

Exhibit 9: We note the Vera Rubin NVL72 compute tray adopts cableless design compared with the GB300 NVL72 compute tray
Compute tray comparison: Vera Rubin NVL72 vs. GB300 NVL72



Source: BofA Global Research, company data

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We summarize the number of PCBs across different trays in GB300 & Vera Rubin (without considering the layers impact). Within a server rack, the compute-tray baseboard (laser drilling) and switch-tray baseboard (mainly mechanical drilling) typically have higher PCB equipment content value.

Exhibit 10: Volume of major PCBs used in GB300 rack vs. Vera Rubin rack (without considering number of layers)
Vera Rubin rack requires 54 more PCB

	GB300 NVL72		Vera Rubin NVL72	
	Unit per tray	PCB per rack	Unit per tray	PCB per rack
PCB per compute tray (18)				
Compute baseboard PCB	1	18	1	18
GPU carrier board PCB	4	72	4	72
Battery backup unit PCB	1	18	1	18
NIC/DPU and Others	4	72	6	108
Midplane PCB	0	0	1	18
PCB per switch tray (9)				
Switch mainboard PCB	1	9	1	9
PCB per Top of Rack Switch (2)				
Top of Rack switch PCB	1	2	1	2
PCB per power shelf (8)				
Power Distribution Board	1	8	1	8
PSU PCB	6	48	6	48
Power management PCB	1	8	1	8

Source: BofA Global Research

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Driver #2: Rising adoption of HDI and HLC=>more layers

The evolution of AI servers is driving greater adoption of HDI and HLC. In general, AI servers require 20-40+ PCB layers, vs. 12-18 layers in general servers. This upgrade supports complex circuit layouts and high-speed inter-chip transmission while providing high-density interconnects, superior thermal management, and space optimization. PCB layer counts continue to rise in next-generation AI servers. For example, Vera Rubin's Bianca board will use 6-layer HDI (6+12+6), vs. 5-layer HDI (5+12+5) in the GB200/GB300 Bianca board, while its switch tray will use 32-layer HLC PCBs, vs. 22 layers for GB200/GB300. PCB layer counts could rise to >78 in the backplane of the Rubin Ultra NVL576 Kyber rack.

On the ASIC front, these solutions use more complex networking architectures to offset lower single-chip performance and therefore typically impose greater demands on underlying interconnects such as PCBs and optical transceivers. Accordingly, PCBs for ASIC solutions require more advanced designs, typically with 28-40 or more layers and advanced CCL materials (M7 and above).

Exhibit 11: Summary of spec comparison and migration for the PCB used in different AI GPU/ASIC
HDI is more widely adopted by GPU camp, while HLC is commonly accepted on ASIC side

NVIDIA			AWS			Google			Meta			Microsoft		
Generation/ platform	PCB type	Technology; layer count	Generation/ platform	PCB type	Technology; layer count	Generation/ platform	PCB type	Technology; layer count	Generation/ platform	PCB type	Technology; layer count	Generation/ platform	PCB type	Technology; layer count
Hopper	OAM	HDI; 20 (5+10+5)	Trainium 2	OAM	HDI; 22 (3+16+3)	TPU v5	UBB	HLC; 10-20	MTIA-2	UBB	HLC; 20-30	Maia 200	UBB	HLC; 20-30
	UBB	HLC; 28		UBB	HLC; 24									
Blackwell	Bianca	HDI; 22 (5+12+5)	Trainium 3	OAM	HDI; 26 (4+18+4)	TPU v6	UBB	HLC; 20-30	MTIA-3	UBB	HLC; 40+	Maia 300	UBB	HLC; 40+
	Switch board	HDI/HLC; 22		UBB	HLC; 26									
VR200 (Rubin CPX)	Bianca	HDI; 24 (6+12+6)				TPU v7	UBB	HLC; 20-30						
	Switch board	HLC; 32												
	Mid-plane	HLC; 22+22				TPU v8	UBB	HLC; 30+						
Rubin Ultra	Bianca	HDI; 26 (7+12+7)												
	Switch board	HLC; 32												
	Backplane	HLC; 78 (26+26+26) or >100												

Source: BofA Global Research estimates

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Driver #3: Potential M9 CCL bring challenges in drilling

PCB materials are evolving from M6 → M7 → M8 → M9 because signal loss, rather than the GPU itself, is becoming the primary bottleneck in AI systems. As data rates rise from 56G to 112G and now 224G PAM4, traditional PCB materials can no longer preserve signal integrity over long channels.

Beyond the increase in PCB layer count, the transition to M9 materials fundamentally changes the drilling environment. Traditional M6/M7 laminates mainly use standard electronic-grade glass fabric and conventional low-loss resin systems. By contrast, M9 materials introduce Q-glass, ultra-low-loss resin systems, and HVLP4/HVLP5 copper foils to support 224G PAM4 signal transmission.

Q-glass's higher silica content (>99.9% SiO_2) significantly increases abrasive wear during drilling. At the same time, the special resin systems used in M9 materials are more brittle and heat-sensitive, requiring tighter process control over drilling speed, feed rate, and hole-wall quality. As a result, drill bits experience faster edge wear, higher breakage rates, and a shorter use-life than with M7 materials.

Exhibit 12: Comparison of drill bits' useful life in different types of CCL materials
M9 material requires >5x more drill bits compared with M7

	M6	M7	M8	M9
Component	Ordinary electronic cloth + HVLP1 copper foil	1st-generation cloth + HVLP3 copper foil	2nd-generation cloth + HVLP4 copper foil	2nd-generation cloth & Q cloth + HVLP4/5 copper foil + special resin
Typical PCB layer	<20	20-30	30-40	44-78 or higher
Major application	Conventional server, 100G/200G switch, 5G substations	AI server (H100), 400G/800G switch	AI server (GB200/GB300 and above), 800G/1.6T switch	AI server (Rubin and above), 1.6T optical transceiver
Useful life of single drill bit (coated)	2,000	1,000	500-800	100-200

Source: BofA Global Research

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Exhibit 13: Summary of PCB specs across different Nvidia GPU platforms
We expect around 3x higher value from VR200 vs GB200/300

	H100	GB200/GB300	VR200	Rubin Ultra
Value (USD)	**2,500**	**20,000-30,000**	**60,000-80,000**	**>100,000**
OAM				
PCB type	HDI			
Layer	20 (5+10+5)			
Material	M7			
UBB				
PCB type	HLC			
Layer	28			
Material	M7			
CPU board				
PCB type	HLC			
Layer	18			
Material	M6			
Computing tray				
PCB type		HDI	HDI	HDI
Layer		22 (5+12+5)	24 (6+12+6)	26 (7+12+7)
Material		M8 + M4	M8 + M4	M8 + M4
Switch tray				
PCB type		HDI/HLC	HLC	HLC
Layer		22	32	32
Material		M8	M8.5	M8.5 or M9 (Q Glass) or M10 (T or low-Dk)
Midplane				
PCB type			HLC	HLC
Layer			22+22	22+22
Material			M8.5	M8.5 or M9 (Q Glass) or M10 (T or low-Dk)
Backplane (potential)				
PCB type				HLC
Layer				78-layer (26+26+26), or over 100-layer
Material				M9 + Q Glass or M10 + HVLP5

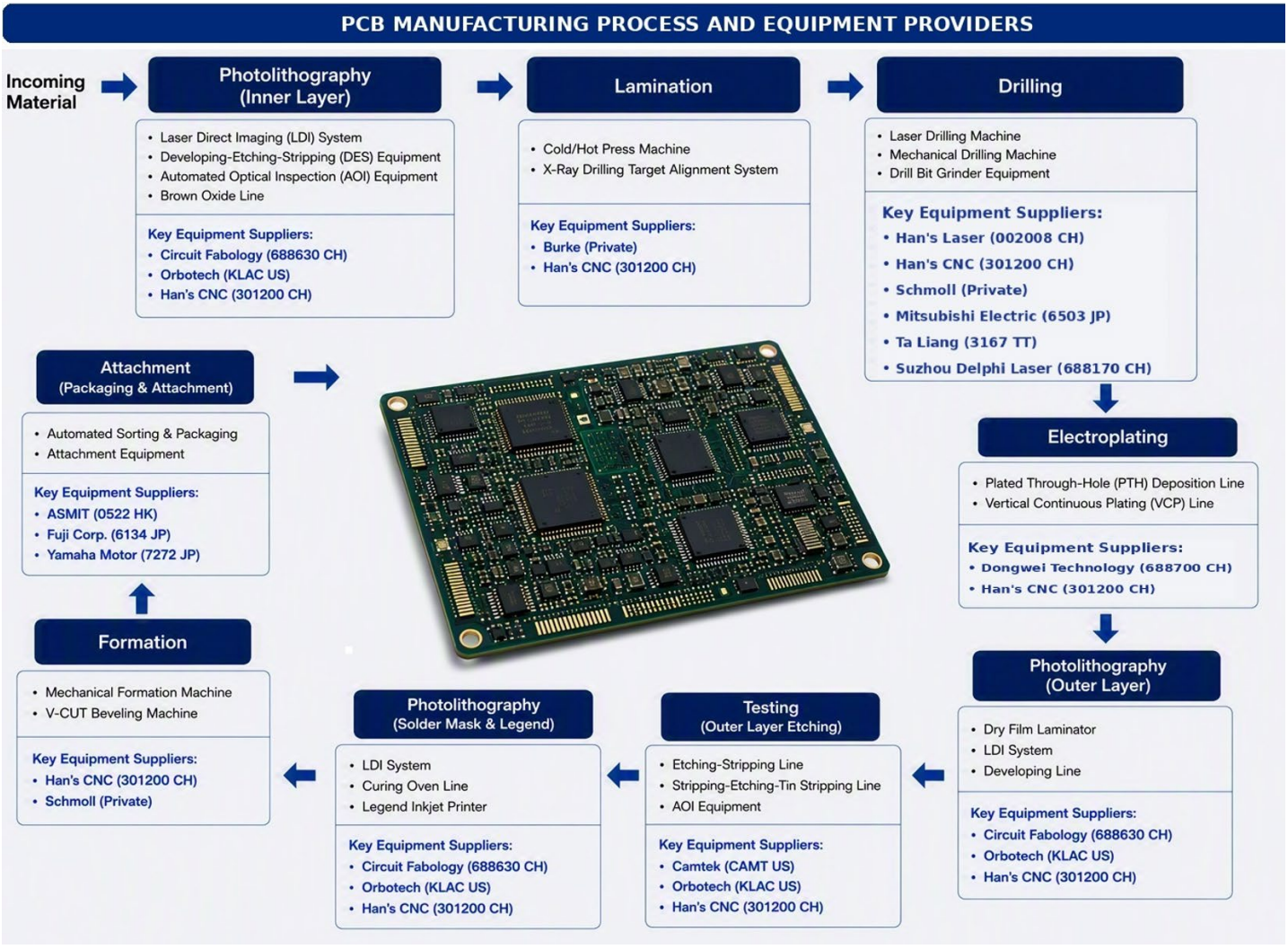
Source: BofA Global Research estimates

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PCB drilling equipment: upside from capex growth & design upgrades

Robust AI development and faster server and chip upgrades are driving demand for PCB equipment. Within drilling equipment (21% of the total PCB equipment market), we expect demand to be supported not only by resilient growth in mechanical drilling (i.e., more HLCs), but also by Chinese OEMs' share gains in laser drilling equipment, underpinned by technological breakthroughs and greater capacity. Indeed, rising HDI board volumes and the migration to M9 materials require more ultra-fast laser drilling equipment. We believe Han's Laser (the parent company of Han's CNC, China's largest PCB equipment manufacturer) would be the major beneficiary among PCB equipment names given its 1) strong position in CCD mechanical drilling equipment; 2) potential upside from ultra-fast laser drilling equipment the potential launch of M9 CCL; and 3) share gains from global peers, supported by high-quality products & sufficient capacity.

Exhibit 14: Manufacturing process of PCB
Drilling is the core process of PCB manufacturing



Source: Han's CNC, BofA Global Research

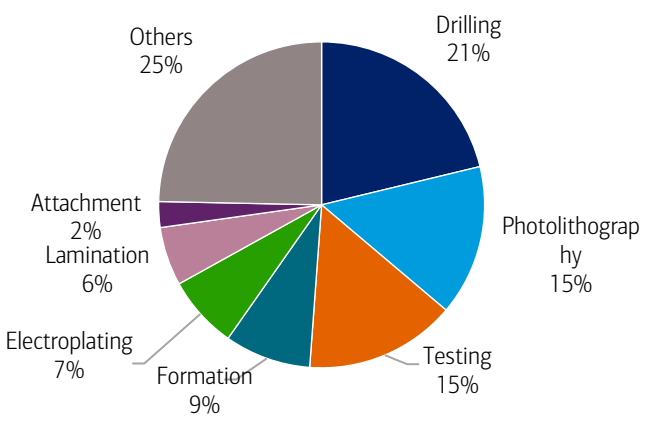
Drilling equipment market: 12% CAGR over 2025-29E

PCB manufacturing requires numerous processes, including photolithography, lamination, drilling, testing, electroplating, formation, and attachment. Drilling equipment represents 21% of the total PCB equipment market, ranking first among major manufacturing processes. We believe the key new opportunities for PCB drilling equipment include 1)

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higher utilization driven by leading PCB manufacturers' proactive capacity expansion plans; 2) upgrades to mechanical drilling equipment with higher unit values (i.e., more widely use of CCD drilling equipment in HLCs); and 3) increased demand for ultra-fast laser drilling equipment as CCL materials upgrade to M9. According to Prismark and CIC, the total PCB drilling equipment market will achieve a 12% CAGR over 2025-29E, reaching US$2.7bn by 2029E, vs. a 6% CAGR over 2020-24.

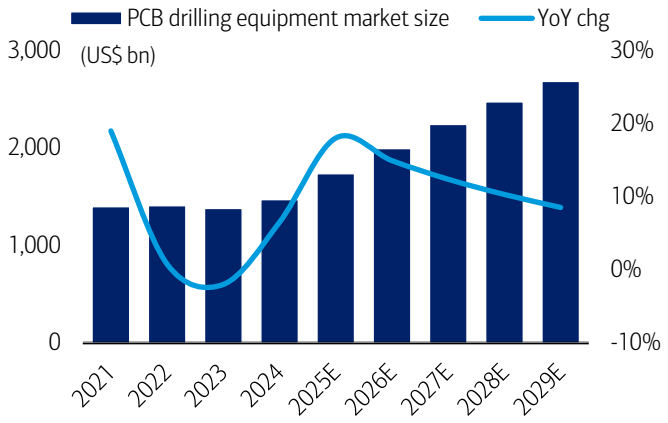
Exhibit 15: Breakdown of PCB equipment market (2025)
Drilling and photolithography represent higher market size



Source: Han's CNC prospectus

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Exhibit 16: Market size and growth rate of PCB drilling equipment
The drilling equipment market will achieve 12% CAGR over 2025-29E



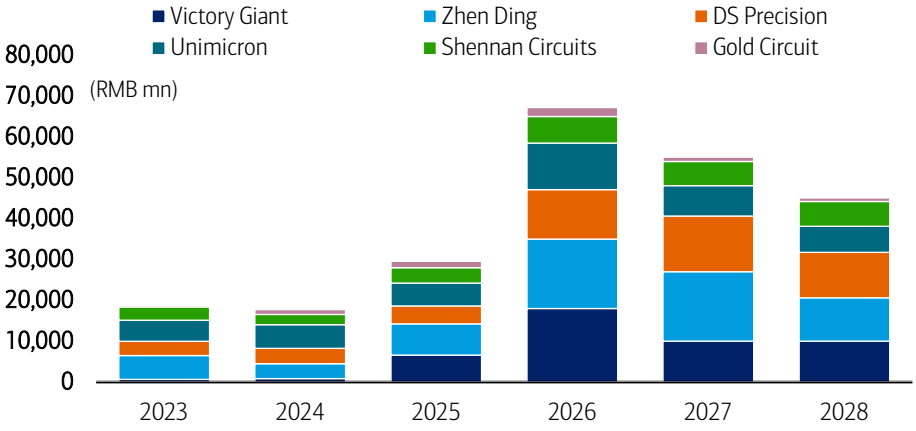
Source: Han's CNC prospectus

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Capacity expansion of PCB manufacturers => rising equipment demand

Leading PCB suppliers in China such as Victory Giant, DS Precision, and Shennan Circuit have turned more aggressive in capex spending since 1H25. This implies more demand for PCB equipment providers. In 2026, the total capex of leading PCB manufacturers in China more than doubled YoY. Looking into 2027-28E, despite some moderation from the peak level, capex of leading PCB manufacturers should remain at a high level.

Exhibit 17: Capex expansion plan of leading PCB manufacturers in China
The capex will maintain at high level over 2026-28E



Source: Company data, BofA Global Research

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Exhibit 18: China suppliers started their aggressive expansion plan especially from 2025, vs Taiwan/US peers
Key PCB suppliers' key capacity expansion plan

Ticker	Company	Announcement time	Investment amount (US$mn)	Location	Land size	Focused PCB type	Expected ramp up time
300476 CH	Victory Giant	Nov-24	195	Thailand		High-layer-count PCBs for servers, switches, and consumer electronics	2026: 750k sqm 2027: 1.5mn sqm
		Mar-25	520	Vietnam	100k sqm	High-end high-layer-count PCBs and high-build-up HDI	Phase I: 2024-2026; Phase II: 2027-2030
		Apr-25	369	China	11k sqm	High-build-up HDI, high-layer-count PCBs and MSAP PCBs	Jun 2025: start production
		Jul-25	250	Thailand		High-layer-count PCBs for servers, switches, and consumer electronics	
002463 CH	WUS	Jan-24	71	China		HDI	To be completed within 3 years
		Oct-24	599	China		High-layer-count HDI laminate boards	1H26: trial production; Phase I: to be completed by 2028; Phase II: to be completed by 2032;
002916 CH	Shennan Circuits	Apr-24	177	Thailand	112k sqm	High-layer-count PCBs and HDI	Aug 2025: trial production
		Sep-24	259	China		HDI and FPC	To be completed by the end of 2025
		Jun-25	n.a.	China		High-end PCBs	2028: to achieve full capacity
603228 CH	Kinwong	Oct-24	279	Thailand	97k sqm	High-build-up HDI and high-layer-count PCBs	1H26: start production
		Aug-25	697	China		High-build-up HDI and high-layer-count PCBs	Mid-2026: start production (the new high-build-up HDI factory)
002384 CH	DS Precision	Apr-24	145	China		High-end FPC	To be completed within 3 years
		Jul-25	1,000	n.a.		High-end PCBs	1H26: ramp-up
600601 CH	Founder	Aug-24	142	Thailand	81k sqm	High-build-up HDI and high-layer-count PCBs	Aug 2025: start production
		11-Jun-25	297	China	80k sqm	HDI for AI and computing power	To be completed within 19 months
001389 CH	Delton	Apr-25	71	China		High-layer-count PCBs	
		May-25	166	Thailand		PCB	2026: groundbreaking 2027: start production
		Aug-25	362	China	25.3k sqm	High-end PCBs	
688183 CH	Shengyi Electronics	Aug-24	170	Thailand	81.3k sqm	PCB	1H25: trial production
		Dec-24	195	China		HDI	Phase I: trial production in 2025; Phase II: trial production in 2027
		Aug-25	265	China		High-layer-count PCBs	Phase I: trial production in 2026; Phase II: trial production in 2027
3037 TT	Unimicron	Jan-24	46	Thailand			
		Sep-24	39	China			
		Oct-24	99	Thailand			
		Dec-24	467	n.a.		Issuance of domestic unsecured bond, partial funding will be used for capacity expansion	
		Jan-25	33	Thailand			
		Oct-25	23	Thailand			
4958 TT	Zhen Ding (include Avary)	Mar-24	98	China		Multi-layer FPC	
		Sep-24	33	Thailand		SLP, thick HDI and RPCB	Phase I: 2H25: start production
		Jan-25	249	Taiwan		Full-process advanced packaging FCBGA mass production site	
		Mar-25	31	Taiwan		IC Substrates and HLC+HDI PCBs	
		Apr-25	257	China		FPC	
		Aug-25	1,114	China		HDI, HLC, and high-end FPCs	
2368 TT	Gold Circuit	Jul-24	36	Thailand		Multi-layer PCB	
		Sep-25	50	Taiwan	13.6k sqm	Multi-layer PCB	
3044 TT	Tripod	May-24	15	Vietnam		PCB	
TTMI US	TTM	Nov-23	100	US	15k sqm	Ultra-HDI PCBs	2026: small volume production
		Apr-24	200	Malaysia	74k sqm	PCB	
		Jul-25	n.a.	US	70k sqm	Advanced PCB	
		Jul-25	n.a.	Malaysia	40k sqm	PCB	

Source: Company data, BofA Global Research

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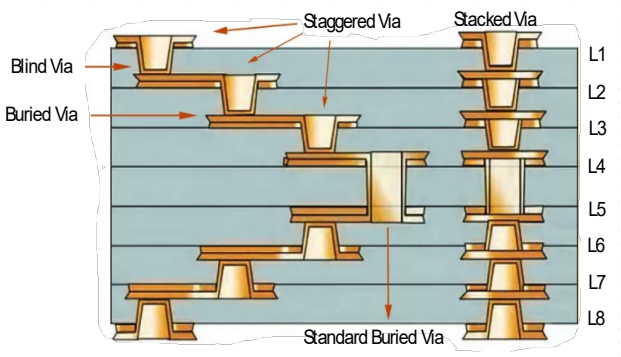
Outline of PCB drilling mechanism

What is PCB drilling? PCB drilling is the manufacturing process of creating holes in a printed circuit board (PCB) to enable: 1) Electrical interconnection between layers (vias); 2) Component mounting (through-hole components); 3) Mechanical assembly (screws, alignment holes, etc.).

There are four major types of PCB drilling methods: conventional mechanical drilling, CCD mechanical drilling, CO_2 laser drilling and Ultra-fast laser drilling.

- **Conventional mechanical drilling** (drilling equipment + drill bits) is the most widely used drilling method. In AI PCB, it is mainly used for through-hole vias to connect the PCB layers within HLC. It is the dominant drilling technology for AI server baseboards and switch boards. Typical hole diameter is 0.1-0.3mm. Major suppliers for conventional mechanical drilling equipment include Schmoll, Han's CNC and Ta Liang.
- **CCD drilling** is a mechanical PCB drilling machine equipped with a CCD vision alignment system. The CCD camera identifies fiducial marks on the PCB and automatically compensates for panel shrinkage, layer misalignment, and registration errors before drilling. It is widely applied in back drill, blind via in HDI, HLC through via etc. Major suppliers for conventional mechanical drilling equipment include Han's CNC.
- **CO_2 laser drilling** is a non-contact PCB manufacturing process that uses a carbon dioxide laser beam to ablate dielectric materials and create extremely small holes (microvias) in multilayer PCBs. It is widely used in HDI (High Density Interconnect) PCBs where conventional mechanical drill bits cannot economically produce very small vias. Major suppliers for CO_2 laser drilling equipment include Mitsubishi and MKS.
- **Ultra-fast laser drilling:** uses extremely short laser pulses, typically in the picosecond (10^{-12} s) or femtosecond (10^{-15} s) range, to remove PCB material with extremely high precision. Unlike mechanical drilling or CO_2 laser drilling, material removal occurs so quickly that there is minimal heat transfer to the surrounding material. This makes it more suitable for new CCL M9 material, which is more sensitive to heat. Major suppliers for ultra-fast laser drilling equipment include Han's CNC and Delphi Laser.

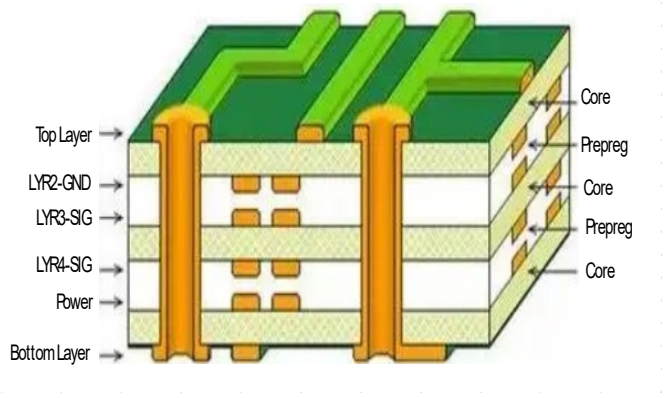
Exhibit 19: Illustration of HDI
HDI adopts stacked/staggered via with build-up process to connect PCB layers



Source: BofA Global Research

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Exhibit 20: Illustration of HLC
HLC uses through-hole vias to connect the PCB layers



Source: BofA Global Research

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Exhibit 21: Summary of major drilling machineries
Ultra-fast laser drilling are more suitable for M8/M9 material

Equipment Type	Drilling mechanism	Typical Hole Diameter	Key Advantages	Key Limitations	PCB materials	Relative Value
Conventional Mechanical Drilling	High-speed cutting using solid carbide drill bits	100–300 μm (typically 150–250 μm)	Lowest cost, suitable for thick PCBs, high productivity	Drill bit wear, difficult to achieve very small holes	M6/M7	★
CCD Mechanical Drilling	CCD vision alignment combined with mechanical drilling	100–300 μm	Higher registration accuracy, suitable for large-format high-layer-count PCBs	Still constrained by the limits of mechanical drilling	M7/M8	★★
CO_2 Laser Drilling	Infrared laser ablation of dielectric layers	50–125 μm (typically 75–100 μm)	High-efficiency HDI drilling, relatively low cost	Cannot directly process copper layers	M8/M9	★★★★
Ultra-fast Laser Drilling	Cold processing using ultra-short laser pulses	10–50 μm	Extremely high precision, minimal heat-affected zone, capable of processing copper and ABF substrates	High equipment cost, relatively low throughput	M8/M9, glass core	★★★★★

Source: BofA Global Research

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More HLC & blind holes => more CCD drilling equipment

Surging demand for computing power and efficiency has driven continuous AI server upgrades. The higher density of GPUs within a rack—mainly 72 currently vs. <4 before the AI boom—requires more HLCs, which can better integrate multiple GPUs, CPUs, NVLink, and other components on a single board. For example, switch-board layer counts rise from 22 in GB200/GB300 to 32 in Vera Rubin. Rising HLC demand requires more conventional mechanical drilling machinery, which is suitable for through-holes. Meanwhile, greater use of HDI boards also requires more CCD mechanical drilling equipment, which are able to do blind holes.

Upgrade of CCL material => ultra-fast laser drilling

The new Nvidia Rubin Ultra server is expected to use M9 CCL materials (likely), which offer faster transmission speeds and lower signal loss. Compared with M8, M9 uses harder electronic-grade glass-fabric materials and high-performance foils that are suitable for ultra-fast laser drilling, which has a much higher unit value than CO_2 drilling equipment and mechanical drilling equipment. Meanwhile, we see more opportunities for Chinese PCB equipment suppliers, such as Han's Laser, given their strength in ultrafast laser drilling. This should enable Han's Laser to gain share from global peers who have stronger positions in CO_2 laser drilling equipment, such as Mitsubishi in Japan.

Major PCB equipment suppliers in China

Drilling equipment

Han's CNC (301200 CH): Han's CNC is China's largest AI PCB equipment manufacturer, with products covering almost all PCB manufacturing processes. Its key products span PCB drilling equipment, from conventional mechanical drilling to laser drilling. The company has a leading position in CCD drilling among Chinese suppliers and has also made solid progress in ultrafast laser drilling equipment, which is better suited to PCBs using M9 materials.

Schmoll Maschinen (private): A privately held German company and one of the world's leading suppliers of high-precision PCB drilling, routing, and imaging equipment, particularly for HDI and IC substrate manufacturing. The company is best known for its mechanical drilling machines, which are widely used to produce HLC PCB, high-density multilayer PCBs and advanced server boards.

Mitsubishi (6503 JP): Mitsubishi Electric is one of the world's leading suppliers of PCB and package substrate laser drilling equipment. The company has developed a comprehensive portfolio of CO_2 laser drilling and UV laser drilling systems, serving

applications ranging from HDI PCBs to high-end semiconductor package substrates. Key components, including laser oscillators, galvano scanners and control systems, are developed in-house, enabling Mitsubishi to achieve high processing accuracy, productivity and reliability.

Ta Liang Technology (3167 TT): is a leading PCB equipment manufacturer in Taiwan. The company was established in 1980, and engaged in manufacturing Semiconductor Inspection, PCB routing machine, PCB drilling machine, Resin Panel cutter, CNC engraving & milling machine , and Glass Panel processing machine.

Suzhou Delphi Laser (688170 CH): Delphi Laser is a leading manufacturer of precision laser equipment serving the PCB, semiconductor, advanced packaging, and other end-markets. In the PCB sector, the company focuses mainly on ultrafast laser drilling systems for high-precision microvia processing. Its equipment is used to drill micro blind vias, HDI structures, IC substrates, and ABF package substrates, where traditional mechanical and CO_2 drilling face limitations. Delphi Laser's PCB exposure is concentrated in the high-end substrate and advanced packaging segment rather than conventional server motherboard drilling.

MKS Inc. (NASDAQ: MKSI): The owner of the ESI laser drilling platform, a leading supplier of CO_2 laser drilling systems for HDI PCB and IC substrate manufacturing.

Lithography equipment

Circuit Fabology Microelectronics Equipment Co., Ltd. (CFMEE) (688630 CH): A leading supplier of direct imaging and direct-write lithography equipment for the PCB and semiconductor industries. In the PCB market, its flagship products are Laser Direct Imaging (LDI) systems, which expose circuit patterns and solder-mask layers more accurately than traditional photomask-based processes. The company also provides automation solutions for PCB production lines spanning circuit, solder-mask, and substrate manufacturing. Its PCB equipment is increasingly relevant for high-layer-count (HLC) server boards, HDI boards, IC substrates, and AI-related computing and networking hardware, where finer line widths and tighter alignment tolerances are required.

Orbotech (private): One of the world's leading suppliers of PCB manufacturing and inspection equipment. KLA Corporation acquired the company in 2019. In the PCB industry, Orbotech is best known for its Laser Direct Imaging (LDI) systems, which enable high-precision patterning for advanced PCBs, HDI boards, and IC substrates with increasingly fine line widths and tighter registration requirements. The company is also a leading supplier of Automated Optical Inspection (AOI) systems used throughout PCB fabrication to detect defects, improve yield, and support mass production of complex multilayer boards.

Electroplating equipment

Dongwei Group (688700 CH): A manufacturer of high-end electroplating equipment and surface-treatment systems serving the PCB, IC substrate, and new energy industries. In the PCB sector, the company is best known for its Vertical Continuous Plating (VCP) systems and Plated Through-Hole (PTH) deposition lines, which are core process equipment in multilayer PCB manufacturing. Its equipment is widely used to produce high-layer-count (HLC) server PCBs, HDI boards, networking PCBs, and IC substrates, where uniform copper deposition and process stability are critical.

Testing

Camtek Ltd. (NASDAQ: CAMT): An Israeli provider of inspection and metrology equipment for the semiconductor and PCB industries. The company is best known for

optical inspection technologies used in high-precision electronics manufacturing. In the PCB sector, Camtek specializes in Automated Optical Inspection (AOI) systems that identify production defects, including issues involving traces, pads, registration, shorts, and opens. Its equipment is widely deployed in manufacturing HDI PCBs, high-layer-count (HLC) server boards, advanced packaging substrates, and IC substrates, where increasing circuit density requires greater inspection accuracy.

Lamination

Burkle (private): A German manufacturer of lamination and pressing equipment, widely recognized as one of the world's leading suppliers of PCB lamination systems. In the PCB industry, Burkle's core products include hot presses, cold presses, vacuum presses, and fully automated PCB lamination lines used to bond inner-layer circuits, prepregs, and copper foils into multilayer PCBs. Its equipment is widely used to produce high-layer-count (HLC) PCBs, HDI boards, server PCBs, networking boards, and advanced substrates, where tight control of temperature, pressure, and panel flatness is critical.

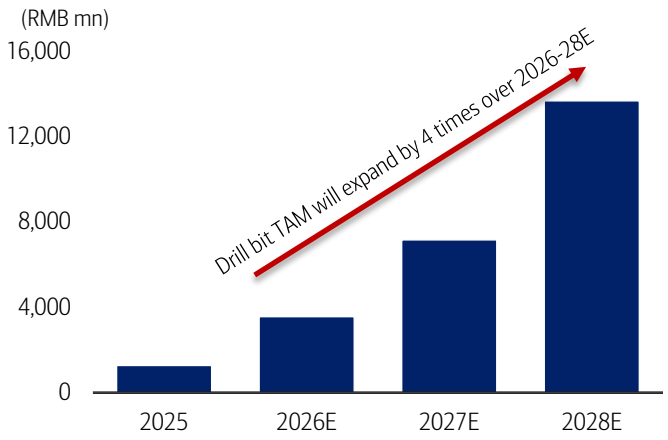
PCB drill bit: exponential demand growth supported by AI trend

What are PCB drill bits? PCB drill bits are the precision cutting tools used to create holes in a printed circuit board (PCB). These holes can be through vias, blind vias, buried vias etc. They are normally installed in mechanical PCB drilling equipment. It is mainly made of Tungsten carbide.

PCB drill bit market to achieve 96% CAGR over 2026-28E

Compared with PCB equipment, which is inherently more cyclical, PCB drill bits benefit from more sustainable demand driven by continued PCB shipment growth and design upgrades. This could provide a long growth runway for PCB drill bits. We estimate the AIPCB drill bit market size (NV related) would deliver a 96% CAGR over 2026-28E and reach RMB14bn by 2028E. This would be mainly driven by 1) surging AI rack volume (i.e., rack volume likely double in 2026E, followed by another c.50% growth in 2027E); 2) introduction of 44 layers compute tray midplane in Vera Rubin; 3) rising adoption of HDI & HLC, driving higher requirement for drill bits (i.e., higher aspect ratio, more coated drill bit); and 4) potential rollout of backplane and M9 material in Rubin Ultra. Notably, the potential transition to M9 CCL could lead to c.5x demand growth for drill bits (compared to M7).

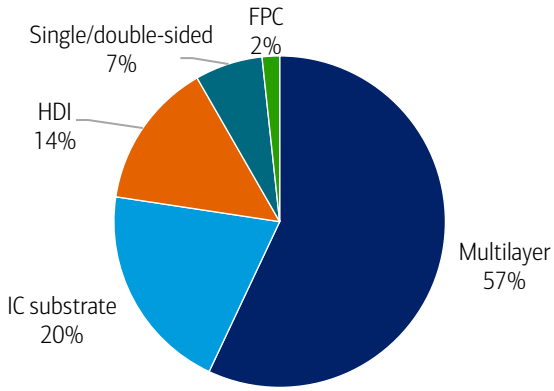
Exhibit 22: Market size of AI PCB drill bit (NV related)
We estimate total market size to grow by 96% CAGR over 2026-28E



Source: BofA Global Research Estimates

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Exhibit 23: End-market of PCB drill bit (2025)
Multilayer PCB/IC substrate/HDI accounted for 57%/20%/14%



Source: Prismark, Frost & Sullivan

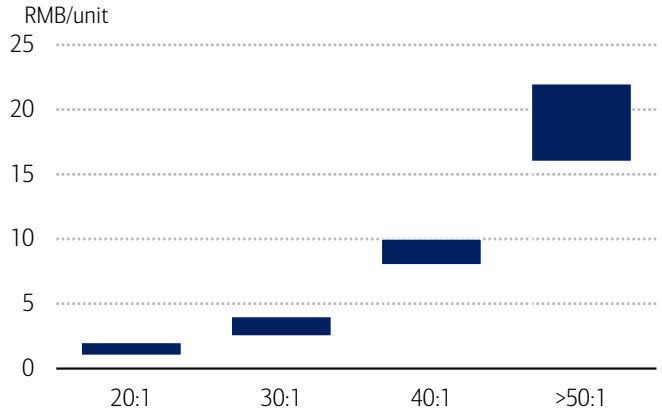
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Rising ASP with higher aspect ratio and material upgrade

Higher aspect ratio supports ASP

The trend towards HDI and HLC has increased PCB thickness while reducing hole diameters, which drives more demand for high-aspect-ratio drill bits. For example, the drill bits used for Rubin/Rubin Ultra AI servers can reach an aspect ratio of up to 50:1, much higher than that of a conventional drill bit (<20:1). The ASP of a high-aspect-ratio drill bit is much higher than that of an ordinary drill bit, given the use of high-precision cemented carbide, sophisticated coating technologies and strict precision and consistency control in the manufacturing process. Currently, the ASP of >50:1 aspect ratio drill bit is c.RMB20/unit, >10x more of a conventional drill bit (RMB1-2/unit). Looking ahead, along with the adoption of more high aspect-ratio drill bits, the blended ASP and gross margin for leading drill bit manufacturers will improve significantly. For example, Dtech's blended ASP for drill bit increased by 49%/36% YoY in 1Q26/2Q26 with its gross margin improving 15.2ppt/17.6ppt YoY to 53.3%/57.8% in 1Q26/2Q26, well indicating the rising demand for high aspect-ratio PCB drill bits.

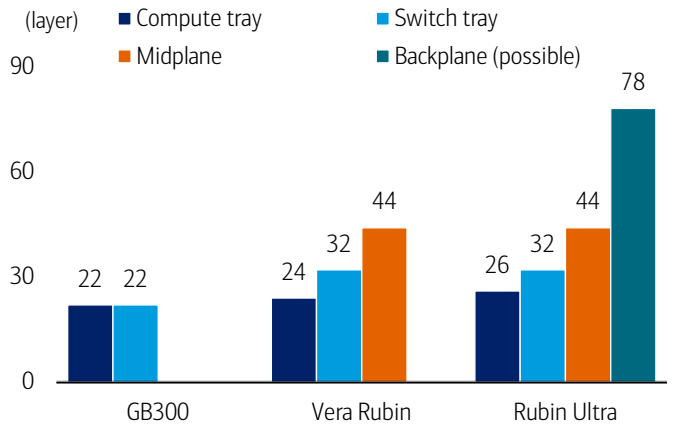
Exhibit 24: Drill bit ASPs by aspect ratio
ASP of a >50:1 drill bit is >10x more than that of a conventional drill bit



Source: BofA Global Research

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Exhibit 25: Summary of layers across different server rack
The upgrade of GPU require for more HLC



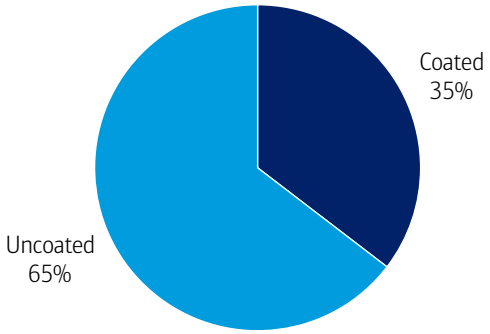
Source: BofA Global Research; Note: Backplane still has uncertainty in time of launch

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Rising penetration of coated drill bit further boosts unit value

Coated drill bits with coating materials such as TiCN (Titanium CarboNitride), CVD diamond, DLC (diamond-like Carbon), and ta-C (tetrahedral amorphous Carbon) can significantly enhance the hardness of drill bits and reduce friction loss, offering a longer service life compared with uncoated drill bits. As such, the ASP of a coated drill bit is much higher than that of an uncoated drill bit. For example, the ASP of a CVD diamond-coated drill bit is usually 3-10x more than that of an ordinary uncoated drill bit. In 2025, coated drill bits accounted for 35% global market share (in terms of sales revenue. We expect the penetration of coated drill bit to continue rising in the coming few years thanks to its superior performance in PCB manufacturing, which should further boost the unit value of drill bit.

Exhibit 26: Market shares of coated vs. uncoated drill bits (2025)
Coated drill bits accounted for 35% market share in 2025



Source: Frost & Sullivan

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Exhibit 29: Dtech's CVD diamond-coated drill bits
Coated drill bits offer longer service life



Source: Dtech

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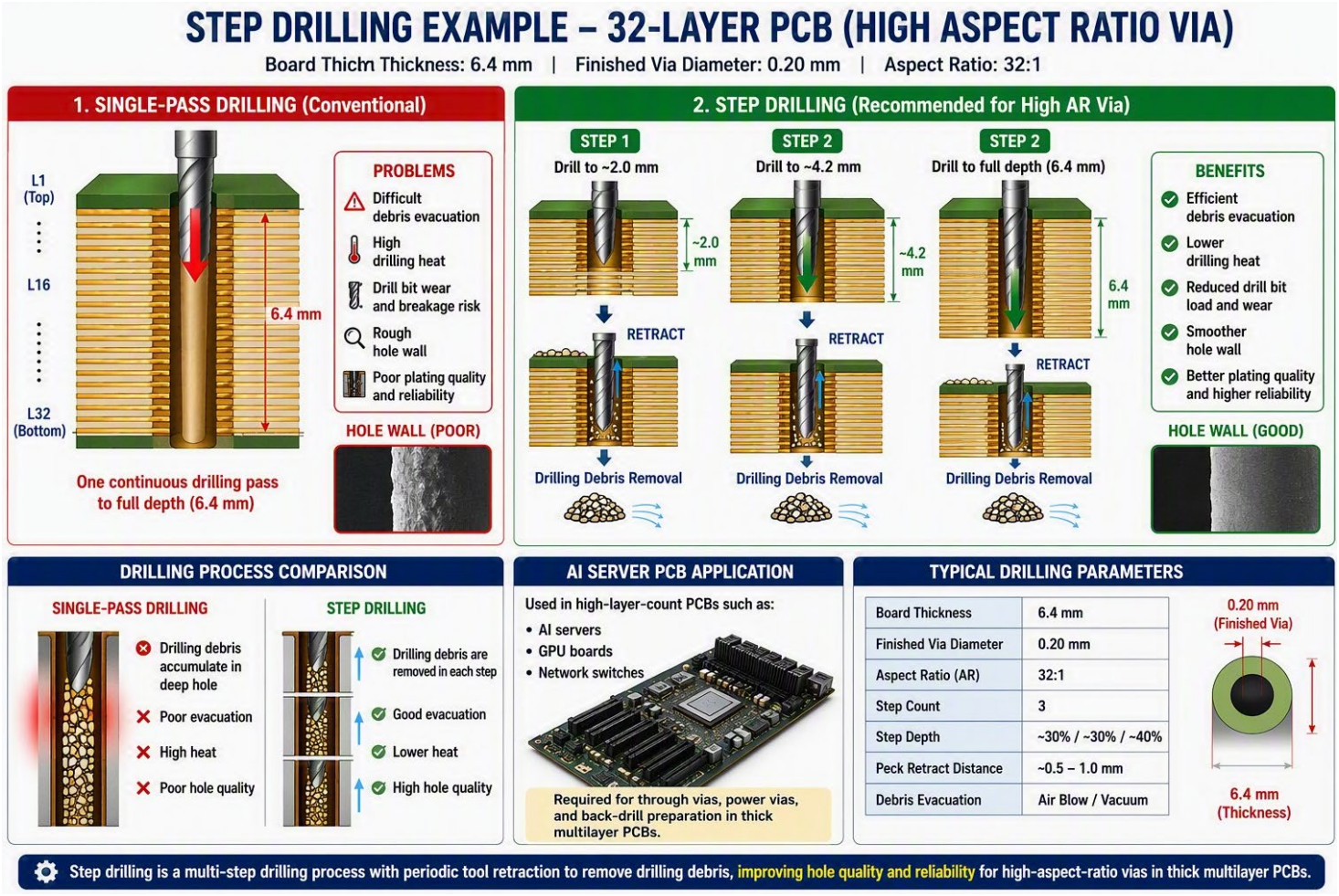
HLC require step-drilling=> surging demand for drill bits

We believe the rising penetration level as well as layer upgrade for HLC translate into more demand for step-drilling, given the rising thickness level (i.e., switch tray mainboard evolves to 32 layers for Vera Rubin & Rubin Ultra vs. 22 layers for GB300). The demand will surge significantly if backplane is introduced for Rubin Ultra, given its ultra thickness level of >70 layers. Step-drilling is a drilling technique used for thick multilayer boards and high aspect-ratio vias, where the drill bit does not penetrate the entire board thickness in a single pass. For example, if the thickness level of a PCB

is >6mm, step drilling will firstly use 2mm long drill bits, then switch to a >4mm drill bits and eventually use >6mm drill bits to complete it. Compared to single-pass drilling, step drilling has lower drilling hit and smoother hole wall, and thus, ensures better quality. By adopting step-drilling, the consumption volume of drill bit surges as it require for more than one type of bits in drilling for one single hole.

What is step drilling? Step-drilling is a drilling technique used for thick multilayer boards and high aspect-ratio vias, where the drill bit does not penetrate the entire board thickness in a single pass. Instead, the drill advances in multiple controlled depth increments until the final hole depth is reached

Exhibit 30: Illustration for procedure of step-drilling
Step-drilling is more suitable for HLCs



Source: BofA Global Research

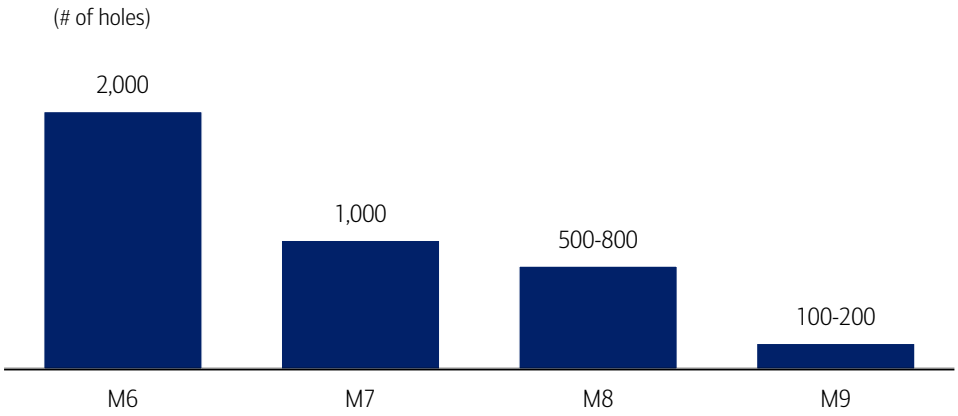
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Potential migration to M9 material=>more usage volume

We also see rising demand for drill bits with the upgrade of CCL materials within PCB. With the migration from M7/M8 to M9 materials, the adoption of harder electronic-grade glass-fabric materials and high-performance copper foil has significantly increased the breakage rate of drill bits. Notably, the Q cloth used in M9 materials (to be adopted in Rubin/Rubin Ultra AI servers from 2H26 onwards) has a much higher SiO_2 content (>99.9%). As such, the usable life of coated drill bits drops sharply to only 100–

200 holes for M9 CCL, from 500-800 holes for M8 and c.1,000 holes for M7. This translates into c.5x demand for drill bits in the next-generation AI servers, vs. the GB200/GB300 era.

Exhibit 29: Usable life of coated drill bits drops sharply to only 100-200 holes for M9 CCL
Number of holes each drill bit produces by different types of materials



Source: BofA Global Research

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Major PCB drill bits suppliers in China

Dtech (301377 CH/1377 HK) is the largest manufacturer of PCB drill bits globally. It held 29.2% global market share in PCB drill bits in 2025, ranking No. 1 globally. Dtech supplies drill bits to >70 of the global top-100 PCB manufacturers, and 9 of the global top-10 PCB manufacturers. Its key customers include Victory Giant, Shennan Circuits, TTM, and Kinwong.

Jinzhou (a subsidiary of China Tungsten) is the world's second largest manufacturer of PCB drill bits, with 21% global market share in 2025. Jinzhou has a higher market share in high-end products. It is now capable of making PCB drill bits with up to 60:1 aspect ratio, and has launched 240:1 products. In 2025, the high-end products (high-aspect-ratio, coated, ultra-small-diameter) accounted for >50% of its sales. Jinzhou has announced four rounds of capacity expansion over the past year, with a total capacity addition of c.40mn units/month. This could take its total production capacity to c.140mn units/month by end-2026.

Topoint (8021 TT) ranked No. 3 in global PCB drill bit shipment in 2025. Topoint's products are mainly sold in Mainland China (58% in 2025) and Taiwan (37%). Topoint's high-end coated drill bits contributed 52% of total shipments in 4Q25. Topoint had 32mn units/month production capacity by end-2025. Its capacity has increased to 35mn units/month in 1Q26 (vs. 31mn units/month in 2025).

Union Tool (6278 JP) ranked No. 4 in global PCB drill bit shipment in 2025. Union Tool mainly focuses on high-end products, with technology leadership in <0.025mm ultra-small-diameter drill bits and specialized micro-drills for IC substrates. As such, it has a much higher ASP than its peer companies. Union Tool's production capacity stood at around 35 million units/month by end-2025, we estimate. It is now expanding production capacity at an "unprecedented scale and speed" to meet the rising demand from AI PCB

Up-shine (301362 CH): is a Chinese provider of LED lighting products and smart lighting solutions for commercial, industrial, educational, and horticultural applications. More recently, the company has attracted investor attention through its expansion into the PCB drill bit industry via acquisitions, providing exposure to the AI server and PCB manufacturing supply chain.

Exhibit 32: Valuation summary table for PCB equipment and drilling bits
Dtech-H is trading at 29x 2027E P/E

Company	Stock code	Currency	Share price	Mkt cap	P/E			P/B		ROE		Dividend yield		2026-28 profit CAGR	PEG	% of revenue from drill bit
				US$ bn	2026E	2027E	2028E	2026E	2027E	2026E	2027E	2026E	2027E			
Dtech-H	**1377 HK**	**HKD**	277.0	25.2	54.7	29.0	16.9	12.7	10.0	31%	39%	1.2%	2.4%	**90%**	**0.3**	**81%**
Dtech-A	**301377 CH**	**RMB**	399.2	25.2	100.7	48.0	28.0	21.0	16.6	31%	39%	0.8%	1.7%	**90%**	**0.5**	**81%**
Global drill bit peers																
Topoint	8021 TT	TWD	450.0	2.0	49.8	26.4	13.0	9.3	10.6	16%	42%	1.3%	3.3%	93%	0.3	98%
Union Tool	6278 JP	JPY	12,840.0	1.6	19.6	15.7	12.7	2.3	2.1	13%	NA	1.2%	1.4%	24%	0.7	93%
Average					**36.2**	**21.6**	**12.9**	**6.2**	**6.8**	**14%**	**23%**	**1.2%**	**2.4%**	**62%**	**0.5**	**96%**
Domestic drill bit/cutting tool peers																
China Tungsten	000657 CH	RMB	60.9	21.0	32.1	26.3	20.8	10.9	8.5	35%	34%	1.1%	1.5%	24%	1.1	16%
Shareate	688257 CH	RMB	54.7	2.8	27.8	22.7	16.6	5.1	3.8	29%	27%	NA	NA	22%	1.0	c.10%
Up-shine Lighting	301362 CH	RMB	115.4	2.5	49.7	25.1	19.9	6.0	5.7	12%	23%	NA	NA	58%	0.4	LSD
OKE	688308 CH	RMB	86.1	2.0	23.2	23.9	17.1	4.5	4.0	20%	17%	1.1%	1.2%	16%	1.4	LSD
Average					**32.6**	**25.7**	**20.0**	**9.4**	**7.5**	**31%**	**31%**	**0.9%**	**1.2%**	**26%**	**1.1**	**c.10%**
PCB equipment peers																
Han's CNC-A	301200 CH	RMB	258.9	18.7	63.6	40.0	29.1	13.5	10.7	25%	30%	0.6%	0.9%	48%	0.8	-
Circuit Fabology	688630 CH	RMB	431.2	8.9	100.3	61.2	43.4	22.1	17.5	22%	30%	0.3%	0.4%	54%	1.1	-
Dongwei	688700 CH	RMB	64.5	2.9	57.6	32.9	21.9	9.2	7.6	16%	24%	0.6%	1.0%	62%	0.5	-
GKG Precision	301338 CH	RMB	100.5	2.1	39.9	26.3	19.7	7.8	6.4	20%	24%	0.8%	1.2%	42%	0.6	-
Suzhou Delphi Laser	688170 CH	RMB	71.4	1.1	98.4	56.2	35.1	5.5	5.1	0%	0%	0.0%	0.0%	68%	0.8	-
Average					**72.5**	**44.7**	**31.9**	**14.8**	**11.7**	**22%**	**28%**	**0.5%**	**0.8%**	**51%**	**0.9**	**-**

Source: Bloomberg, Company data, BofA Global Research; price date: 17 September 2026; note: earnings forecasts for non-covered companies are based on BBG consensus

BofA GLOBAL RESEARCH

Exhibit 33: Abbreviation table
Abbreviations used in the report

Abbreviation	Full name / meaning	Abbreviation	Full name / meaning
3D	Three-dimensional	HLC	High-layer-count PCB
400G / 800G / 1.6T	Network / optical transmission-rate classes	HVLP	Hyper very low profile
56G / 112G / 224G	Signal data-rate generations	IC	Integrated circuit
5G	Fifth-generation mobile communications	KLA	KLA Corporation
ABF	Ajinomoto build-up film	LDI	Laser direct imaging
AI	Artificial intelligence	M6 / M7 / M8 / M8.5 / M9 / M10	Generations / performance grades of CCL materials
AIPCB / AI PCB	Artificial-intelligence printed circuit board	mn	Million
AOI	Automated optical inspection	MSAP	Modified semi-additive process
ASIC	Application-specific integrated circuit	NIC	Network interface card
ASP	Average selling price	NV	NVIDIA
AWS	Amazon Web Services	NVDA	NVIDIA
BBU	Battery backup unit	NVL	NVLink rack-scale system designation
bn	Billion	OAM	Open accelerator module
c.	Circa / approximately	OEM	Original equipment manufacturer
CAGR	Compound annual growth rate	PAM4	Four-level pulse-amplitude modulation
capex	Capital expenditure	PCB	Printed circuit board
CCD	Camera-controlled drilling	PCD	Polycrystalline diamond
CCL	Copper-clad laminate	PO	Price objective
CFMEE	Circuit Fabology Microelectronics Equipment Co., Ltd.	ppt	Percentage point
CIC	China Insights Consultancy	PSU	Power supply unit
CNC	Computer numerical control	PTH	Plated through hole
CoWoP	Chip-on-Wafer-on-PCB	Q-glass	Quartz-glass / high-silica glass fabric
CO_2	Carbon dioxide	RMB	Renminbi
CPO	Co-packaged optics	RPCB	Rigid printed circuit board
CPU	Central processing unit	RU	Rubin Ultra
CPX	Context processing accelerator	SiO_2	Silicon dioxide
CVD	Chemical vapor deposition	SLP	Substrate-like PCB
DES	Developing–etching–stripping	sqm	Square metre
DLC	Diamond-like carbon	ta-C	Tetrahedral amorphous carbon
DPU	Data processing unit	TAM	Total addressable market
E / F	Estimate / forecast	TiCN	Titanium carbonitride
ESI	Electro Scientific Industries	TPU	Tensor processing unit
FCBGA	Flip-chip ball grid array	UBB	Universal baseboard
FINRA	Financial Industry Regulatory Authority	US$ / USD	United States dollar
FPC	Flexible printed circuit	UV	Ultraviolet
GB	Grace Blackwell	VCP	Vertical continuous plating
GPU	Graphics processing unit	VR / VR200	Vera Rubin / Vera Rubin 200
HDI	High-density interconnect	YoY	Year over year

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 34: Company mentioned
Company mentioned in the report

Name used in report	Company / entity name	Stock code or status
Dtech	Guangdong Dtech Technology Co., Ltd.	301377 CH / 1377 HK
Han's Laser	Han's Laser Technology Industry Group Co., Ltd.	002008 CH
Han's CNC	Shenzhen Han's CNC Technology Co., Ltd.	301200 CH
Victory Giant	Victory Giant Technology	300476 CH
WUS	WUS Printed Circuit	002463 CH
Shennan Circuits	Shennan Circuits Co., Ltd.	002916 CH
Kinwong	Kinwong Electronic	603228 CH
DS Precision	Dongshan Precision / DS Precision	002384 CH
Founder	Founder Technology	600601 CH
Delton	Delton Technology	001389 CH
Shengyi Electronics	Shengyi Electronics	688183 CH
Unimicron	Unimicron Technology	3037 TT
Zhen Ding	Zhen Ding Technology	4958 TT
Avary	Avary Holding	Included under Zhen Ding
Gold Circuit	Gold Circuit Electronics	2368 TT
Tripod	Tripod Technology	3044 TT
TTM	TTM Technologies	TTMI US
Dtech / DTECH	Guangdong Dtech Technology	301377 CH / 1377 HK
Jinzhou	Jinzhou Precision / subsidiary of China Tungsten	Private subsidiary
China Tungsten	China Tungsten and Hightech Materials	000657 CH
Topoint	Topoint Technology	8021 TT
Union Tool	Union Tool Co., Ltd.	6278 JP
Shareate	Shareate Tools	688257 CH
Up-shine	Up-shine Lighting	301362 CH
Schmoll Maschinen	Schmoll Maschinen	Private company
Mitsubishi Electric	Mitsubishi Electric Corporation	6503 JP
Ta Liang Technology	Ta Liang Technology	3167 TT
Suzhou Delphi Laser	Suzhou Delphi Laser	688170 CH
MKS Instruments	MKS Instruments, Inc.	MKSI US / NASDAQ: MKSI
ESI	Electro Scientific Industries	Owned by MKS
Mitsubishi Heavy Industries	Mitsubishi Heavy Industries	7011 JP
Hitachi High-Tech	Hitachi High-Tech	8036 JP
Circuit Fabology / CFMEE	Circuit Fabology Microelectronics Equipment Co., Ltd.	688630 CH
Orbotech	Orbotech	Private
KLA	KLA Corporation	KLAC US
Dongwei Group	Dongwei Technology	688700 CH
Camtek	Camtek Ltd.	CAMT US / NASDAQ: CAMT
Burkle	Robert Bürkle GmbH	Private company
ASMIT	ASMPT	0522 HK
Fuji Corp.	Fuji Corporation	6134 JP
Yamaha Motor	Yamaha Motor Co., Ltd.	7272 JP
NVIDIA	NVIDIA Corporation	NVDA US
Amazon / AWS	Amazon.com, Inc. / Amazon Web Services	AMZN US
Google	Alphabet / Google	GOOGL US
Meta	Meta Platforms	META US
Microsoft	Microsoft Corporation	MSFT US
Apple	Apple Inc.	AAPL US
Prismark	Prismark Partners	Private company
CIC	China Insights Consultancy	Private company
Frost & Sullivan	Frost & Sullivan	Private company

Source: BofA Global Research

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Price objective basis & risk

Dtech Technology (XDTXF)
Our PO for Dtech A is based on 35% premium to Dtech H, in line with its historical average level.
Our PO of HK$430 is derived from the average of DCF and P/E valuation methodologies. We believe DCF is a suitable valuation methodology as it better captures the company's net profit, working capital management, capex, and cash-flow generation. On the other hand, we also believe P/E is another suitable methodology as it captures the sustained earnings growth we anticipate the company will achieve.

DCF valuation: we derive a fair value of HK$430 from our DCF calculation, with FCF perpetuity growth assumption of 3%. Our WACC of 13.2% is based on 13.3% total cost of equity (i.e., risk-free rate of 3.5%, expected market return of 12% and 1.15x equity beta) and an after-tax cost of debt of 2.6%.

P/E valuation: we assign a target P/E of 45x to its 2027E EPS and derive a P/E-based fair value of HK$430. Our target P/E reflects a PEG of 0.5x, given the company's estimated earnings CAGR of 90% over 2026-28.

Risks: (1) Slower-than-expected AI capex, (2) Slower-than-expected spec upgrade of AI PCB, (3) Market competition in PCB drill bit, and (4) Fluctuation of raw material prices & availability of high-end tungsten steel

Dtech Technology (XNISF)
Our PO of HK$430 is derived from the average of DCF and P/E valuation methodologies. We believe DCF is a suitable valuation methodology as it better captures the company's net profit, working capital management, capex, and cash-flow generation. On the other hand, we also believe P/E is another suitable methodology as it captures the sustained earnings growth we anticipate the company will achieve.

DCF valuation: we derive a fair value of HK$430 from our DCF calculation, with FCF perpetuity growth assumption of 3%. Our WACC of 13.2% is based on 13.3% total cost of equity (i.e., risk-free rate of 3.5%, expected market return of 12% and 1.15x equity beta) and an after-tax cost of debt of 2.6%.

P/E valuation: we assign a target P/E of 45x to its 2027E EPS and derive a P/E-based fair value of HK$430. Our target P/E reflects a PEG of 0.5x, given the company's estimated earnings CAGR of 90% over 2026-28.

Risks: (1) Slower-than-expected AI capex, (2) Slower-than-expected spec upgrade of AI PCB, (3) Market competition in PCB drill bit, and (4) Fluctuation of raw material prices & availability of high-end tungsten steel

Han's Laser (XHQTF)
Our new PO of RMB185 is based on the average of DCF-derived and P/E-based valuations.

(1) DCF-based fair value: A new fair value of RMB175 is derived from our DCF calculation, with assumptions of 2% FCF perpetuity growth rate and 12.4% WACC.

(2) P/E-based fair value: We derive a new fair value of RMB195 on higher earnings estimates. We apply target P/E of 50x over 2027E EPS, close to 2SD above its 10-year historical average level to reflect the Apple supply chain upcycle and growth rate for the

PCB segment.

Downside risks: 1) A slowdown in demand growth in consumer electronic products, 2) slower-than-expected progress in upgrade of cell phone manufacturing techniques, 3) lower-than-expected market share in 3D print equipment, 4) slower growth rate in PCB segment, 5) lower margin level and 5) intensified competition from new entrants, 6) slower progress in ultra-fast laser drilling equipment.

Analyst Certification

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

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APR - Industrials Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
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	AirTAC	ATCXF	1590 TT	Ming Hsun Lee, CFA
	Anhui Yingliu	XANHF	603308 CH	Fiona Liang
	Ayala Corporation	AYYLF	AC PM	Russ Toribio
	Centre Testing International	XCTEF	300012 CH	Ming Hsun Lee, CFA
	Daifuku	DAIUF	6383 JP	Kenjin Hotta
	Daikin Industries	DKILF	6367 JP	Kenjin Hotta
	Daikin Industries	DKILY	DKILY US	Kenjin Hotta
	Dtech Technology	XDTXF	301377 CH	Summer Wang, CFA
	Dtech Technology	XNISF	1377 HK	Summer Wang, CFA
	Envicool	XPTIF	002837 CH	Yibing Xia
	GeekPlus	BGTCF	2590 HK	Summer Wang, CFA
	Goldwind	XJNGF	2208 HK	Gary Tsang
	GTCAP	GTHOF	GTCAP PM	Russ Toribio
	Guangdong Songfa	XDZGF	603268 CH	Amy Han
	Guizhou Aviation	XNSZF	688239 CH	Fiona Liang
	Hainan Jinpan	XKZNF	688676 CH	Matty Zhao
	Hangcha Group	XXCLF	603298 CH	Summer Wang, CFA
	Hangzhou Great Star	XNZLF	002444 CH	Fiona Liang
	Hankuk Carbon	HKUCF	017960 KS	KJ Hwang
	Han's Laser	XHQTF	002008 CH	Summer Wang, CFA
	Hanwha Aerospace	SSASF	012450 KS	KJ Hwang
	HD Hyundai Electric	XPELF	267260 KS	Sun Jung Lee
	HD Hyundai Heavy Industries	XHZXF	329180 KS	KJ Hwang
	Himile	XMSVF	002595 CH	Fiona Liang
	Hiwin Technologies	HITEF	2049 TT	Ming Hsun Lee, CFA
	Huaming Equipment	XKTIF	002270 CH	Matty Zhao
	IHI	IHICF	7013 JP	Kenjin Hotta
	Inovance Technology	XMYRF	300124 CH	Ming Hsun Lee, CFA
	Jiangsu Hengli Hydraulic Co., Ltd	XHDCF	601100 CH	Ming Hsun Lee, CFA
	Kawasaki Heavy Industries	KWHIF	7012 JP	Kenjin Hotta
	Keyence	KYCCF	6861 JP	Kenjin Hotta
	Korea Aerospace	XAQHF	047810 KS	KJ Hwang
	LIG Defense & Aerospace	XLQUF	079550 KS	KJ Hwang
	LS Electric	LGXSF	010120 KS	Sun Jung Lee
	Makita	MKEWF	6586 JP	Kenjin Hotta
	Mingyang Smart Energy	XLARF	601615 CH	Charlotte Xia
	Mitsubishi Heavy Industries	MHVYF	7011 JP	Kenjin Hotta
	Mitsui E&S	MIESF	7003 JP	Yuri Nishizaki
	MNC Solution	XZXRF	484870 KS	Dongho Shin
	Nabtesco	NCTKF	6268 JP	Kenjin Hotta
	Namura Shipbuilding	NMRSF	7014 JP	Yuri Nishizaki
	NARI Technology	XLODF	600406 CH	Matty Zhao
	OMRON Corporation	OMRNF	6645 JP	Kenjin Hotta
	OMRON Corporation	OMRNY	OMRNY US	Kenjin Hotta
	RoboTechnik	XYICF	300757 CH	Matty Zhao
	Samsung Heavy Industries	SMSHF	010140 KS	KJ Hwang
	Sany Heavy Industry Co., Ltd	SHVYF	600031 CH	Ming Hsun Lee, CFA
	Sany Heavy Industry Co., Ltd	XHEVF	6031 HK	Ming Hsun Lee, CFA
	Sany International	SNYYF	631 HK	Summer Wang, CFA
	SATS Limited	SPASF	SATS SP	Nathan Gee, CFA
	Shenling	XSRLF	301018 CH	Yibing Xia
	Shenzhen Megmeet	XMXLF	002851 CH	Fiona Liang
	Sieyuan Electric	XUJKF	002028 CH	Matty Zhao
	Sinexcel	XSBEF	300693 CH	Summer Wang, CFA
	Sinotruk Hong Kong Ltd	SHKLF	3808 HK	Fiona Liang
	SM Investments Corporation	SVTMF	SM PM	Russ Toribio
	SMC	SMECF	6273 JP	Kenjin Hotta
	SMC	SMCAY	SMCAY US	Kenjin Hotta
	ST Engineering	SGGKF	STE SP	Jessie Lo
	Suzhou Maxwell Technologies	XSMTF	300751 CH	Gary Tsang
	TGOOD	XQGDF	300001 CH	Ming Hsun Lee, CFA
	THK	THKLF	6481 JP	Kenjin Hotta
	UBTECH	UBTRF	9880 HK	Ming Hsun Lee, CFA

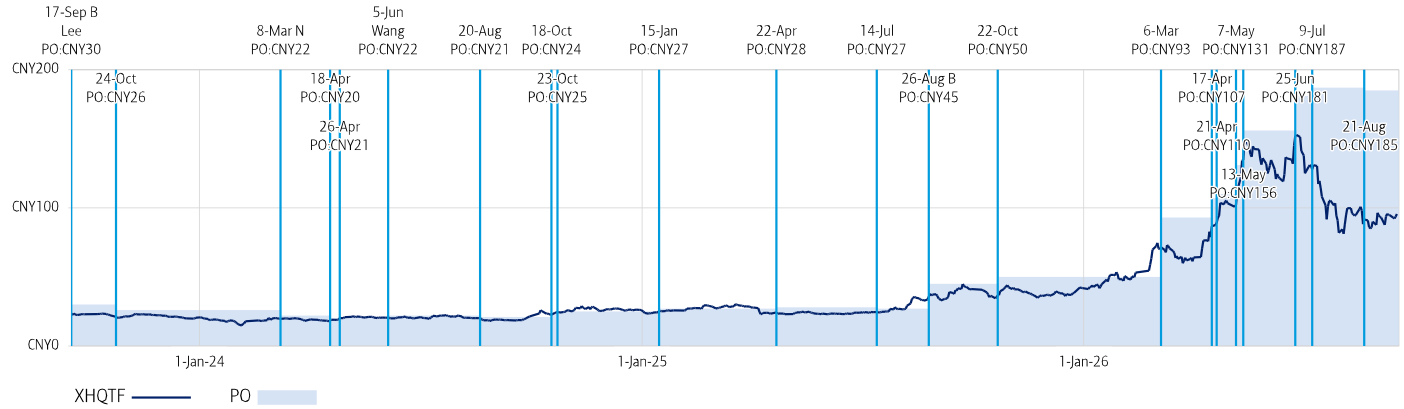
APR - Industrials Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Weichai Power Co. Ltd	WEICF	2338 HK	Fiona Liang
	Weichai Power Co. Ltd	XWPEF	000338 CH	Fiona Liang
	XCMG Construction Machinery Co Ltd	XVPZF	000425 CH	Ming Hsun Lee, CFA
	XJ Electric	XJECF	000400 CH	Matty Zhao
	Yangzijiang Shipbuilding	YSHLF	YZJSGD SP	Amy Han
	Yaskawa Electric	YASKF	6506 JP	Kenjin Hotta
	Yuchai International	CYD	CYD US	Fiona Liang
	Zhejiang Supcon Technology	XDXFF	688777 CH	Ming Hsun Lee, CFA
	Zoomlion Heavy Industry	XLRYF	000157 CH	Ming Hsun Lee, CFA
	Zoomlion Heavy Industry	ZLIOF	1157 HK	Ming Hsun Lee, CFA
NEUTRAL				
	Anhui Heli	AHUHF	600761 CH	Summer Wang, CFA
	D&L Industries, Inc.	DALQF	DNL PM	Philip Albert Felix
	Dongguan Yiheda Automation	XDXGF	301029 CH	Ming Hsun Lee, CFA
	Fanuc	FANUF	6954 JP	Kenjin Hotta
	Fanuc	FANUY	FANUY US	Kenjin Hotta
	Kubota Corp	KUBTF	6326 JP	Kenjin Hotta
	Kubota Corp	KUBTY	KUBTY US	Kenjin Hotta
	Neway Valve	XNNVF	603699 CH	Summer Wang, CFA
	Zhuzhou CRRC Times Electric	ZHUZF	3898 HK	Ming Hsun Lee, CFA
	Zhuzhou CRRC Times Electric	XWCTF	688187 CH	Ming Hsun Lee, CFA
UNDERPERFORM				
	Alliance Global Group, Inc.	ALGGF	AGI PM	Russ Toribio
	CKD	CKDOF	6407 JP	Kenjin Hotta
	ESTUN Automation	XNJNF	002747 CH	Ming Hsun Lee, CFA
	ESTUN Automation	XZMTF	2715 HK	Ming Hsun Lee, CFA
	Goldwind	XJGWF	002202 CH	Gary Tsang
	Hitachi CM	HTCMF	6305 JP	Kenjin Hotta
	Hongfa Technology	XQXAF	600885 CH	Fiona Liang
	Komatsu	KMTUF	6301 JP	Kenjin Hotta
	Komatsu	KMTUY	KMTUY US	Kenjin Hotta
	L.K. Technology	XBQXF	558 HK	Joey Yang, CFA
	Leader Harmonious Drive Systems	XLHNF	688017 CH	Ming Hsun Lee, CFA
	LT Group, Inc.	LTGIF	LTG PM	Philip Albert Felix
	OPT Machine Vision	XOTVF	688686 CH	Summer Wang, CFA
	SCG Packaging PCL	XAFLF	SCGP TB	Komsun Suksumrun
	Shanghai Bochu Electronic	XWUTF	688188 CH	Fiona Liang
	Shenzhen SC New Energy	XENYF	300724 CH	Ming Hsun Lee, CFA
	SK Bend	SUKWF	014620 KS	KJ Hwang

Disclosures

Important Disclosures

Han's Laser (XHQTF) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Industrials/Multi-Industry Group (as of 30 Jun 2026)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	68	62.39%	Buy	36	52.94%
Hold	15	13.76%	Hold	7	46.67%
Sell	26	23.85%	Sell	12	46.15%

Equity Investment Rating Distribution: Machinery/Diversified Manufacturing Group (as of 30 Jun 2026)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	39	59.09%	Buy	18	46.15%
Hold	12	18.18%	Hold	9	75.00%
Sell	15	22.73%	Sell	9	60.00%

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

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

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

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

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

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R2]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R2]Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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