

## Asia Technology

## ABF oversupply to continue till 2H26E, with key impact to tier-2 suppliers; d/g Unimicron/Kinsus to Neutral/Sell

**Limited N-T earnings upside on continued ABF oversupply**

**We cut our ABF substrate TAM by 12/10% in 2025/26E (Exhibit 11)**, and believe the **ABF substrate market will be in a 7% oversupply in 2025E** (Exhibit 1; vs. our expectation of a supply-demand balance in 2025) on the back of lower than previously expected AI server GPU substrate/AI server rack shipment and an increase in pricing pressure. Based on our “Rule of three” framework, the legacy ABF substrate product cycle will remain at a bottom level in next 12+ months, despite the solid high-end ABF substrate demand growth in the near-term. For the AI server substrate market, we cut our 2025 TAM estimate by ~50% (Exhibit 3) on lower AI server rack shipments (down by 35% in 2025), and as we factor in a less favorable AI GPU ABF substrate pricing (US\$100 now vs. US\$120+ earlier this year). Moreover, we are now less optimistic on PC substrate restocking demand given a challenging macro environment. Overall, we believe supply and pricing challenges would largely impact tier 2 suppliers (such as Unimicron and Kinsus) given their exposure to legacy ABF products and lower than expected spillover of high-end orders from T1 suppliers.

For Ibiden, we continue to expect the company to benefit from its leading position in the high-end substrate business.

**Key Catalysts: China's AI IC localization + CPO adoption**

In the mid-to-long-term, along with ABF substrate supply-demand outlook turning more balanced in 2H26, we see the following catalysts for Taiwan ABF suppliers - (1) solid improvement in the substrate demand from Chinese design house customers (53% 2025-27E CAGR) driven by AI IC production localization (see our ZDT initiation report here), and (2) the adoption of CPO technology, which can expand the consumption of switch IC ABF substrates by more than 2x vs. general 2.5D packaging substrate.

As a result, we see Taiwan ABF suppliers with capacity in mainland China (such as ZDT, Unimicron, and NYPCB) and focusing on networking-related business as well positioned to see solid growth from domestic China demand and technological upgrades from switch customers in the long term.

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**Stock Ideas: Initiate ZDT at Buy; remain Buy/Neutral on Ibiden/NYPCB; d/g Unimicron/Kinsus to Neutral/Sell**

We initiate on **Zhen Ding Technology (ZDT)** with a **Buy** rating ([here](#)), with a **12m TP of NT\$115** as it will be the key beneficiary of ABF demand expansion from Chinese IC design houses.

**We downgrade Unimicron/Kinsus to Neutral/Sell (from Buy/Neutral)**, due to the less favorable AI server substrate spillover order demand outlook, and the weak demand outlook for legacy ABF and consumer electronics related products. This will be partly offset by the growth driven by high-end products. **We revise Unimicron's TP to NT\$90 (from NT\$170), and Kinsus' TP to NT\$63 (from NT\$110).**

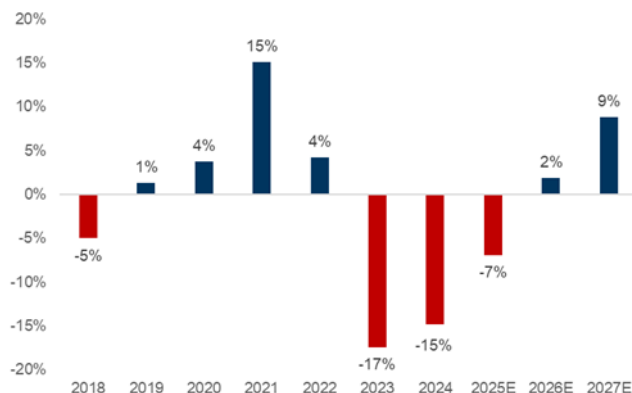
**Remain Neutral on NYPCB with a revised TP of NT\$98 (from NT\$128)**, as it will be the key beneficiary of the CPO adoption trend and its solid market position will in turn result in gaining share in the AI ASIC substrate market in the long term. However, we note the company has limited catalysts in the near term.

**We maintain our Buy rating on Ibiden, with an unchanged TP of ¥6200**, given its leading position in the high-end ABF substrate market and its high exposure to leading edge products.

*With this note, Chao Wang assumes primary coverage of NYPCB (8046.TW) and Unimicron (3037.TW).*

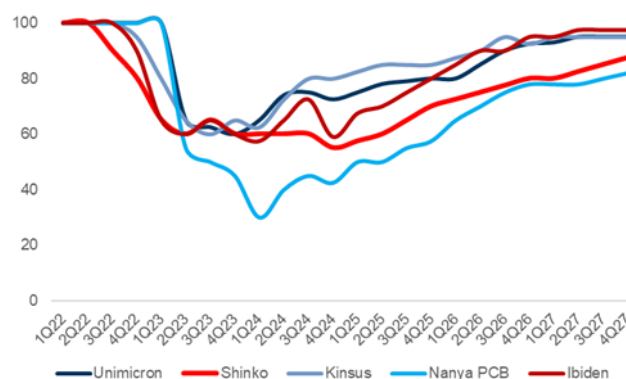
## Our thesis in 6 charts

**Exhibit 1: We expect ABF market will still be in a 7% oversupply in 2025E, before S/D turns to balance from mid-2026**



Source: Company data, Goldman Sachs Global Investment Research

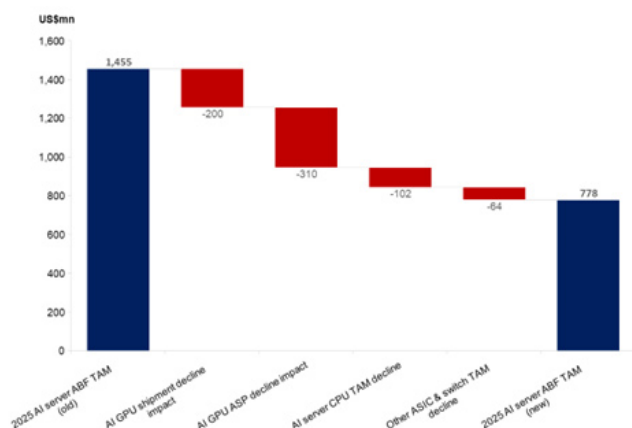
**Exhibit 2: We believe ABF substrate suppliers' UTR will improve stably in 2025, but the overall industry UTR will still be <80%**



\*UTR = Utilization rate \*\*1Q25-4Q27 based on GSE

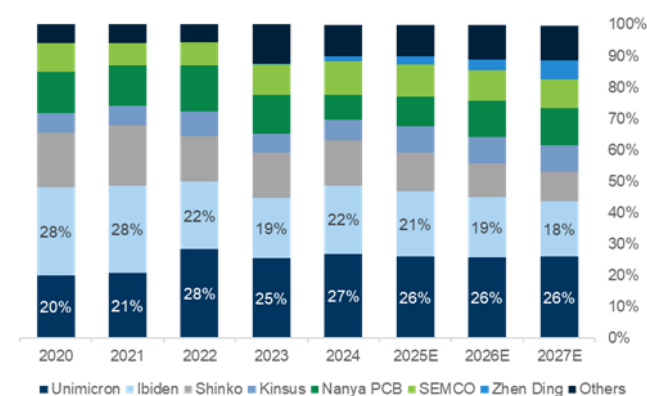
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 3: We cut AI ABF industry TAM by ~50% in 2025, due to the weaker than expected AI server shipment, and lower ASP**



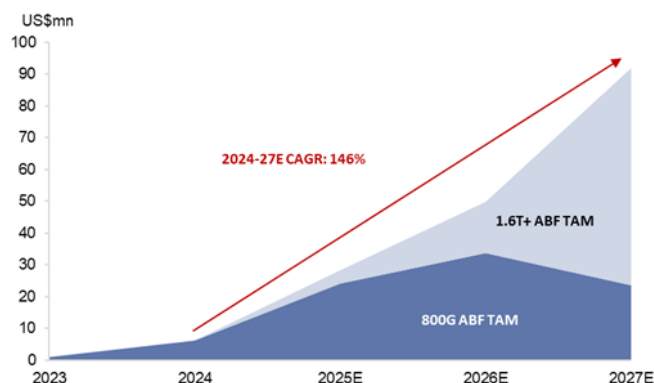
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 4: Unimicron and Ibiden will continue to hold the largest share in the ABF substrate industry**



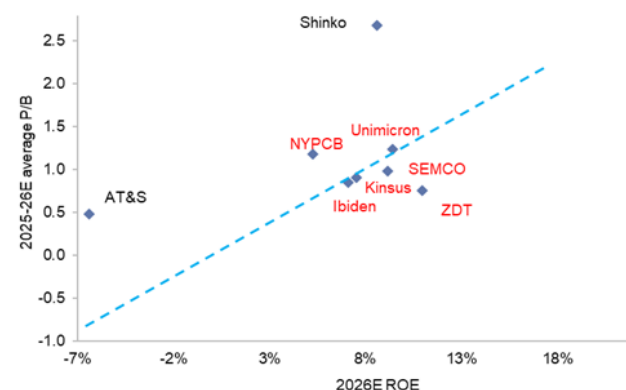
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 5: We believe high-end Switch IC TAM will continue to expand fuel by the CPO adoption after 2026**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 6: ABF suppliers PB vs. ROE scatter chart - we see good risk reward for ZDT**



Estimate data for AT&S (Not Covered) from BBG consensus

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

## We cut 2025/26E ABF TAM by 12/10%, which suggests 12+ months for a potential inflection

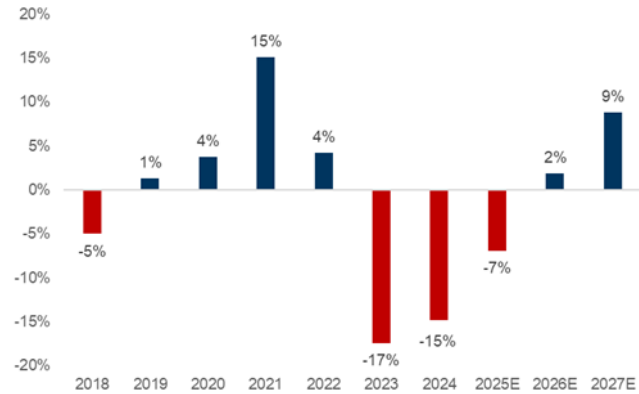
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**We cut our 2025/26E ABF substrate industry TAM by 12/10% in 2025/26E.** This reflects cuts to our **AI ABF substrate TAM estimate** (given lower AI chip shipment and ASP estimates) as well as our **less positive view on PC ABF substrate upgrading demand** in the near term. We expect this to negatively impact all ABF substrate suppliers' business outlooks (especially Unimicron) except Ibiden, which is the leading supplier. We introduce our 2027 ABF substrate estimate of US\$11.3bn and expect the overall ABF substrate TAM to grow by 18% CAGR in 2025-27E (ABF TAM of US\$9.5bn in 2026E vs. our previous estimate of US\$11.3bn), still supported by the solid upgrading demand from AI infrastructure IC and the regular upgrade of server/PC substrate.

After incorporating the less favorable ABF demand into our supply demand (S/D) model, we expect the overall industry supply demand condition in 2025-1H26 to remain in oversupply (vs. our original expectation that the S/D condition will turn to undersupply from mid-2025), considering key ABF substrate suppliers' capacity expansion plans made before 2024 (11% 2024-27E CAGR based on all ABF substrate suppliers' announcements. Notably, 90%+ of the new capacity coming on stream after 2024 were announced before 2023; [Exhibit 8](#)).

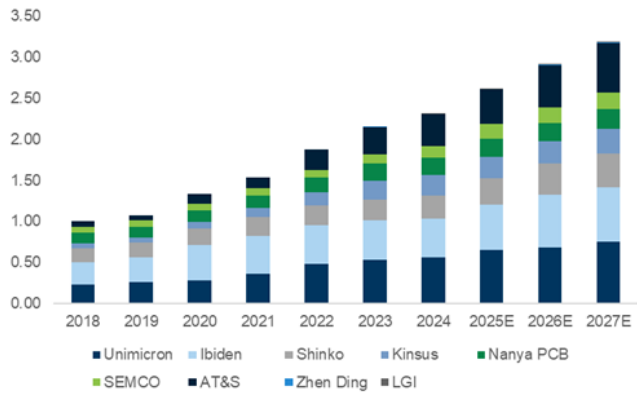
In terms of suppliers' utilization rate ([Exhibit 9](#)), we believe that the technology leader, Ibiden, will see a much faster UTR improvement in the coming quarters due to its strong industry position. However, for the technology follower, Unimicron, we expect the company's UTR growth rate to decelerate, considering significantly slower-than-expected AI server ABF demand. This should result in a much lower spillover volume than previously anticipated, with no AI spillover orders expected in the first half of 2025. For other suppliers, we also anticipate a slower UTR recovery progress in 2025-1H26 (vs. our previous view), considering the slower-than-expected PC substrate upgrading speed. PCs still account for over 50% of industry demand, and tier 2/3 suppliers are primarily focused on PC-related substrate business ([Exhibit 10](#)).

**Exhibit 7: We expect ABF will still see 7% oversupply in 2025E, and start to see a better supply demand condition only after mid 2026**



Source: Company data, Goldman Sachs Global Investment Research

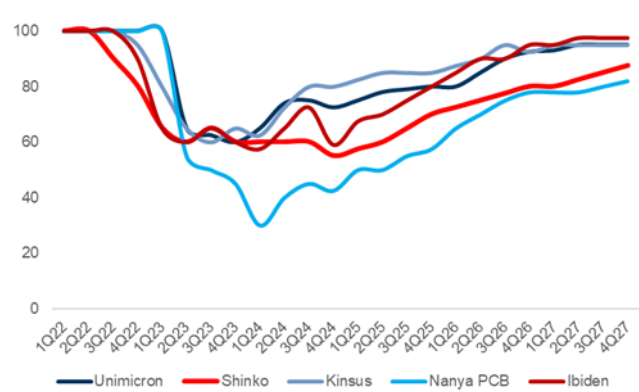
**Exhibit 8: We expect ABF industry capacity will go up by ~40% from 2024 to 2027, and will be 3x+ of the industry capacity vs. 2018**



Not Covered companies' estimates are from BBG consensus

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

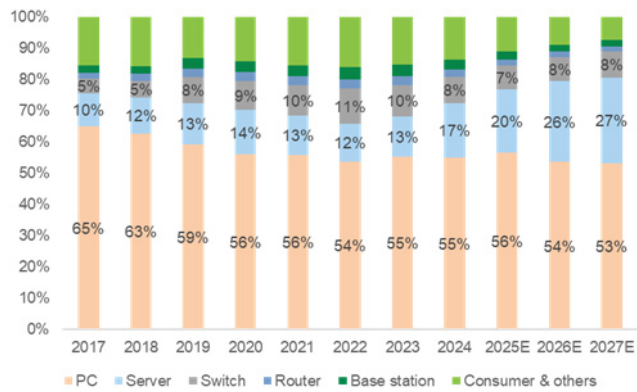
**Exhibit 9: We believe ABF substrate suppliers' UTR will improve in 2025, but the overall industry UTR will still be <80%**



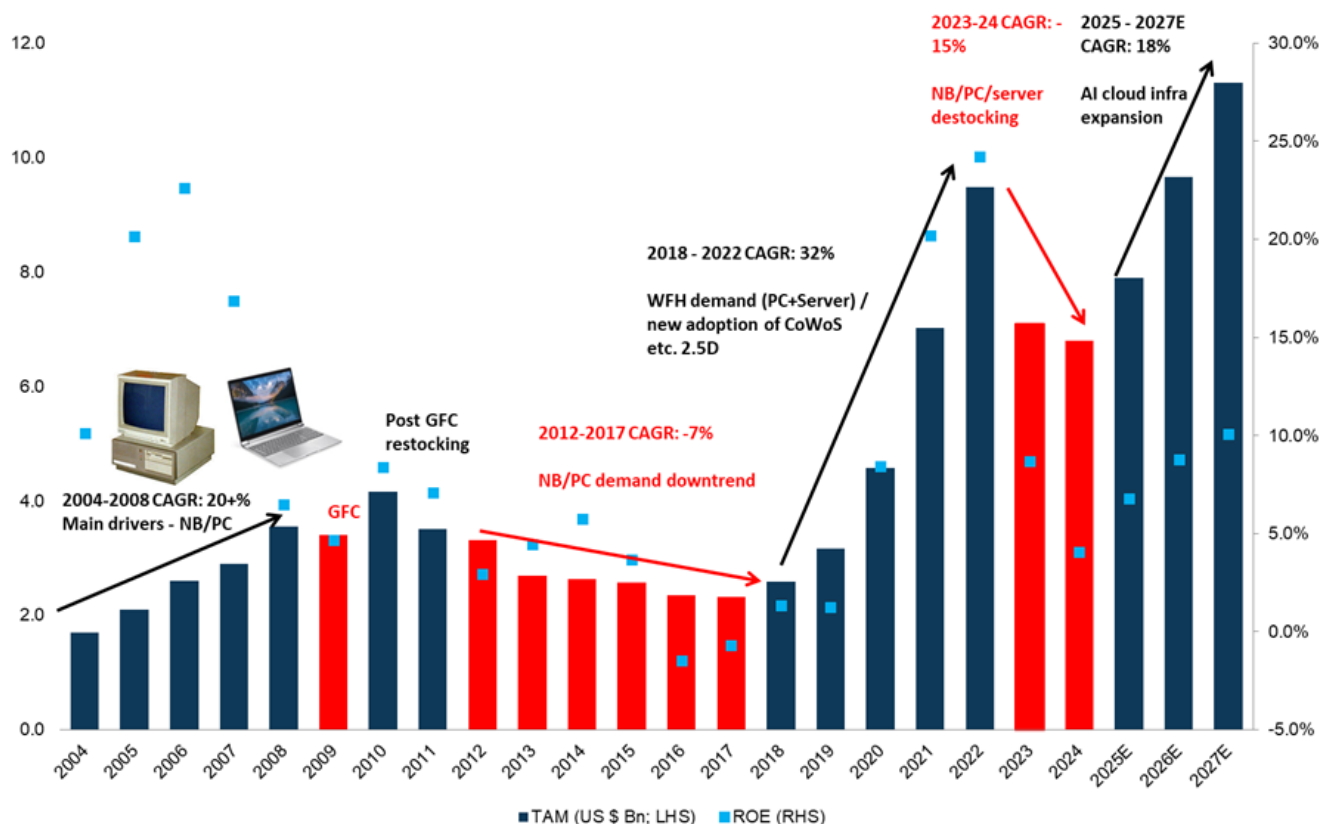
1Q25-4Q27 based on GSe

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 10: We estimate PC will still account for 50%+ of the ABF industry TAM in coming years**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 11: ABF substrate TAM should continue to expand despite the less favorable demand outlook in the short term**

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 12: Key ABF substrate capacity expansion plans after 2024 (mostly announced before 2024)**

	Expansion plant	Capex	Time of new capacity come on-line	Capacity expansion
<b>Unimicron</b>	KF plant	KF plant: NT\$12bn+	KF: 4Q24 pilot run, 1H25 MP, phase 2 starts in 2H24	KF: Additional 20-30% of total capacity per Gse
<b>Ibiden</b>	Gama Plant Ono plant	Gama Plant: JPY180bn Ono plant: JPY250bn (Gse) (aggregated investment until completed)	Gama Plant: production starts from CY4Q26 Ono plant: production starts from CY3Q25	Gama Plant: Additional 40% of total capacity Ono plant: Additional 100% of the non-US CPU customer dedicated capacity
<b>Shinko</b>	Kohoku and Wakaho plant new Chikuma plant	Total investment to be JPY140bn in FY3/23- FY3/26	Kohoku and Wakaho plant: production starts from FY3/24 new Chikuma plant: production starts from FY4/26	Additional 40-50% capacity expansion vs. the capacity in FY3/23
<b>AT&amp;S</b>	Kulim plant	Kulim plant: EUR1.7bn	Kulim- phase 1: 2Q24-1Q25 (rev contribution starts from 2025) Kulim- phase 2: TBA	Kulim: Additional 500%+ vs. 2019 capacity
<b>Zhen Ding</b>	Kaohsiung plant Shenzhen plant	Kaohsiung plant: NT\$8Bn (FY25)	Shenzhen fab 2: ~2027 equipment installation Kaohsiung AI fab: 4Q25 MPI verification	Kaohsiung: Additional 12% capacity expansion

Source: Company data, Data compiled by Goldman Sachs Global Investment Research

**Measuring the ABF industry cycle: Upcycle yet to come in 2025-1H26**

The questions “When will the ABF industry return to an upcycle?” and “Should we expect the ABF downcycle to last for another 5+ years, similar to what we saw in the past two decades?” have been frequently asked since the ABF industry downcycle began in 2023. Despite maintaining a positive outlook on the overall ABF substrate industry due to solid upgrading demand (see more details [here](#)), ABF substrate suppliers have consistently delivered less favorable results each quarter since 2023. The primary reasons for the downcycle are: (1) longer-than-expected inventory digestion for most end products, (2) slower-than-anticipated ABF substrate upgrading speed, and (3) extended capacity expansion cycles for ABF substrate suppliers.

To assess where we are in the ABF substrate supply cycle and when can we see a

cyclical inflection, we use our Rule of Three framework (see more [here](#)).

### **“Rule of Three” to define a cyclical trough**

*The below framework is detailed in [Taking a pure cyclical approach](#) by Jim Covello (Goldman Sachs Global Head of Equity Research and former Semiconductor Equipment Analyst)*

1. Are the majority of companies in the industry at or near breakeven EBITDA? Rule One asks whether or not the cash flows of the majority of companies in an industry have deteriorated to the point at which companies are no longer able to add any new capacity and/or have begun to take capacity off-line.
2. Has the industry reached “hara-kiri” stage? The point of Rule 2 is that industry executives must “throw in” the proverbial towel and give up anticipating when an industry is going to hit a cyclical upturn. Only after industry managements capitulate are supply/demand dynamics likely to come back into balance.
3. Is there a glimmer of hope for an upturn? An industry can stay at a cyclical bottom for some time. Rule Three helps us identify whether business conditions have started to improve and thus whether or not a cyclical upturn is imminent.

### **Rule Number 1: Are the majority of companies in the industry at or near breakeven EBITDA? We are at a low versus 2020-2024, and could see an inflection in the coming years**

We use all key ABF substrate suppliers’ EBITDA margin cycle to check where we are in the cycle ([Exhibit 13](#)); however, we don’t expect the cash margin for ABF substrate to be close to breakeven, given the product is not dominated by commodity type products anymore (customization ratio has surpassed 30% since 2020 and is 50%+ now vs. <10% in 2000-2020) and is a key production component for the overall semiconductor industry. Hence, we expect suppliers to enjoy a much better margin premium from a technology perspective.

While we had anticipated all players’ cash margins to bottom out at the end of 2024, we expect further pressure for cash margins recovery in 2025 due to several factors: (1) we do not expect the utilization rate (UTR) to recover before 2H25, (2) Taiwanese players’ R&D expenses will likely increase in 2025 as they strive to catch up with Ibiden’s technology leadership, and (3) there is a pricing downside risk for AI server products in 2025.

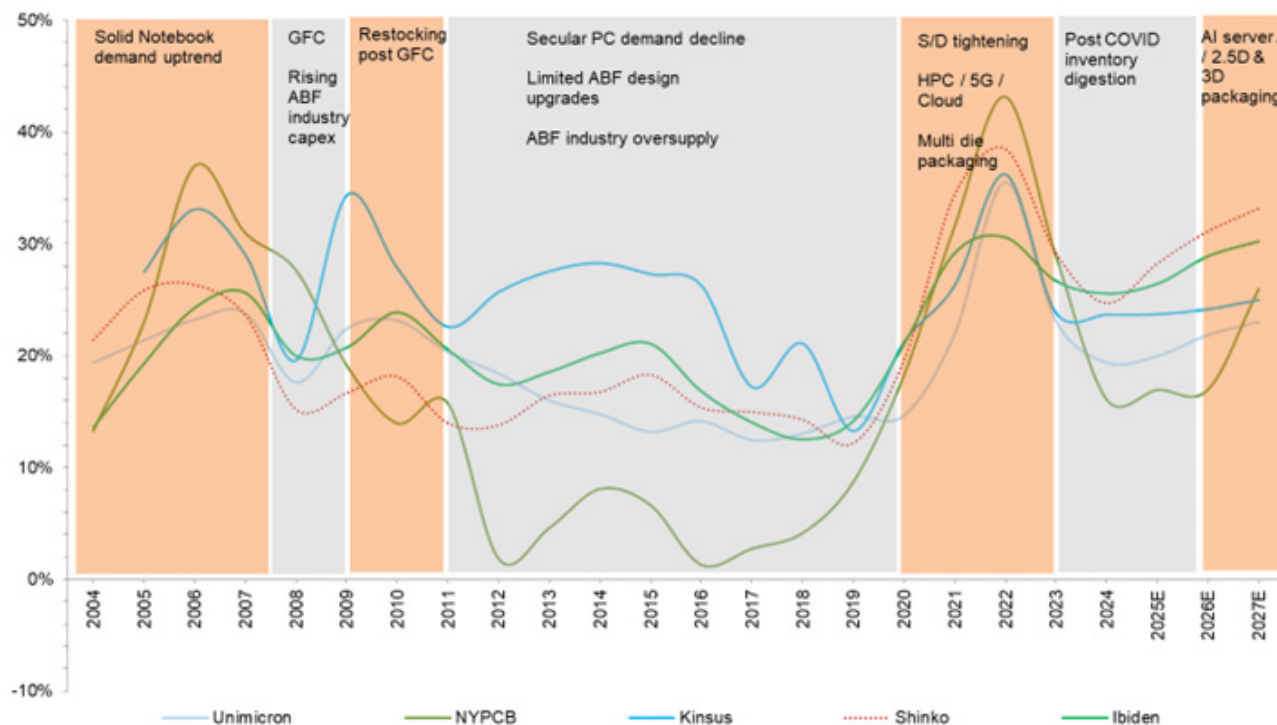
As a result, we believe that cash margins for all players will show more significant improvement starting in 2026, leading to a clear upcycle from 2027 onwards.

From the overall industry’s standpoint ([Exhibit 14](#)), we can easily see that the cash margin of the overall ABF industry will likely bottom out in 2H25, which implies that ABF players will start to enjoy a much better operating cash flow from 2026. However, the key risks to cash margin improvement in 2026 are: (1) higher TW electricity cost from 2H25 (we estimate cost as % of revenue in total will go up by 0.4-1.8ppt annually if electricity cost goes up by 10-40%), and (2) possible tariff impact (based on our sensitivity analysis, cost as % of revenue in total could go up by 8ppt-30ppt assuming

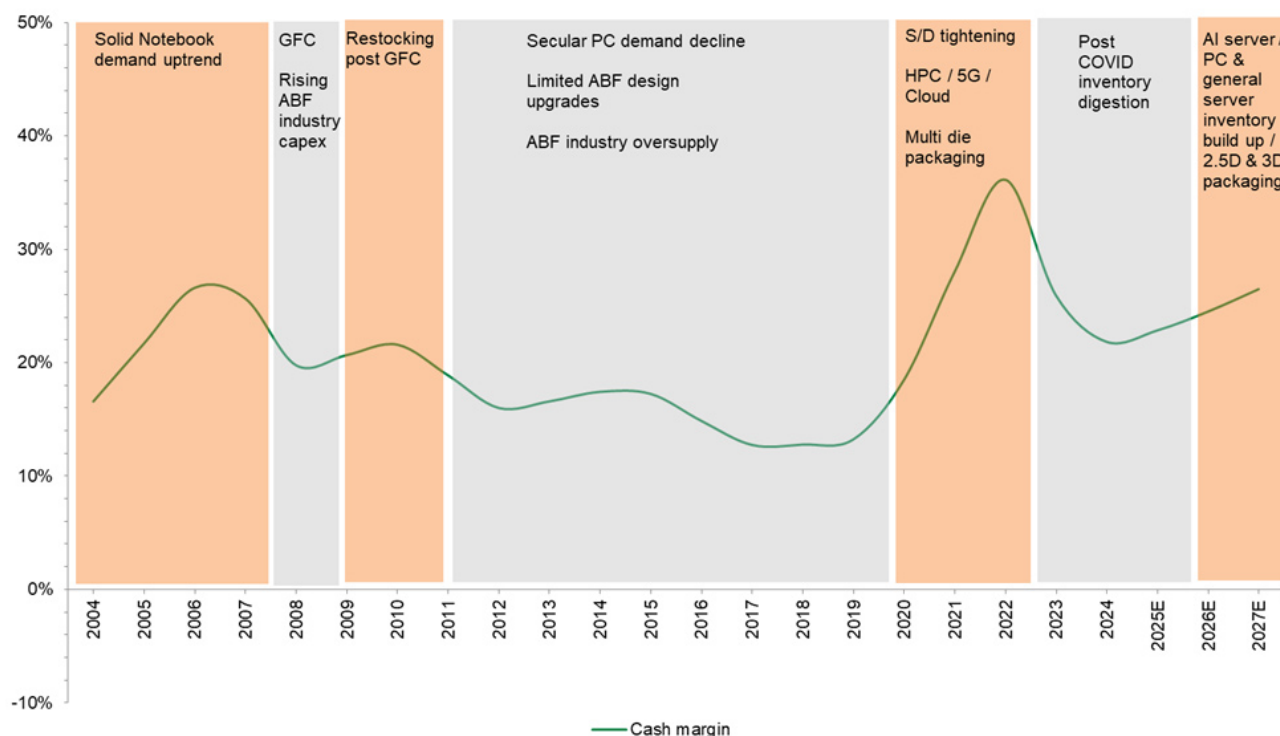


potential 10-32/34% tariffs from 2H25 assuming consumer electronics products' price elasticity of demand is 0.7, and enterprise/toB/military product price elasticity of demand is 0.2), which we discuss in more detail in the section "Potential earnings downside risks in 2H: (1) Possibility of higher TW electricity cost & (2) Impact from tariffs".

**Exhibit 13: Cash margin trend of all key ABF substrate suppliers - Cash margin is not close to breakeven, but it is down to a low level versus 2020**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 14: Cash margin trend of ABF substrate industry**

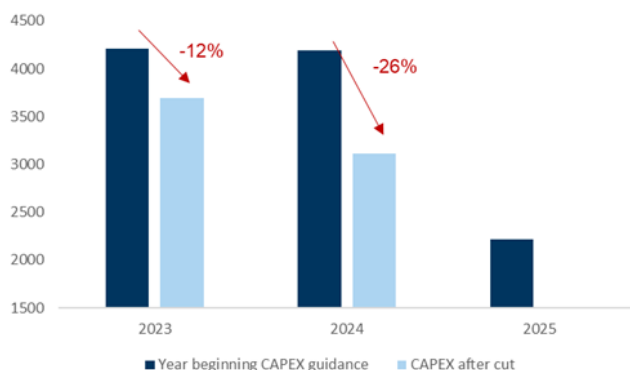
Source: Company data, Goldman Sachs Global Investment Research

**Rule Number 2: Has the industry reached the “hara-kiri” stage? CAPEX revision shows suppliers have a less constructive view on building capacity; however, existing CAPEX plans continue to imply 10%+ annual capacity growth until 1H27**

We use the trend of Capex revisions as an indicator of incremental changes in supply responses to market conditions. The second derivative of the Capex trend captures producers’ plans in terms of adding or canceling expansion projects, versus changes in capital spending yoy.

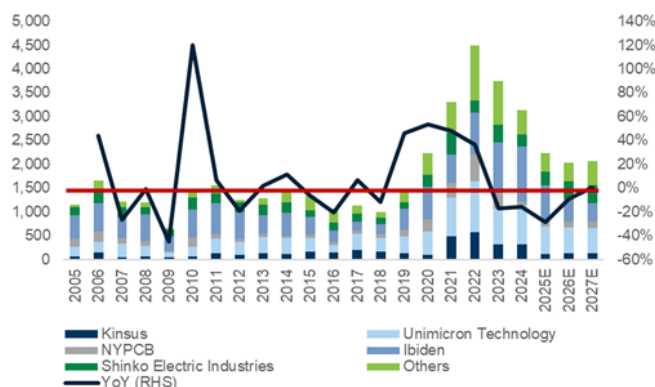
Based on ABF suppliers’ Capex guidance history, all players started to revise down Capex guidance from 1Q23 (Kinsus/NYPxCB mentioned no capacity expansion after 2024), and continued to delay/cancel capacity expansion plans from 2Q23 (Ibiden/Unimicron delayed CAPEX plans by 12-36 months), making the whole process of digesting excess capacity less painful but longer. We saw key ABF suppliers cut CAPEX by 26% in 2024 which accelerated from the 2023 level (12% cut in full year 2023; [Exhibit 15](#)). However, we have not seen companies further cut CAPEX guidance from late 2024. Moreover, the CAPEX guidance from companies show YoY decline until 2026, but the delayed capacity expansion plans from 2023 still suggest a 10%+ 2023-27E industry capacity CAGR, making the overall supply environment unfavorable.

**Exhibit 15: ABF suppliers' combined CAPEX year beginning guidance vs. CAPEX after cut; Cuts accelerated in 2024, but we have not seen any suppliers cut CAPEX guidance from late 2024**  
US\$mn



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 16: We expect ABF suppliers' combined CAPEX to be back to positive territory from 2027, showing suppliers' improving S/D outlook going into 2027 and beyond**



Source: Company data, Goldman Sachs Global Investment Research

### **Rule Number 3: Is there a glimmer of hope in the industry (for a demand upturn)? Demand is improving with an 18% 2025-27E CAGR**

We believe ABF substrate demand already bottomed in 2024 (after the 25%/4% YoY ABF TAM decline in 2023/24), and believe the industry demand will see an 18% 2025-27E CAGR, with the easing impact from inventory digestion. We believe the ABF substrate demand downcycle has finished, and we see a solid demand outlook going into 2025-27.

In conclusion, we are seeing the bottoming out of cash margin (even though it is not even close to breakeven level), and expect the overall CAPEX revision to stop from 2025. Together with the improving demand outlook, this suggests a much better industry cycle outlook with better S/D dynamics. However, as mentioned above, while the CAPEX revision deceleration and CAPEX YoY decline from 2023-2026 suggest suppliers' more cautious view on building additional new capacity, existing capacity plans made before 2024 still suggest a 10%+ 2025-27E capacity CAGR, making the overall S/D outlook still unfavorable.

Moreover, per our understanding of ABF substrate players' business models, suppliers' profit/earnings growth is highly correlated with utilization rates and ABF substrate pricing, while demand growth is only one of the key factors for substrate players' earnings growth. The other important factor is the future supply outlook (as well as the industry capacity outlook), which we believe will continue to go up in 2025-27, due mainly to the expansion plans that were made by suppliers before 2023.

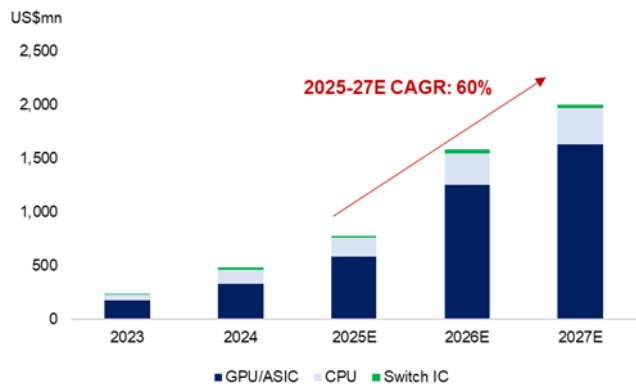
As a result, considering the unfavorable S/D outlook, we do not expect ABF substrate suppliers to enjoy solid profit growth before 2H26. Hence, we believe most ABF substrate suppliers' earnings could bottom in 2H24-1H25, but would not see significant improvement before 2H26, suggesting another 12+ month of industry downcycle.

**We cut 2025 AI ABF substrate TAM by ~50% given the less favorable P&Q outlook, which is still the key growth driver for the ABF industry**

We cut 2025 AI ABF industry TAM by ~50% from US\$1455mn to US\$778mn ([Exhibit 22](#)), to factor in lower AI server rack shipments (see [here](#)), which directly impact our AI ABF substrate shipment estimate by 25%; moreover, we continue to see pressure on AI GPU substrate pricing (see [here](#)), and cut our 2025/26 AI GPU ABF substrate ASP from US\$164/183 to US\$107/152, reflecting the less favorable supply demand environment, and increasing competition in this industry.

However, on the other hand, we still believe the AI-related ABF substrate demand will grow the strongest among all ABF substrate end market, and become the key driver of the overall ABF substrate TAM in coming years. Our research and model suggests AI-related ABF substrate TAM will continue to grow by 60% 2025-27E CAGR ([Exhibit 17](#)), mainly driven by substrate spec upgrade (ASP growth - [Exhibit 21](#)). We also believe that AI-related ABF substrate growth in 2024-27 will account for 30%+ of the total ABF substrate industry growth value ([Exhibit 18](#)), leading AI substrate to account for 20% of total substrate market demand in 2027 ([Exhibit 19](#)). As a result, AI substrate suppliers should enjoy much better demand outlook vs. others.

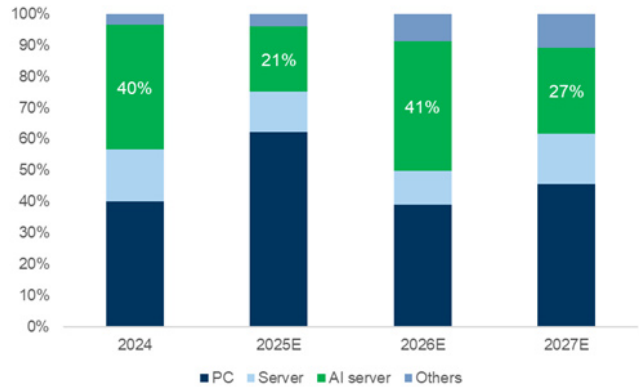
**Exhibit 17: We estimate AI server ABF substrate market will still grow by 60% CAGR in 2025-27E**



Source: Company data, Goldman Sachs Global Investment Research

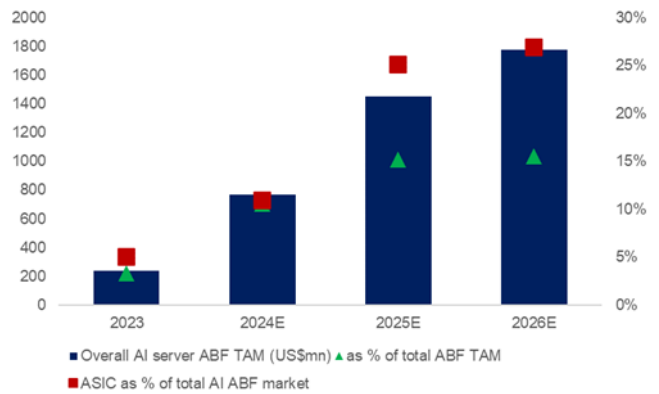
**Exhibit 18: We believe AI-related ABF substrate demand growth will continue to be the key growth driver of the overall ABF TAM in coming years**

ABF TAM growth by key end markets



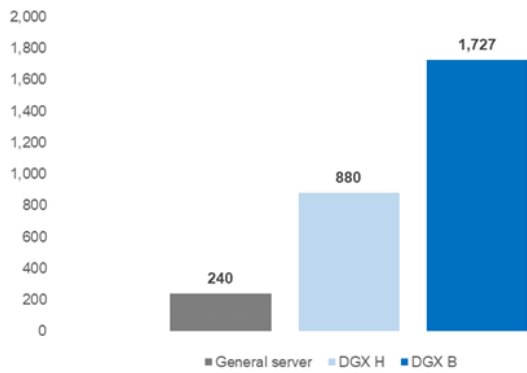
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 19: We estimate AI server to account for a larger % of total ABF TAM in the coming years, meanwhile ASIC AI server to also become one of the most important customers in the longer term**



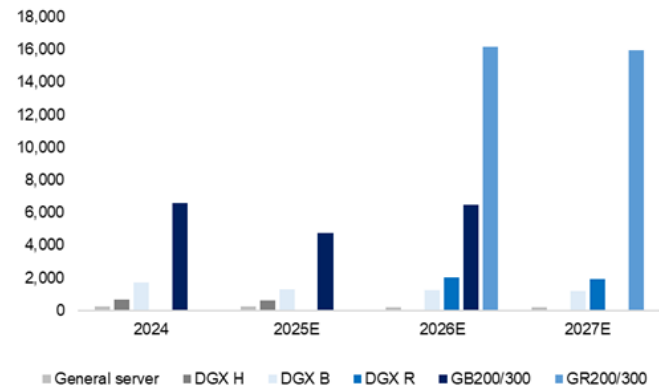
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 20: We continue to see ABF dollar content improving in different AI server versions, which should drive upgrades to rack level products, suggesting more favorable content upside due to more complex IC design**  
US\$, 2024E



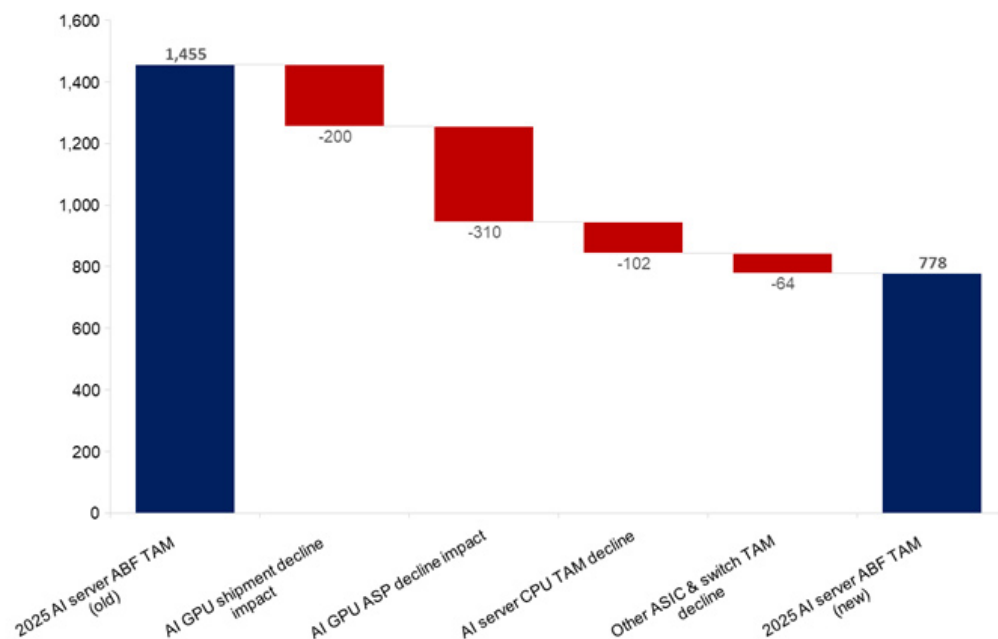
Source: Goldman Sachs Global Investment Research

**Exhibit 21: We believe the ABF ASP of new AI projects will continue to go up, and be the key driver for AI ABF TAM**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 22: We cut AI ABF industry TAM by 50% in 2025, due to weaker-than-expected AI server shipment and lower-than-expected ASP**  
US\$m

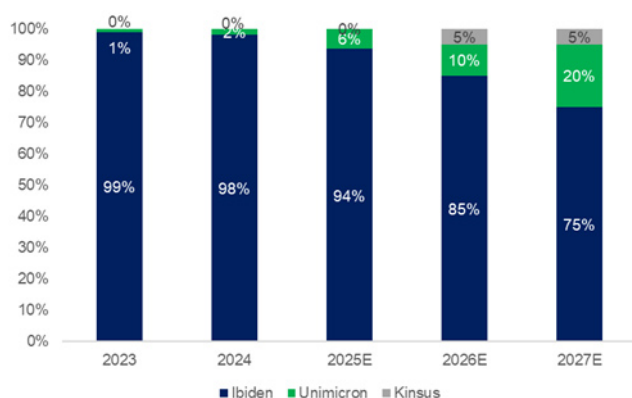


Source: Company data, Goldman Sachs Global Investment Research

In the near term, we believe the lower-than-expected AI GPU volume shipment in 2025 will impact Unimicron's ability to capture the spillover share from Ibiden. Unimicron may need to reduce pricing to secure more projects, which suggests a less favorable market share for Unimicron in 2025 than previously expected. We anticipate that Ibiden will continue to be the major supplier for AI GPU substrates in the near term.

On the other hand, with the reduced volume of AI GPU shipments in 2025, we believe the ASIC AI server market will become more significant for Unimicron. However, we foresee competition from key competitors, including NYPCB, SEMCO, and AT & S, which could result in less favorable market share or product pricing for Unimicron. Despite this, we maintain our high market share estimate for Unimicron in the ASIC AI server market for now, given its long-term relationship with most ASIC AI chip designers and its key focus in this area, but will continue to monitor the situation closely.

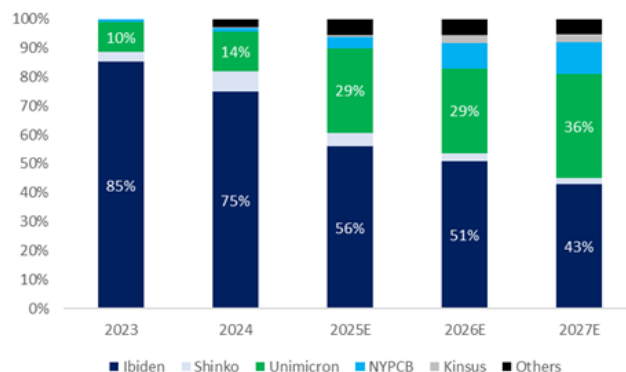
**Exhibit 23: We expect Ibiden will continue to dominate the AI GPU substrate market in 2025, considering the limited volume demand**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 24: We believe Ibiden and Unimicron will continue to be key suppliers for the overall AI server ABF substrate market in the long term**

Overall AI server ABF substrate industry market share



Includes AI server GPU/ASIC/CPU/Switch IC etc. IC substrate that used in AI servers.

Source: Company data, Goldman Sachs Global Investment Research

### Server and PCTAM update - Solid server ABF substrate upgrade will continue, but PC substrate upgrade acceleration depends on the AI PC penetration rate

As mentioned above, we believe the server and PC substrate capacity demand will grow by over 20% per year (Exhibit 26) in the coming years. The key growth driver remains the technology and specification upgrades, which not only increase the overall substrate size and layer count but also suggest a lower yield rate, leading to higher capacity usage.

On the inventory side, we believe most of the server ABF substrate/CPU inventory has been digested over the past 8 quarters (Exhibit 28). However, we do not expect any restocking demand, especially now, as end customers lack visibility on the demand outlook for 2H25 due to tariffs. For PC-related inventory, we continue to see high inventory risk with long days of inventory (DOI), primarily due to very low demand.

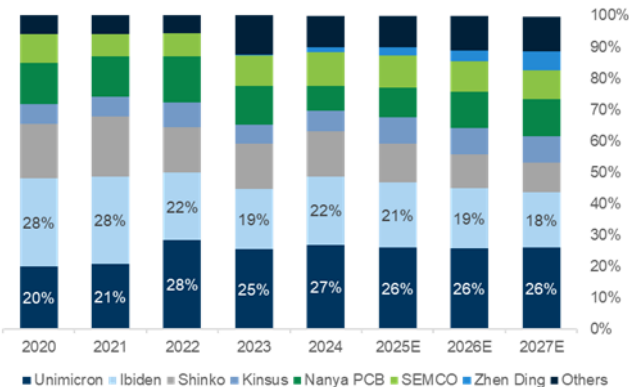
We do not anticipate any volume upside for server and PC substrates in the near term, and believe the key drivers will continue to come from specification upgrades.

We observe significant substrate specification upgrades for server and switch-related product platforms with each generation. In 2025, we expect a much better Birch Stream penetration rate (15-20% by the end of 2025), whose substrate size is 104.5mm x 70.5mm (compared to Eagle Stream HBM version at 100mm x 56.5mm) and layer count is 18 layers (versus Eagle Stream HBM at 16 layers), suggesting over 40% more ABF substrate capacity consumption. Therefore, even without growth in overall server shipments, the ABF substrate upgrade will suggest an additional 6-8% demand on capacity solely from specification upgrades in 2025 (excluding yield rate dilution). Moreover, we see multiple server/switch ABF substrate growth drivers in 2026, including AMD's new Venice CPU and Broadcom's new switch ASIC Tomahawk 6, whose ABF substrate capacity consumption will be 35% and 90% more than existing product lines, respectively. As a result, we expect server ABF demand to grow by a 44% CAGR in 2025-27E, with servers accounting for 27% of the total ABF market

demand in 2027E (up from 17% in 2024).

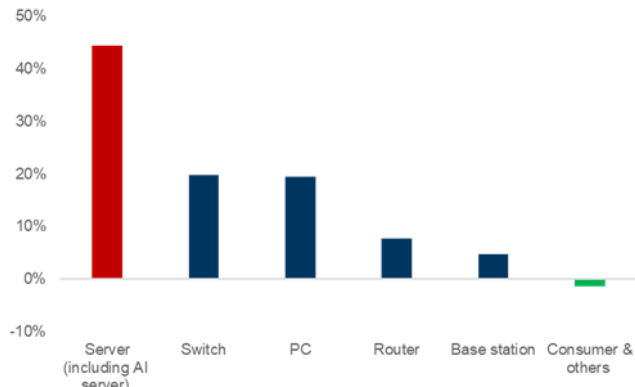
For general PC ICs, we do not see significant growth in ABF substrate size but do observe increasing layer counts in different generation products. However, growth driven solely by layer count suggests only a 10-20% increase in ABF substrate capacity consumption in the long term. On the other hand, we expect key AI PC IC designers to launch new AI PC CPUs in the coming quarters and years, with ABF substrate sizes significantly larger than existing AI PC CPUs and next-generation PC CPUs. For example, the AI PC CPU substrate size for Strix Halo is expected to be 55mm x 50mm (compared to the last generation Strix Point at 42.5mm x 42.5mm and next-generation PC CPU substrate size at 42mm x 42mm) with 12-14 ABF layers (compared to the last generation AI PC product and next-generation general PC at 12/14 layers). As a result, we believe the key upside potential for PC ABF substrate TAM will be driven by better penetration rates of AI PC CPUs in the coming quarters and years.

**Exhibit 25: We believe Unimicron and Ibiden will continue to hold the largest share in the ABF substrate industry, but Unimicron will focus more on mid-to-low end products**



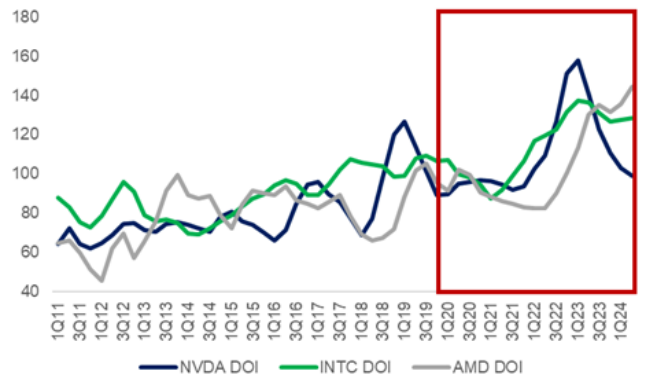
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 26: Server, switch and PC will grow the strongest in terms of substrate capacity area usage, in our view 2024-27E CAGR**



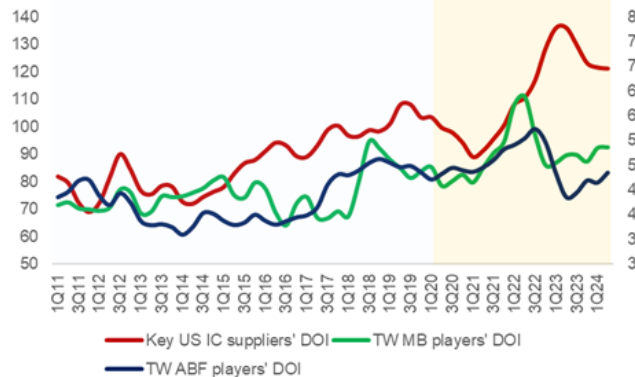
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 27: Key PC (including gaming) IC suppliers continue to face high inventory levels; we note that gaming demand has been increasing**  
DOI (days) of key PC IC suppliers



Source: Company data, Data compiled by Goldman Sachs Global Investment Research

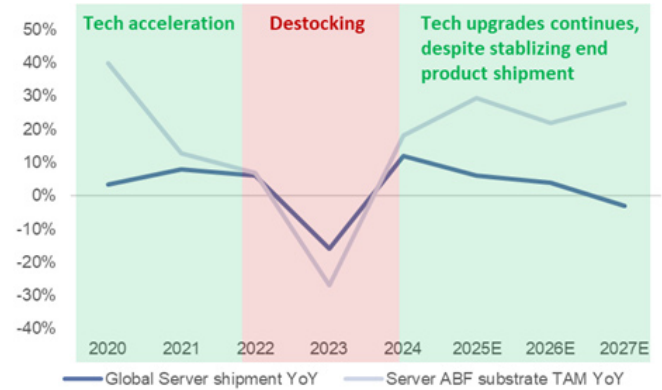
**Exhibit 28: Even though ABF substrate suppliers' owned DOI is back to pre-COVID levels, we believe the high PC IC DOI and motherboard suppliers' high inventory level will weigh on PC ABF demand outlook**  
DOI (days) of US PC IC suppliers / Taiwan motherboard players / Taiwan ABF suppliers



Source: Company data, Data compiled by Goldman Sachs Global Investment Research

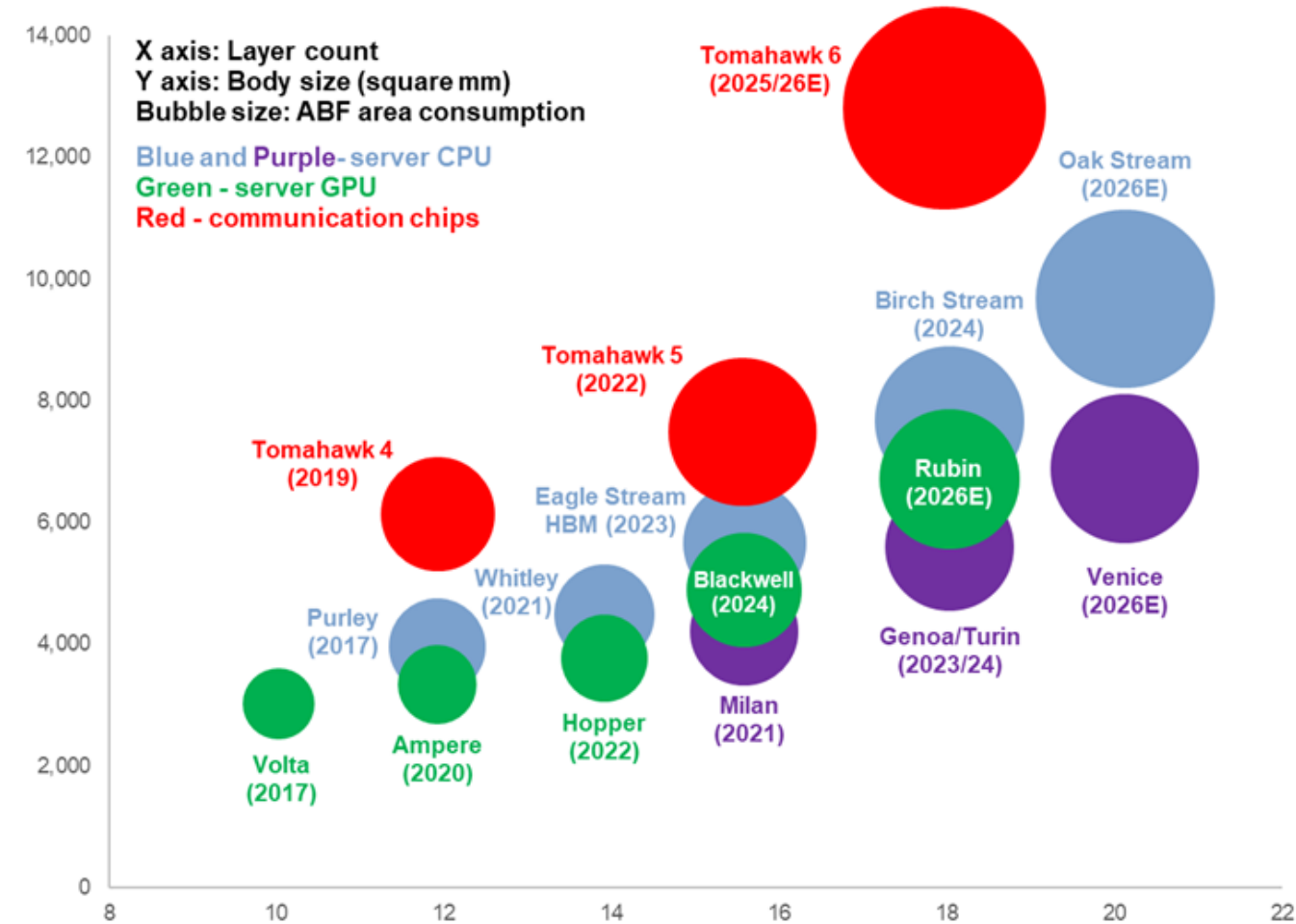


**Exhibit 29: Destocking of server ABF substrate is already over, but the conservative end demand outlook could continue to lead to weak ABF TAM**



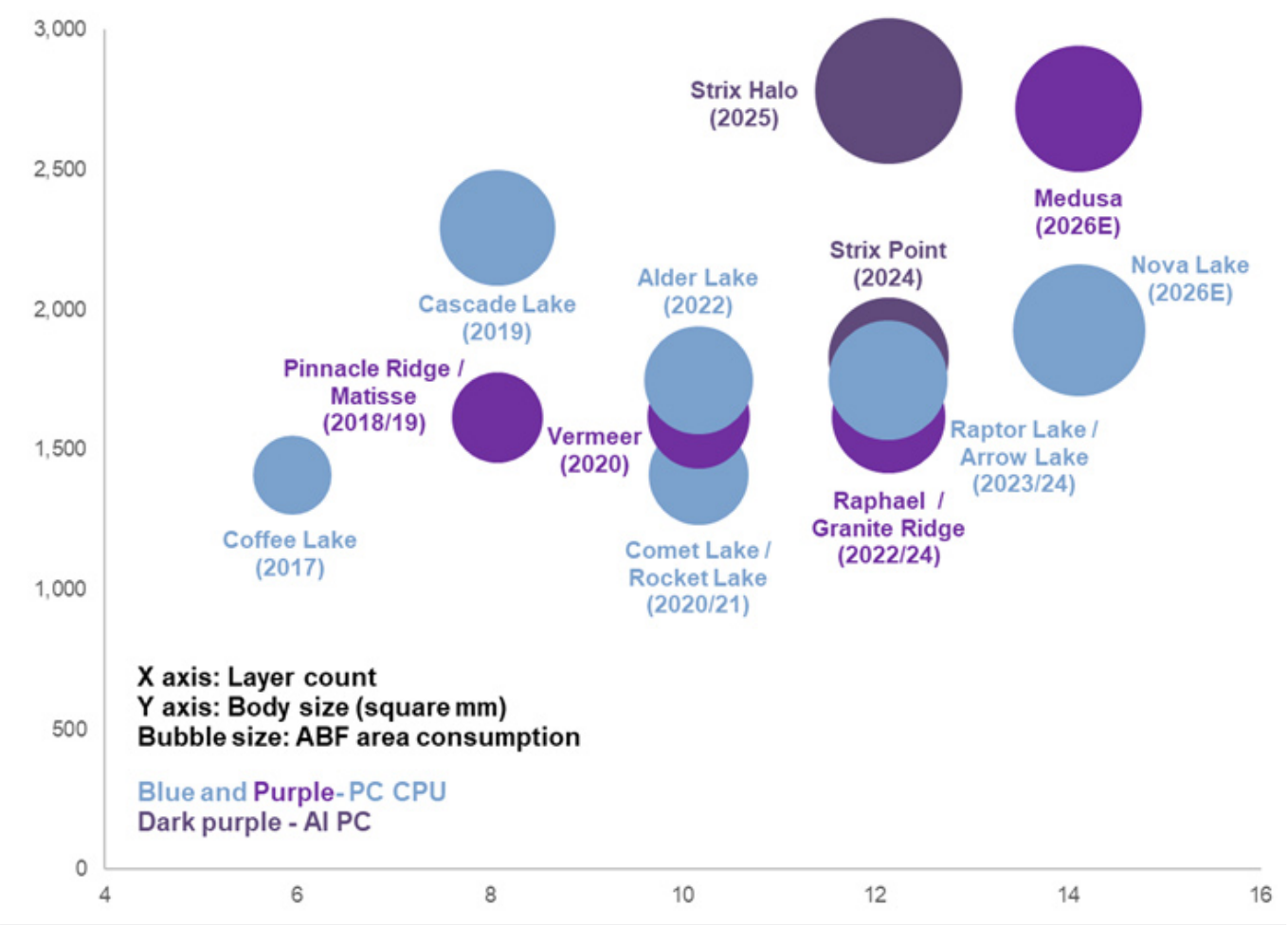
Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 30: Server substrate will continue to upgrade, leading to more demand upside for ABF substrate capacity in the long term, in our view**



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 31: For PC substrate, we estimate AI PC substrate size/layer count will start to outpace general PC substrate



Source: Company data, Goldman Sachs Global Investment Research

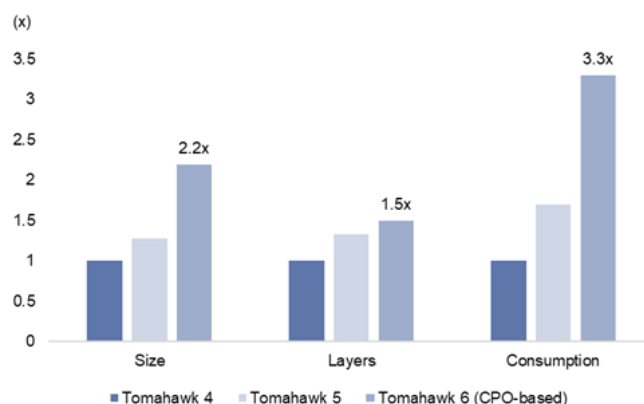
## CPO business opportunity - key demand upside potential for Taiwan substrate suppliers in LT

### CPO as a long-term driver to boost switch ABF substrate consumption

Co-Packaged Optics (CPO) are expected to significantly spur switch ABF substrate dollar content in the coming years due to the increase in substrate size and layer count growth, as CPO packages the optoelectrical modules on the substrate and is mostly utilized in AI/HPC applications that demand high data density. For a high-end CPO switch IC, the package size can rise up to 150mm x 150 mm vs. 87.5mm x 87.5mm for Broadcom Tomahawk 5. We expect the upcoming Tomahawk 6 to adopt CPO with 18 layers (vs. 16 layers in Tomahawk 5). We believe that a CPO-based switch IC (e.g. Tomahawk 6) can have up to 2x the ABF content value compared to a standardized switch IC (e.g. Tomahawk 5). Riding on the significant demand trend for high-speed data transmission and low latency, we expect that the ABF TAM for 800G+ switches could reach US\$92mn, with a CAGR of 146% in 2024-27E.

#### Exhibit 32: CPO based switch IC substrate size and layer count and the total ABF substrate consumption will be much higher than general switch ICs

Rebased Tomahawk 4 substrate size / layer count as 1 (as of 2025)

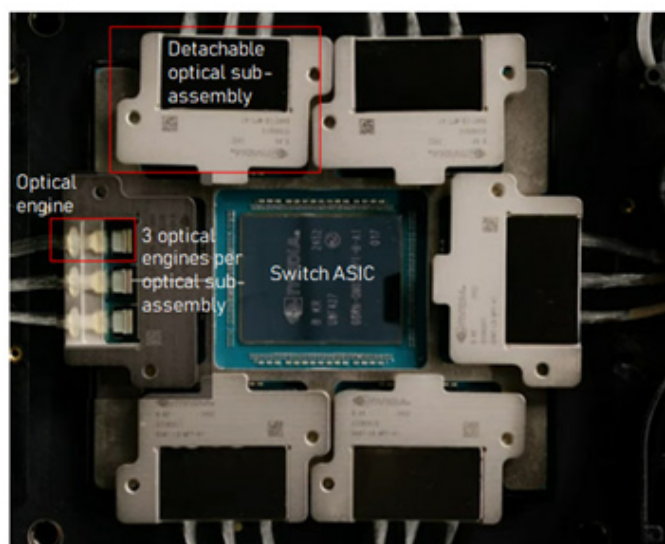


Source: Company data, Goldman Sachs Global Investment Research

### More CPO-based products underway with NVIDIA leading the industry

During GTC 2025, NVIDIA (Not Covered) unveiled Spectrum-X (Ethernet-based) and Quantum-X (InfiniBand-based) as CPO-based network switches ([Link](#)), which will be adopted by the upcoming Rubin server racks in 2026. The Spectrum-X is an Ethernet networking platform, providing multiple configurations with a total throughput of 100/400Tb/s, which we expect to be rolled out in 2H26. Quantum-X, on the other hand, is a switch platform offering 144 ports of 800Gb/s InfiniBand for the standardized model and we expect it to be launched in 2H25. Both switch platforms can support up to 1.6Tb/s per port, which is suitable for interconnection in mega AI factories with millions of GPUs. Our Greater China Tech team did a deep dive into the implications from CPO and its future roadmap ([Link](#)).

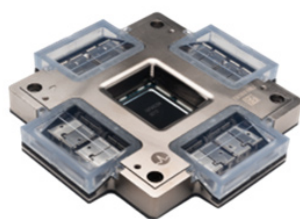
**Exhibit 33: Illustration of Quantum-X configuration with switch ASIC and detachable optical assembly and optical engines**



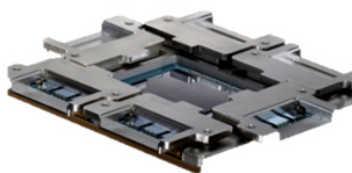
Source: Company data

Based on our conversations with our covered Taiwan ABF companies, if CPO is implemented in a switch IC, the first product to adopt the technology would be the 1.6Tb/s switch. Based on our estimate, the standardized model of 1.6Tb/s switch would have a packaging size of over 100mm x 100mm, and for the upcoming Broadcom Tomahawk 6, assuming that it adopts CPO, the size can rise to 110mm x 120mm based on T-glass material with 18 substrate layers (vs. Tomahawk 5 of 87.5mm x 87.5mm with 16 layers). Given the content upgrade and potential shortage in T-glass, we estimate that the substrate ASP for Tomahawk 6 should cost US\$200+ per unit (vs. US\$100+ for Tomahawk 5).

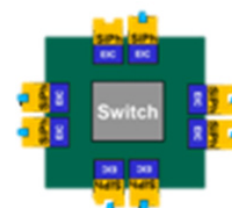
Besides NVIDIA and Broadcom, major chipmakers (such as TSMC) have also started to develop their own CPO-based switch products and prototypes to seize the sizeable emerging market. Regarding the configuration, most chipmakers position the switch ASIC in the middle of the substrate with optical engines on the edge of the package. Depending on the specs design, these switch ICs can have the optoelectrical modules on all four sides of the package (e.g. NVIDIA Quantum-X) or only on one side (e.g. Intel Optical Compute Interconnect, OCI).

**Exhibit 34: Variation of CPO switch products from Broadcom, Nvidia, and TSMC**

**Broadcom**  
BCM78909



**Nvidia**  
Quantum-X



**TSMC**  
CPO with Switch prototype

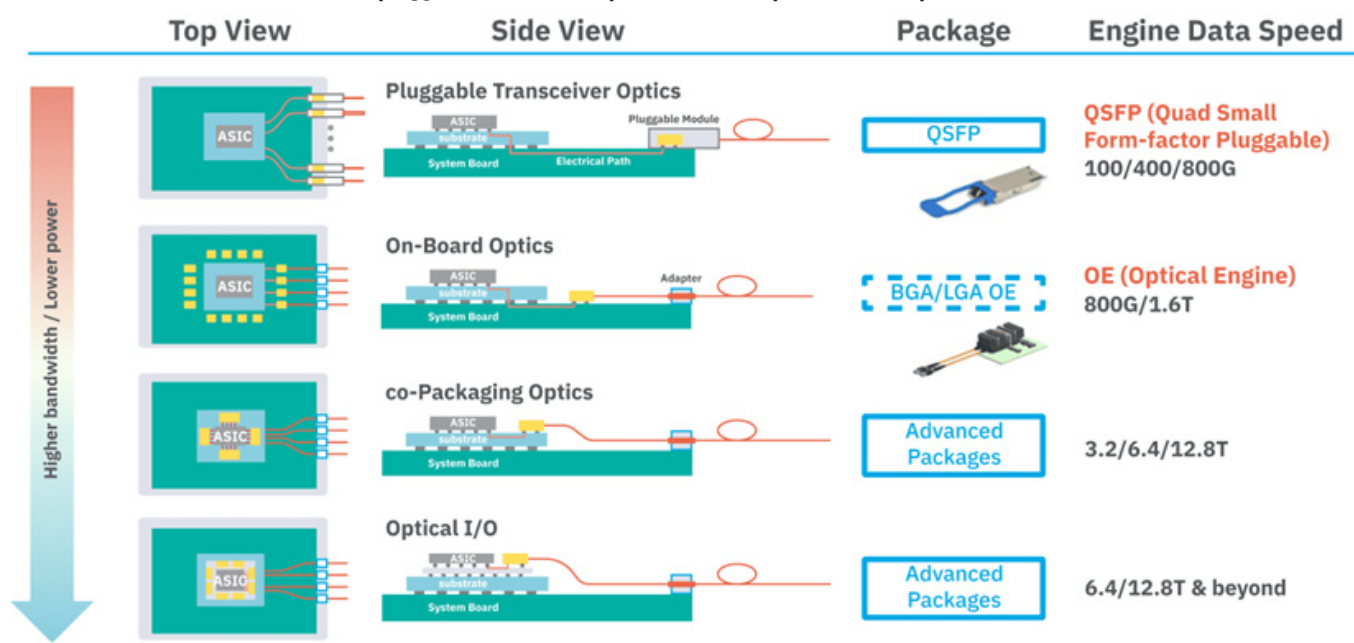
Source: Company data

**The evolution of CPO development**

We believe that the substrate size expansion mainly arises from the technology of packaging optoelectrical module with the ASIC/switch IC, which is the so-called Co-Packaged Optics (CPO). The development evolution of CPO can be broken down into four techniques: pluggable transceiver, on-board optics (OBO), co-packaged optics (CPO), and eventually optical I/O.

**Pluggable transceiver** has been widely adopted by the industry for many years. It is attached at the server's edge, akin to USB interface, to convert electrical signals into photonic signals, which are transmitted through optical fibers. However, this technology currently falls short of meeting the high-speed transmission demand for AI applications. Compared to pluggable transceiver, **on-board optics (OBO)** relocates the optoelectronic conversion module on the printed circuit board (PCB) within the server. As it shortens the distance of electrical signal transmission, OBO can further reduce signal loss and latency.

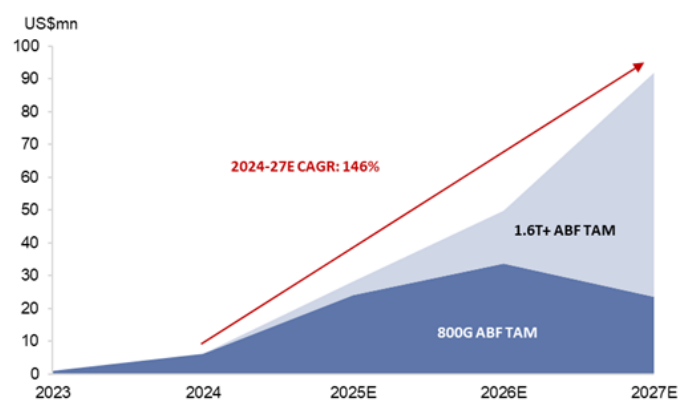
**Co-packaged optics (CPO)** rises to prominence because it positions the optoelectronic conversion module onto the IC substrate, even closer to the processors. Co-packaging electrical integrated circuit (EIC) with photonic integrated circuit (PIC) can significantly increase the data transmission speed and save energy consumption. To achieve the ultimate goal of **optical I/O**, TSMC is currently developing Compact Universal Photonic Engine (COUPE) techniques to stack the EIC directly on the processor chip by using 3D packaging. Given the architectural change, when we package the optoelectronic conversion module on the substrate, the chip will need to leave room for the device, resulting in the increase in substrate packaging size.

**Exhibit 35: The evolution of CPO: from pluggable transceiver optics, on-board optics, CPO, to optical I/O**

Source: Company data

**ABF TAM for 800G+ switches is expected to grow at a 146% CAGR in 2024-27E**

The emerging demand for high-speed data transmission and ultra-low latency will eventually translate into exponential growth for switch ABF consumption in the following years, vastly enhanced by CPO technology. We expect the ABF TAM for 800G+ switch to reach US\$92mn in 2027E, with a CAGR of 146% in 2024-27E, mainly driven by increasing adoption of CPO. Given the acceleration in CPO product roadmap and an increasing number of chipmakers joining the high-end switch market, we believe that CPO penetration will continue to grow exponentially and thus strongly boost the ABF TAM for 800G+ switches.

**Exhibit 36: We believe high-end Switch IC TAM will continue to expand driven by CPO adoption after 2026**

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 37: Tomahawk ASIC substrate spec will upgrade driven by the adoption of CPO**

	Tomahawk	Tom ahawk 2	Tomahawk 3	Tomahawk 4	Tomahawk 5	Tomahawk 6
Launch time	2014	2016	2017	2019	2022	2025/26 (*)
Technology node	28nm	16nm	16nm	7nm	5nm	3nm (*)
Packaging size		4,556	4,556	6,006	7,656	13,200
Network ports	32*100G		32*400G	64*400G	64*800G	64*1.6T
	64*40G	64*100G	64*200G	128*200G	128*400G	128*800G
	128*25G	128*40G	128*100G	256*100G	256*200G	256*400G

Source: Company data, Goldman Sachs Global Investment Research



## Potential earnings downside risks in 2H: (1) Possibility of higher TW electricity cost & (2) Impact from tariffs

As shown in the [Exhibit 38](#) below, after lowering our estimate for ABF substrate market global demand, our earnings estimate is already lower than BBG consensus (except for Zhen Ding, given our positive view on China ABF substrate industry). However, we see further earnings downside risks vs. our current estimates which are (1) the possibility of higher TW electricity cost from 2H25, and (2) the impact from the tariff issue.

Our illustrative analysis shows that higher electricity cost could potentially impact 2025 earnings by 0-17%, while higher tariffs could impact 2025 earnings by 0-60%.

**Exhibit 38: 2025/26 GSe vs. BBG consensus**

NT\$m	2025				2026			
Gse	Kinsus	NYP	Unimicron	ZDT	Kinsus	NYP	Unimicron	ZDT
Sales	37,138	37,831	131,069	189,920	39,611	51,265	153,628	216,731
Gross Profit	9,279	1,995	20,861	37,617	10,462	4,628	28,234	44,698
EBIT	2,987	311	8,813	15,032	4,031	2,698	14,881	20,097
Net income	1,639	631	6,403	10,029	2,527	2,451	11,158	12,817
EPS (NT\$)	3.61	0.98	4.21	10.48	5.57	3.79	7.33	13.40
GM (%)	25.0%	5.3%	15.9%	19.8%	26.4%	9.0%	18.4%	20.6%
OPM (%)	8.0%	0.8%	6.7%	7.9%	10.2%	5.3%	9.7%	9.3%
BBG consensus	Kinsus	NYP	Unimicron	ZDT	Kinsus	NYP	Unimicron	ZDT
Sales	35,815	38,926	135,555	189,674	39,484	46,866	156,661	206,746
Gross Profit	10,918	3,008	23,566	37,385	12,645	5,991	32,518	41,120
EBIT	3,271	2,153	10,747	14,941	4,840	5,268	19,157	17,888
Net income	2,692	2,125	10,424	9,847	3,000	4,269	16,266	11,215
EPS (NT\$)	5.66	2.96	6.47	10.01	6.56	7.45	10.67	11.49
GM (%)	30.5%	7.7%	17.4%	19.7%	32.0%	12.8%	20.8%	19.9%
OPM (%)	9.1%	5.5%	7.9%	7.9%	12.3%	11.2%	12.2%	8.6%
Differences (GSe vs. BBG)	Kinsus	NYP	Unimicron	ZDT	Kinsus	NYP	Unimicron	ZDT
Sales	4%	-3%	-3%	0%	0%	9%	-2%	5%
Gross Profit	-15%	-34%	-11%	1%	-17%	-23%	-13%	9%
EBIT	-9%	-86%	-18%	1%	-17%	-49%	-22%	14%
Net income	-39%	-70%	-39%	2%	-16%	-43%	-31%	14%
EPS (NT\$)	-36%	-67%	-35%	5%	-15%	-49%	-31%	17%
GM (%)	-5.5ppt	-2.5ppt	-1.5ppt	0.1ppt	-5.6ppt	-3.8ppt	-2.4ppt	0.7ppt
OPM (%)	-1.1ppt	-4.7ppt	-1.2ppt	0.0ppt	-2.1ppt	-6.0ppt	-2.5ppt	0.7ppt

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

### Potential downside risk (1) : Possibility of higher TW electricity cost from 2H25

Taiwan Power Company reported their accumulated loss exceeded NT\$420bn in 2024, and the Legislative Yuan cut ~NT\$100bn subsidy in 2025 (see [here](#)), which might result in electricity cost hikes in 2H25. This could impact TW ABF suppliers' earnings.

Our understanding is that the electricity cost accounts for 7%/4.5%/4.5%/3% of Unimicron/NYP/Kinsus/ZDT's total COGS (Unimicron has the highest electricity cost exposure (7%), given the company's key focus in HDI/PCB/high-end ABF substrate, while ZDT has the least electricity cost exposure (3%), considering the company's key focus in FPC), and the Taiwan capacity value accounts for 100%/70%/65%/2% of Kinsus/Unimicron/NYP/ZDT's ABF substrate total capacity value.

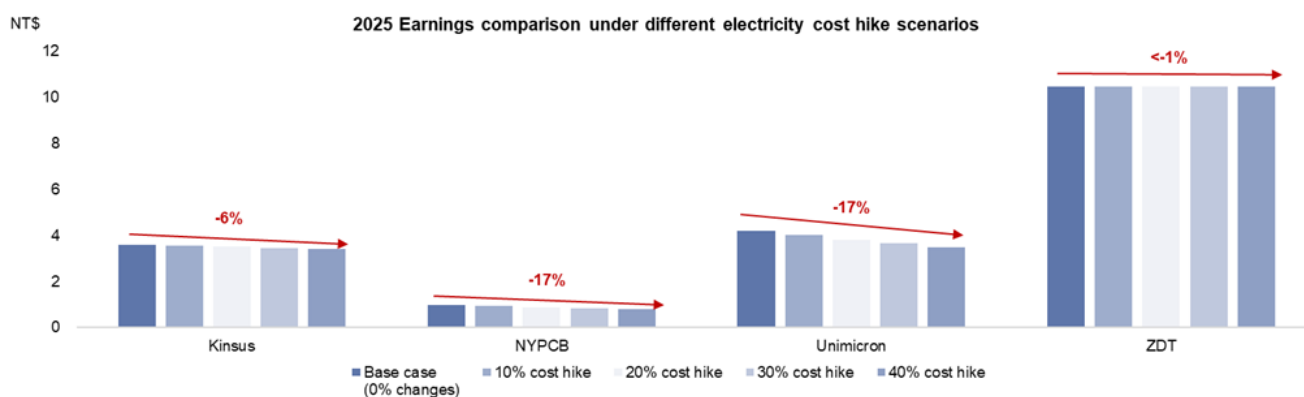
We conduct a sensitivity analysis on how the Taiwan electricity cost hike could impact respective companies' earnings in 2025, and the analysis suggests that Unimicron and NYP could be impacted the most (35% negative impact on 2025 annual earnings if



electricity cost is hiked by 40% in 2H25), followed by Kinsus (6% negative impact on 2025 annual earnings if electricity cost is hiked by 40% in 2H25), while ZDT is likely to see the least impact ([Exhibit 39](#)).

Given there is no official announcement around electricity cost hikes, our sensitivity analysis includes 5 different cases (case 1 is our base case wherein we do not factor any impact from electricity cost hikes in 2H25, and case 2/3/4/5 assume 10/20/30/40% cost hikes in 2H25).

**Exhibit 39: Illustrative analysis: 2025 earnings comparison under different electricity cost hike scenarios**



Source: Company data, Goldman Sachs Global Investment Research

### **Potential downside risk (2) : Impact of tariffs on end-product demand outlook/pricing from 2H25**

The US government on April 2nd announced 32-34% tariffs for the products exported from mainland China and Taiwan (which have been currently paused for 90 days), which if passed onto the customers could increase the end product selling price by 32-34%. This could weigh on components pricing and could also impact consumer demand.

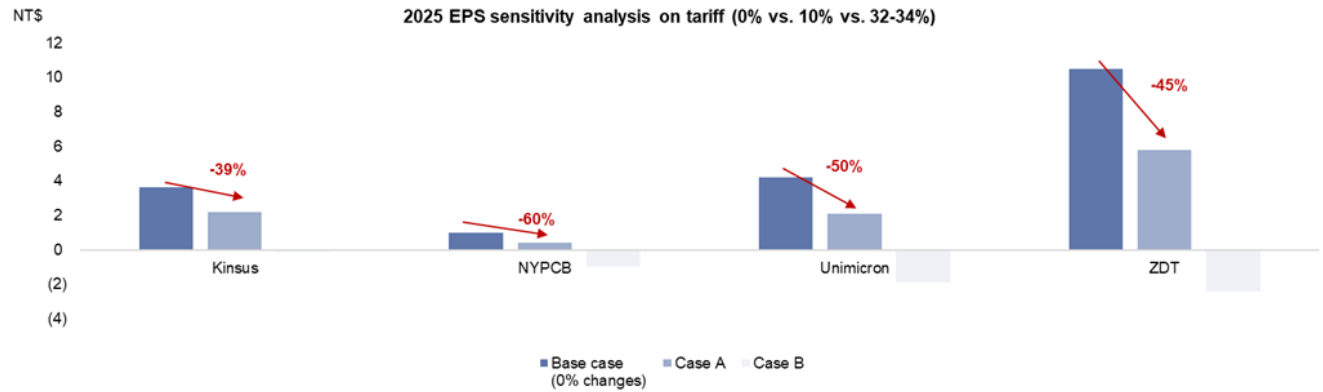
We conduct a sensitivity analysis to see how the ABF substrate suppliers' 2025 earnings could be impacted by the tariffs. Our key assumptions include (1) assuming 50% of the tariff hike is borne by end customers (in a way of price increases) and the remaining 50% of the tariff hike is borne by the supply chain participants, and (2) assuming consumer electronics products price elasticity of demand is 0.7, and enterprise/toB/military, etc. product price elasticity of demand is 0.2 (in-line with our tech team's assumption - [here](#)).

Given the tariffs have been paused for 90 days, our illustrative sensitivity analysis includes 3 different cases (case 1 is our base case wherein we do not factor any impact from tariffs in 2H25, and for the case A, we assume a 10% tariff on all products that export to the US, while for the case B, we assume tariffs for mainland China/Taiwan products to be 32%-34% - in line with president Trump's tariff announcement on April 2nd).

Based on the illustrative sensitivity analysis and cases, we see Kinsus's total 2025 earnings will be impacted by 39%/103% in cases A and B, respectively, while NYPCB will be impacted by 60/200%, Unimicron will be impacted by 50/145%, and ZDT will be

impacted by 45/123% in 2025.

Exhibit 40: Illustrative analysis: 2025 earnings comparison under different tariff scenarios



Source: Company data, Goldman Sachs Global Investment Research

## Valuation: New P/B based valuation methodology to better measure players' stock price during the mixed outlook period

**Exhibit 41: Our 12m TPs and valuation methodology for key ABF names**

Target price derivation	ZDT	Unimicron	NYPCB	Kinsus	Ibiden
Target price based on	2H25-1H26	2H25-1H26	2H25-1H26	2H25-1H26	FY3/26-FY3/27E
Valuation methodology	SOTP	Sector blended P/B	Sector blended P/B	Sector blended P/B	EV/GCI vs. CROCI/WACC
Industry uptrend PB multiple	4.0x	4.0x	4.0x	4.0x	
Industry downtrend P/B multiple	0.5x	0.5x	0.5x	0.5x	
High growth (AI/China ABF) business exposure in 2H25-1H26	70%	25%	25%	11%	
Low growth business exposure in 2H25-1H26	30%	75%	75%	89%	
Target P/B	3.0x	1.4x	1.4x	0.9x	
Substrate BVPS (2H25-1H26)	9.2	66.0	72.1	73.7	
Other sector valuation (NT\$)	88				
<b>Target price (NT\$)</b>	<b>115</b>	<b>90</b>	<b>98</b>	<b>63</b>	<b>6,200</b>
<b>Potential upside/downside</b>	<b>19%</b>	<b>-6%</b>	<b>0%</b>	<b>-17%</b>	<b>60%</b>
<b>TP implied valuation</b>					
<b>PE (x)</b>					
2025	11.0	28.2	100.3	18.0	22.5
2026	8.6	14.6	25.8	11.4	20.6
<b>PB (x)</b>					
2025	1.0	1.4	1.4	0.9	1.6
2026	0.9	1.3	1.3	0.8	1.5
Current share price (as of 28th April, 2025)	97.0	95.3	97.6	76.1	3,883

Source: Company data, Goldman Sachs Global Investment Research

To derive our target prices for Unimicron, NYPCB and Kinsus, we now value the companies' substrates businesses separately according to the contribution of each division (vs. PB/ROE earlier) as this is more appropriate given the mixed outlook period. For each of the company's high-growth substrates (i.e., AI & China ABF substrate business), we use the industry uptrend level P/B of 4.0x, while for their low-growth business (all others), we apply the industry downtrend level P/B of 0.5x (considering the bottom cycle condition now, as mentioned in above section). We then sum up the two business valuations to arrive at **our blended multiple for P/B (Exhibit 41)**, which we use to determine our final target price. Consequently, our target multiple will be highly correlated with the ABF suppliers high growth business exposure.

Meanwhile, for ZDT, we use an SOTP methodology, as the company is not a pure substrate suppliers, which has more exposure to the RPCB/FPC/HDI products, but we use the same valuation methodology to evaluate its substrate business value per share.

**Exhibit 42: Overview of the key TW ABF substrate makers' business and outlook**

Company name	Kinsus	NYP CB	Unimicron	ZDT
Ticker	3189.TW (Sell)	8046.TW (Neutral)	3037.TW(Neutral)	4958.TW (Buy)
Key ABF customers in 2025	AMD, Nvidia, Broadcom, Xilinx, Marvell	AMD, Nvidia, Broadcom, Xilinx, Marvell	Intel, AMD, Nvidia, Broadcom, Xilinx, Marvell	China design house
2025E ABF substrate market share	8%	9%	26%	2%
2025E revenue exposure to ABF substrate	55%	61%	50%	3%
2025E high-end ABF substrate capacity %	40%	55%	72%	85%
2025E AI server ABF substrate revenue %	3%	4%	11%	0%
2025E China customer as % of total ABF	0%	10-15%	5-10%	60%+
2025E revenue mix by products				
2025E ABF revenue mix by application				
2025E ABF substrate capacity mix by region				
2020-27E GM/OPM/ROE trend				
2020-27E ABF revenue and ABF revenue share				

ZDT has 60%+ substrate revenue contributed by ML China customers, considering the company's high market share and best-in-class production capability in ML China ABF industry

Source: Company data, Goldman Sachs Global Investment Research

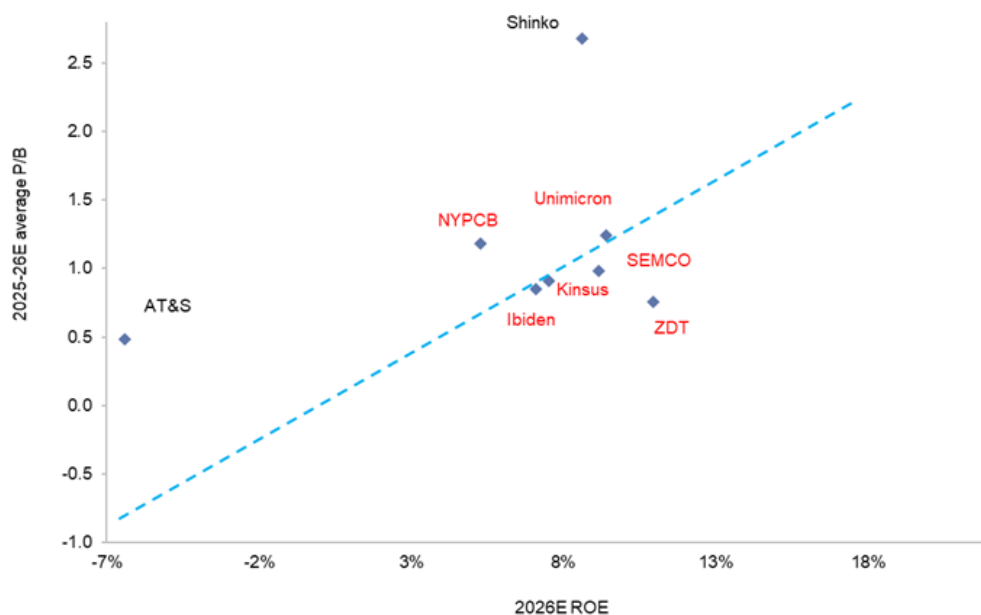
**NYP CB (8046.TW, maintain Neutral):** We cut our NYP CB 12-m TP from NT\$128 to NT\$98, and maintain our Neutral rating on NYP CB. Our new 12-m TP is based on the blended P/B methodology, while our target 2H25-1H26 P/B for high-growth substrate (China & AI) is 4x (in-line with substrate industry upcycle PB multiple average) and 0.5x for low growth business (in-line with industry downcycle valuation). 75% of NYP CB's profit in 2H25-1H26 will be contributed by low growth substrate and 25% will be

contributed by AI & China substrate, making the blended P/B to be 1.4x.

**Unimicron (3037.TW, Downgrade from Buy to Neutral):** We cut our Unimicron 12-m TP from NT\$170 to NT\$90, and downgrade our rating from Buy to Neutral. Our new 12-m TP is based on the blended P/B methodology, while our target 2H25-1H26 PB for high-growth substrate (China & AI) is 4x (in-line with substrate industry upcycle PB multiple average) and 0.5x for low growth business (in-line with industry downcycle valuation). 75% of Unimicron's profit in 2H25-1H26 will be contributed by low growth substrate and 25% will be contributed by AI & China substrate, making the blended P/B to be 1.4x.

**Kinsus (3189.TW, Downgrade from Neutral to Sell):** We cut our Kinsus 12-m TP from NT\$110 to NT\$63, and downgrade our rating from Neutral to Sell. Our new 12-m TP is based on the blended P/B methodology, while our target 2H25-1H26 P/B for high-growth substrate (China & AI) is 4x (in-line with substrate industry upcycle PB multiple average) and 0.5x for low growth business (in-line with industry downcycle valuation). 89% of Kinsus' profit in 2H25-1H26 will be contributed by low growth substrate and 11% will be contributed by AI & China substrate, making the blended P/B to be 0.9x.

**Exhibit 43: Key ABF substrate suppliers PB vs. ROE chart**



Estimate data for AT&S from BBG consensus

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

## Maintain Neutral on NYPCB considering the long transformation period (transitioning into a high-end substrate supplier)

8046.TW		12m Price Target: NT\$98		Price: NT\$97.6		Upside: 0.4%	
Neutral		GS Forecast					
		12/24	12/25E	12/26E	12/27E		
Market cap: NT\$63.1bn / \$1.9bn	Revenue (NT\$ mn) New	32,283.3	37,830.7	51,265.0	60,886.9		
Enterprise value: NT\$52.8bn / \$1.6bn	Revenue (NT\$ mn) Old	32,283.2	42,669.5	55,835.1	62,951.1		
3m ADTV :NT\$388.4mn/ \$11.8mn	EBITDA (NT\$ mn)	5,193.4	7,069.4	9,794.2	13,985.7		
Taiwan	EPS (NT\$) New	0.32	0.98	3.79	8.43		
Taiwan Electronic Components	EPS (NT\$) Old	0.32	4.38	12.38	15.17		
	P/E (X)	NM	99.9	25.7	11.6		
M&A Rank: 3	P/B (X)	2.4	1.4	1.3	1.2		
Leases incl. in net debt & EV?: No	Dividend yield (%)	0.6	0.4	1.6	3.5		
	CROCI (%)	3.9	7.2	8.9	11.4		
		12/24	3/25E	6/25E	9/25E		
	EPS (NT\$)	0.28	0.02	0.10	0.52		

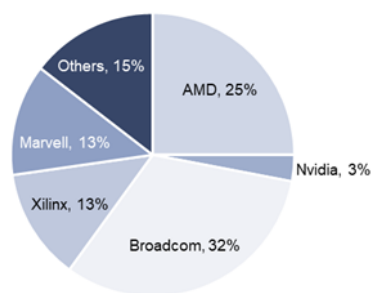
Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 28 Apr 2025 close.

We maintain our Neutral rating on NYPCB, with a new 12-m TP of NT\$98 (from NT\$128) implying 0.4% upside (as of April 28th). We believe NYPCB will be the key beneficiary of CPO adoption trend and its solid market position will in turn result in gaining share in the AI ASIC substrate market in the long term. As a result, NYPCB is better-positioned compared to peers post the recovery. However, we note limited catalysts to earnings in the near term, and potential downside risks (tariffs and Taiwan electricity cost hikes in 2H25). We believe NYPCB could benefit from a solid growth post 2H25-1H26 considering 1) multiple new projects in the pipeline with Switch and AI ASIC customers, and 2) the company's upgraded production lines in Jinshing plant. We expect NYPCB's ABF substrate business to benefit from the solid AI related infrastructure (including AI computing ASIC and switch ASIC) growth in long term.

However, we see limited upside potential for NYPCB in the near term. Considering the potential earnings downside risks (see "Potential earnings downside risks in 2H: (1) Possibility of higher TW electricity cost & (2) Impact from tariffs" section above), and the uncertainty in earnings outlook for the company's high-end business (while NYPCB is still working on its high-end projects qualifications), we maintain our Neutral rating on NYPCB, but will continue to monitor the company's business progress in new high-end project closely.

**Exhibit 44: NYPCB ABF customer breakdown in 2025**

NYPCB ABF customer breakdown in 2025E

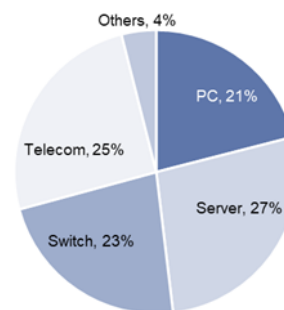


Estimate based on GSe &amp; company's 2024 data

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 45: NYPCB's ABF end applications breakdown**

NYPCB ABF application breakdown in 2025E



Source: Company data, Goldman Sachs Global Investment Research

## Financial data update

### Earnings revision

We cut our 2025/26/27E earnings by 78%/69%/44% to factor in our more bearish view on the legacy ABF substrate business applications demand, while we continue to believe the demand cycle will remain at the bottom level, especially for PC related applications (therefore we cut our 2025/26/27E revenue estimate by 11/8/3% and cut our 2025/26/27E GM estimate by 6.2/11.9/8.7ppt).

**Exhibit 46: NYPCB earnings revision table**

NYPCB P&L (NT\$ mn)	2025E New	2025E Old	Diff.	2026E New	2026E Old	Diff.	2027E New	2027E Old	Diff.
Sales	37,831	42,669	-11%	51,265	55,835	-8%	60,887	62,951	-3%
Gross Profit	1,995	4,894	-59%	4,628	11,705	-60%	8,525	14,292	-40%
EBIT	311	3,345	-91%	2,698	9,990	-73%	6,535	12,342	-47%
Net Income	631	2,831	-78%	2,451	7,998	-69%	5,450	9,804	-44%
EPS (NT\$)	0.98	4.38	-78%	3.79	12.38	-69%	8.43	15.17	-44%
<b>Ratio analysis</b>									
Gross margin	5.3%	11.5%	-6.2pp	9.0%	21.0%	-11.9pp	14.0%	22.7%	-8.7pp
EBIT margin	0.8%	7.8%	-7.0pp	5.3%	17.9%	-12.6pp	10.7%	19.6%	-8.9pp
Net margin	1.7%	6.6%	-5.0pp	4.8%	14.3%	-9.5pp	9.0%	15.6%	-6.6pp

Source: Company data, Goldman Sachs Global Investment Research

### Where we are vs. consensus?

Our 2025/26E net income estimates are 70%/43% lower than Bloomberg consensus, and our gross profit estimates are 34%/23% lower than consensus' estimates. Our 2025/26E OPM estimates are 4.7ppt/6.0ppt lower than Bloomberg consensus (operating income is 86% /49% lower than consensus), because we believe that there are no clear imminent catalysts for the company, and we are bearish about the long-term outlook for its ABF business.

## Exhibit 47: NYPCB GSe v. BBG consensus

	2025E			2026E			2027E		
NYPCB's P&L (NT\$m)	G S est,	Consensus	Diff (%)	GS est,	Consensus	Diff (%)	GS est,	Consensus	Diff (%)
Revenue	37,831	38,926	-3%	51,265	46,866	9%	60,887		
Gross profits	1,995	3,008	-34%	4,628	5,991	-23%	8,525		
Operating profits	311	2,153	-86%	2,698	5,268	-49%	6,535		
Net earnings	631	2,125	-70%	2,451	4,269	-43%	5,450		
EPS, NT\$	0.98	2.96	-67%	3.79	7.45	-49%	8.43		
Gross margin (%)	5.3%	7.7%	-2.5ppt	9.0%	12.8%	-3.8ppt	14.0%		
EBIT margin (%)	0.8%	5.5%	-4.7ppt	5.3%	11.2%	-6.0ppt	10.7%		
Net margin (%)	1.7%	5.5%	-3.8ppt	4.8%	9.1%	-4.3ppt	9.0%		

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

## Exhibit 48: NYPCB P&amp;L table

NT\$m	1Q24	2Q24	3Q24	4Q24	1Q25E	2Q25E	3Q25E	4Q25E	1Q26E	2Q26E	3Q26E	4Q26E	2023	2024	2025E	2026E	2027E
Revenue	7,101	8,121	9,192	7,870	8,458	9,016	10,255	10,102	10,499	12,444	14,208	14,114	42,253	32,283	37,831	51,265	60,887
Gross profit	(380)	183	538	17	305	371	740	580	552	905	1,493	1,677	8,177	358	1,995	4,628	8,525
Operating expense	(414)	(390)	(413)	(408)	(414)	(415)	(431)	(424)	(462)	(448)	(511)	(508)	(1,847)	(1,624)	(1,684)	(1,930)	(1,990)
Operating income	(794)	(207)	125	(391)	(109)	(44)	309	156	90	457	982	1,169	6,330	(1,267)	311	2,698	6,535
Pretax income	(241)	180	67	158	16	81	434	281	215	582	1,057	1,294	7,107	163	811	3,148	6,985
Taxes expense	89	(61)	(8)	21	(3)	(18)	(95)	(64)	(43)	(128)	(233)	(294)	(1,290)	41	(180)	(697)	(1,535)
Net income	(152)	119	59	179	13	63	338	217	172	454	824	1,000	5,817	204	631	2,451	5,450
EPS, NT\$	(0.24)	0.18	0.09	0.28	0.02	0.10	0.52	0.34	0.27	0.70	1.28	1.55	9.00	0.32	0.98	3.79	8.43
Ratio analysis and assumption																	
As % of sales																	
Gross margin	-5.4%	2.3%	5.9%	0.2%	3.6%	4.1%	7.2%	5.7%	5.3%	7.3%	10.5%	11.9%	19.4%	1.1%	5.3%	9.0%	14.0%
Operating expense ratio	5.8%	4.8%	4.5%	5.2%	4.9%	4.6%	4.2%	4.2%	4.4%	3.6%	3.6%	3.6%	4.4%	5.0%	4.5%	3.8%	3.3%
Operating margin	-11.2%	-2.5%	1.4%	-5.0%	-1.3%	-0.5%	3.0%	1.5%	0.9%	3.7%	6.9%	8.3%	15.0%	-3.9%	0.8%	5.3%	10.7%
Net margin	-2.1%	1.5%	0.6%	2.3%	0.1%	0.7%	3.3%	2.1%	1.6%	3.6%	5.8%	7.1%	13.8%	0.6%	1.7%	4.8%	9.0%
QoQ growth (%)																	
Revenue	-23.7%	14.4%	13.2%	-14.4%	7.5%	6.6%	13.8%	-1.5%	3.9%	18.5%	14.2%	-0.7%	-	-	-	-	-
Gross profit	-137.4%	-148.2%	193.1%	-96.9%	1702.5%	21.4%	99.6%	-21.6%	-4.8%	63.9%	65.0%	12.3%	-	-	-	-	-
Operating income	-215.1%	-73.9%	-160.4%	-412.6%	-72.0%	-59.6%	-799.6%	-49.6%	-42.0%	406.9%	114.7%	19.0%	-	-	-	-	-
Net income	-118.1%	-177.8%	-50.3%	203.4%	-92.9%	398.5%	436.7%	-35.9%	-20.6%	163.8%	81.5%	21.3%	-	-	-	-	-
YoY growth (%)																	
Revenue	-43.6%	-19.9%	-10.1%	-15.5%	19.1%	11.0%	11.6%	28.4%	24.1%	38.0%	38.5%	39.7%	-35%	-24%	17%	36%	19%
Gross profit	-110.2%	-90.5%	-64.5%	-98.3%	-180.2%	101.9%	37.5%	3324.6%	80.9%	144.3%	101.9%	189.1%	-68%	-96%	458%	132%	84%
Operating income	-125.1%	-114.3%	-87.9%	-156.6%	-86.2%	-78.7%	147.2%	-139.8%	-182.6%	-1135.7%	217.9%	651.0%	-73%	-120%	-125%	767%	142%
Net income	-106.6%	-92.5%	-94.5%	-78.8%	-108.3%	-46.8%	474.7%	21.4%	1261.0%	620.3%	143.6%	361.0%	-70%	-96%	210%	288%	122%

Source: Company data, Goldman Sachs Global Investment Research

## Valuation

We remain Neutral-rated on NYPCB and update our 12-month target price to NT\$98 (from NT\$128), implying 0.4% (as of 28th April) potential upside. Our target price is based on the new valuation methodology - 1.4x blended P/B in 2H25-1H26 (0.3x STDV lower than base 10-year average P/B of 1.8x; vs. 15x average 2025-26 PB/ROE previously), composed of 0.5x 2H25-1H26 P/B for non-China/non-AI business (75% of 2H25-1H26 profit) and 4x 2H25-1H26 P/B for China/AI business (25% of 2H25-1H26 profit).

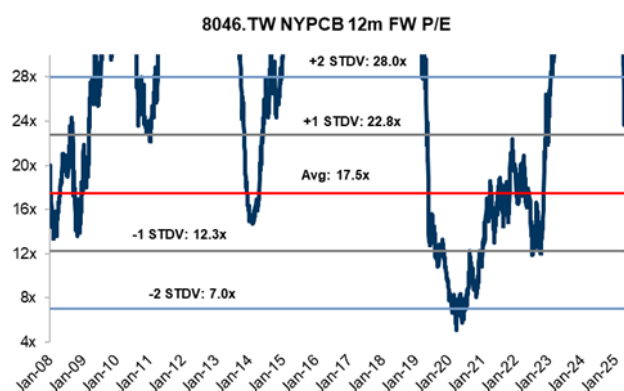
The 0.5x 2H25-1H26 P/B for non-China/non-AI business is in-line with ABF industry bottom level P/B multiple, while the 4x 2H25-1H26 P/B for China/AI business is in-line with ABF industry peak level P/B ratio. We consider this multiple appropriate given the company has entered a downcycle and awaits for new catalysts.

Our TP implies 41.2x average 2025-26E P/E, which is trading at a higher level than the company's P/E ratio since 2008. However, looking at the historical trend, we expect its P/E ratio to go down and EPS to go up in the coming years, after the current cycle/EPS is back to mid-cycle period, offsetting the P/E de-rating effect.



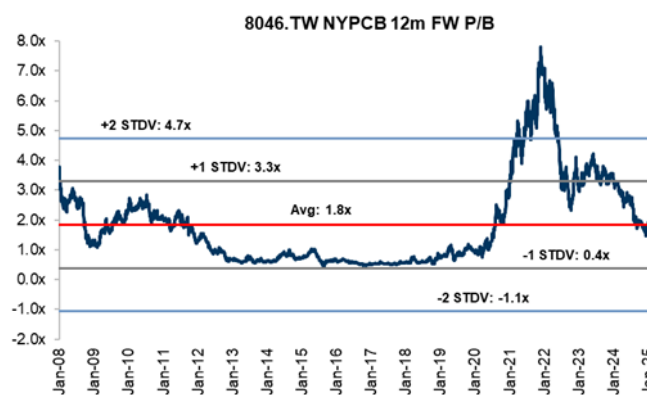
Our valuation methodology change from PB/ROE to sector-blended P/B is mainly due to our less favorable view on the overall ABF substrate industry cycle outlook, and hence we believe P/B methodology is appropriate to better evaluate the company's value. Given the company's high-end products are in a clear upcycle while the legacy products are in a bottom cycle, we believe this blended-based P/B would make the overall company valuation more precise.

**Exhibit 49: NYPCB— 12-m forward P/E multiple is still trading at a high level, we expect PE to go down but EPS to go up, and offset the PE de-rating**



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 50: NYPCB's PB is still trading at a mid-cycle valuation, but excluding the one off high PB during last cycle**



Source: Company data, Goldman Sachs Global Investment Research

### Risks to the investment case

- 1. Slower/Faster-than-expected PC demand recovery:** As mentioned in the previous section, PC still accounts for 50%+ of total ABF substrate market demand going forward, and we believe any slower / faster than expected PC demand recovery in 2025-27 would have a major impact on NYPCB's ABF substrate revenue/profit.
- 2. Slower/Faster-than-expected ABF substrate upgrades:** As mentioned in the earlier section, we continue to believe the pace of ABF substrate industry technology upgrades will continue to be the key demand driver for the overall ABF substrate market, which has prompted NYPCB to transfer most of its mid to low-end capacity to high-end capacity. As such, any slower or faster than expected ABF substrate upgrading speed could pose risk to our estimates and rating.
- 3. Slower/Faster-than-expected new high-end capacity qualification progress:** As mentioned above and in our previous [report](#), NYPCB is upgrading its main ABF plant (Jinshing plant) capacity to high-end ABF substrate capacity to catch up with the strong high-end ABF substrate demand going forward, and we believe any slower/faster than expected new high-end capacity qualification progress will pose risk to our rating and target price (we expect NYPCB's new high-end capacity will start to be qualified by 2H24, suggesting a better outlook in 2025 but not 2024).

## Downgrade Unimicron to Neutral (from Buy) on weaker than expected AI spillover orders and slow PC demand outlook

3037.TW	12m Price Target: NT\$90	Price: NT\$95.3	Downside: 5.6%		
Neutral	GS Forecast				
		12/24	12/25E	12/26E	12/27E
Market cap: NT\$138.6bn / \$4.3bn	Revenue (NT\$ mn) New	115,373.3	131,068.9	153,627.8	174,527.8
Enterprise value: NT\$121.1bn / \$3.7bn	Revenue (NT\$ mn) Old	115,373.3	144,651.9	161,090.2	179,688.3
3m ADTV :NT\$2.0bn/ \$62.4mn	EBITDA (NT\$ mn)	22,347.5	27,713.8	33,782.0	37,199.2
Taiwan	EPS (NT\$) New	3.34	4.21	7.33	9.58
Taiwan Electronic Components	EPS (NT\$) Old	3.34	8.30	13.06	15.51
	P/E (X)	50.8	22.7	13.0	9.9
M&A Rank: 3	P/B (X)	2.8	1.5	1.4	1.3
Leases incl. in net debt & EV?: No	Dividend yield (%)	0.9	1.3	3.1	4.0
	CROCI (%)	7.3	11.4	12.6	12.7
		12/24	3/25E	6/25E	9/25E
	EPS (NT\$)	0.04	0.60	0.85	1.26

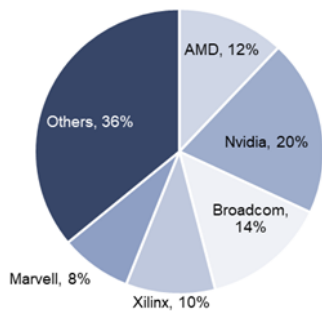
Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 28 Apr 2025 close.

As mentioned in the earlier section, we believe the ABF substrate demand outlook would become less favorable in the coming quarters on the back of lower than expected AI server GPU substrate shipment (we cut the AI server GPU substrate TAM by 50% in 2025E) followed by slower AI server rack shipment outlook and estimates cut and the increase in pricing pressure (see [here](#)). Post our downward revision of overall AI server rack shipment (see [here](#)) and the possible slowing of AI GPU demand in 2H25, we now cut our Unimicron AI GPU substrate market share estimate from ~15-20% by end of 2025 to <10%, and factor in a much lesser AI GPU substrate ASP, due to the possible fiercer pricing competition. Also, as mentioned in the previous section, on the possible impact from tariff, we believe PC CPU substrate customers could start the next round of inventory digestion in 2H25, making us less positive on Unimicron's ABF substrate business outlook (as ~37% of Unimicron's ABF will be related to PC related demand in 2025, per GSe), despite some possible rush order and pricing hike in 1H25 (we believe key PC substrate suppliers are negotiating with customers on pricing hike due to the rising material costs which suggest further loss for the PC substrate business, but we believe the rising PC substrate pricing could eventually result in another round of inventory digestion due to weak end demand). We downgrade Unimicron to Neutral from Buy, with a new TP of NT\$90 (from NT\$170), implying 6% downside (as of April 28th). Since being added to the Buy List on Aug 11, 2020, the stock is up 17% vs the Taiwan SE Weighted Index up 57% (as of April 28th). We believe the weak performance compared to the index was mainly due to the ongoing ABF substrate industry downtrend, and oversupply issue, which weighed on the company's profitability and earnings outlook.

For AI server HDI products, Unimicron’s small size products started earning profits with better production yield rate in 1Q25, per the management. However, the large size HDI for GB200 computing tray is still a loss making product in Unimicron’s product portfolio per our calculation, and it could continue to lose market share to its key Chinese competitor if the production yield does not improve in coming quarters (we already factor in a 50% market share for Unimicron by end of 2025, from 70% previously). For the next generation GPU AI server rack (GB300), we believe the large size HDI solution (Bianca solution) will be the mainstream design, which could be Unimicron’s next opportunity to regain market share if the company can provide a better quality product with good accessibility and competitive pricing. However, we only estimate 50% market share for now (no change vs. GB200 computing board).

Exhibit 51: Unimicron ABF customer breakdown in 2025

Unimicron ABF customer breakdown in 2025E

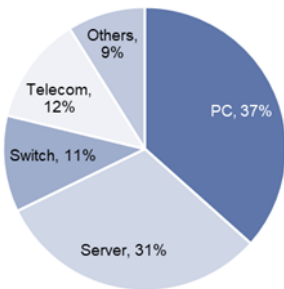


Estimate based on GSe & company’s 2024 data

Source: Company data, Goldman Sachs Global Investment Research

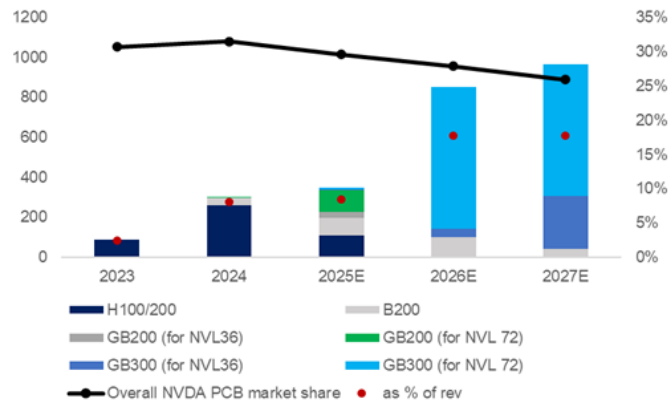
Exhibit 52: Unimicron’s ABF end applications breakdown

Unimicron ABF application breakdown in 2025E



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 53: We believe Unimicron’s AI PCB revenue will further expand, but its market share in the industry will continue to go down



We estimate Unimicron’s market share in NVDA’s PCB supply chain based on our estimates on the PCB industry

Source: Company data, Goldman Sachs Global Investment Research

## Financial data update

### Earnings revision

We cut our 2025/26/27E earnings by 49/44/38% to factor in our bearish view on the legacy ABF substrate business applications demand and our less favorable estimate on

AI HDI market share in coming years (cut 2025/26/27E revenue by 9/5/3%, and cut GM estimate by 3.2/5.4/5.0ppt).

#### Exhibit 54: Unimicron earnings revision table

Unimicron P&L (NT\$ mn)	2025E New	2025E Old	Diff.	2026E New	2026E Old	Diff.	2027E New	2027E Old	Diff.
Sales	131,069	144,652	-9%	153,628	161,090	-5%	174,528	179,688	-3%
Gross Profit	20,861	27,599	-24%	28,234	38,311	-26%	33,922	43,916	-23%
EBIT	8,813	15,294	-42%	14,881	24,499	-39%	19,219	29,212	-34%
Net Income	6,403	12,635	-49%	11,158	19,885	-44%	14,589	23,604	-38%
EPS (NT\$)	4.21	8.30	-49%	7.33	13.06	-44%	9.58	15.51	-38%
<b>Ratio analysis</b>									
Gross margin	15.9%	19.1%	-3.2pp	18.4%	23.8%	-5.4pp	19.4%	24.4%	-5.0pp
EBIT margin	6.7%	10.6%	-3.8pp	9.7%	15.2%	-5.5pp	11.0%	16.3%	-5.2pp
Net margin	4.9%	8.7%	-3.8pp	7.3%	12.3%	-5.1pp	8.4%	13.1%	-4.8pp

Source: Company data, Goldman Sachs Global Investment Research

#### Where we are vs. consensus?

Our 2025/26E net income estimates are 39/31% lower than Bloomberg consensus, considering our 11/13% lower than BBG consensus' gross profit estimates, given our more bearish view on Unimicron's ABF segment and AI HDI profitability outlook. Our 2025/26E OPM estimate is 1.2/2.5ppt lower than Bloomberg consensus (operating income is 18/22% lower than consensus), mainly driven by the market share loss from its AI business and weaker ABF capacity expansion plan in the coming years.

#### Exhibit 55: Unimicron GSe v. BBG consensus

Unimicron's P&L (NT\$mn)	2025E			2026E			2027E		
	GS est.	Consensus	Diff (%)	GS est.	Consensus	Diff (%)	GS est.	Consensus	Diff (%)
Revenue	131,069	135,555	-3%	153,628	156,661	-2%	174,528		
Gross profits	20,861	23,566	-11%	28,234	32,518	-13%	33,922		
Operating profits	8,813	10,747	-18%	14,881	19,157	-22%	19,219		
Net earnings	6,403	10,424	-39%	11,158	16,266	-31%	14,589		
EPS, NT\$	4.21	6.47	-35%	7.33	10.67	-31%	9.58		
Gross margin (%)	15.9%	17.4%	-1.5ppt	18.4%	20.8%	-2.4ppt	19.4%		
EBIT margin (%)	6.7%	7.9%	-1.2ppt	9.7%	12.2%	-2.5ppt	11.0%		
Net margin (%)	4.9%	7.7%	-2.8ppt	7.3%	10.4%	-3.1ppt	8.4%		

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

## Exhibit 56: Unimicron P&amp;L table

	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25E	3Q25E	4Q25E	1Q26E	2Q26E	3Q26E	4Q26E	2023	2024E	2025E	2026E	2027E
Revenue	26,403	27,877	31,712	29,381	30,090	32,669	34,678	33,633	33,827	37,728	39,971	42,101	104,036	115,373	131,069	153,628	174,528
Gross profit	4,292	3,683	4,942	3,398	4,026	4,853	5,880	6,101	6,079	6,826	7,739	7,591	20,302	16,315	20,861	28,234	33,922
Operating expense	(2,714)	(2,786)	(2,980)	(2,719)	(2,759)	(3,071)	(3,190)	(3,027)	(2,977)	(3,358)	(3,398)	(3,621)	(11,382)	(11,198)	(12,047)	(13,353)	(14,703)
Operating income	1,578	897	1,962	679	1,267	1,782	2,690	3,074	3,102	3,468	4,341	3,971	8,920	5,117	8,813	14,881	19,219
Pretax income	3,357	2,130	1,514	319	1,373	1,782	2,690	3,074	3,102	3,468	4,341	3,971	15,575	7,321	8,920	14,881	19,219
Taxes expense	(695)	(399)	(424)	(247)	(450)	(392)	(619)	(598)	(620)	(763)	(998)	(772)	(3,350)	(1,765)	(2,058)	(3,153)	(4,059)
Net income	2,434	1,595	997	56	915	1,290	1,921	2,277	2,362	2,605	3,193	2,999	11,980	5,082	6,403	11,158	14,589
EPS, NT\$	1.60	1.05	0.66	0.04	0.60	0.85	1.26	1.50	1.55	1.71	2.10	1.97	7.88	3.34	4.21	7.33	9.58
Ratio analysis and assumption																	
As % of sales																	
Gross margin	16.3%	13.2%	15.6%	11.6%	13.4%	14.9%	17.0%	18.1%	18.0%	18.1%	19.4%	18.0%	19.5%	14.1%	15.9%	18.4%	19.4%
Operating expense ratio	10.3%	10.0%	9.4%	9.3%	9.2%	9.4%	9.2%	9.0%	8.8%	8.9%	8.5%	8.6%	10.9%	9.7%	9.2%	8.7%	8.4%
Operating margin	6.0%	3.2%	6.2%	2.3%	4.2%	5.5%	7.8%	9.1%	9.2%	9.2%	10.9%	9.4%	8.6%	4.4%	6.7%	9.7%	11.0%
Net margin	9.2%	5.7%	3.1%	0.2%	3.0%	3.9%	5.5%	6.8%	7.0%	6.9%	8.0%	7.1%	11.5%	4.4%	4.9%	7.3%	8.4%
QoQ growth (%)																	
Revenue	2.8%	5.6%	13.8%	-7.4%	2.4%	8.6%	6.1%	-3.0%	0.6%	11.5%	5.9%	5.3%	-	-	-	-	-
Gross profit	-4.8%	-14.2%	34.2%	-31.2%	18.5%	20.5%	21.2%	3.8%	-0.4%	12.3%	13.4%	-1.9%	-	-	-	-	-
Operating income	13.5%	-43.2%	118.7%	-65.4%	86.5%	40.7%	50.9%	14.3%	0.9%	11.8%	25.2%	-8.5%	-	-	-	-	-
Net income	-16.3%	-34.4%	-37.5%	-94.4%	1531.2%	41.1%	48.9%	18.5%	3.7%	10.3%	22.6%	-6.1%	-	-	-	-	-
YoY growth (%)																	
Revenue	-0.6%	10.5%	19.5%	14.4%	14.0%	17.2%	9.4%	14.5%	12.4%	15.5%	15.3%	25.2%	-26%	11%	14%	17%	14%
Gross profit	-21.4%	-27.8%	-5.5%	-24.6%	-6.2%	31.8%	19.0%	79.5%	51.0%	40.6%	31.6%	24.4%	-60%	-20%	28%	35%	20%
Operating income	-45.7%	-61.9%	-13.5%	-51.1%	-19.7%	98.7%	37.1%	352.5%	144.9%	94.6%	61.4%	29.2%	-77%	-43%	72%	69%	29%
Net income	-40.6%	-33.2%	-61.5%	-98.1%	-62.4%	-19.1%	92.7%	3960.9%	158.2%	101.9%	66.2%	31.7%	-60%	-58%	26%	74%	31%

Source: Company data, Goldman Sachs Global Investment Research

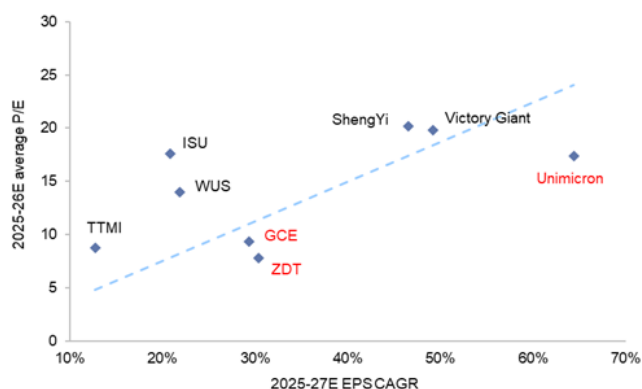
## Valuation

We downgrade Unimicron to Neutral from Buy and update our 12-month target price of NT\$90 (from NT\$ 170), implying 5.6% potential downside (as of April 28th). Our target price is based on the new valuation methodology - 1.4x blended P/B in 2H25-1H26 (0.1x STDV lower than past 15+ years average of 1.5x vs. 16x average 2025/26E PB/ROE earlier), based on 0.5x 2H25-1H26 P/B for non-China/non-AI business (75% of 2H25-1H26 profit) and 4x 2H25-1H26 P/B for China/AI business (25% of 2H25-1H26 profit).

The 0.5x 2H25-1H26 P/B for non-China/non-AI business is in-line with ABF industry bottom level P/B multiple, while the 4x 2H25-1H26 P/B for China/AI business is in-line with ABF industry peak level P/B ratio. We consider this multiple appropriate given the potential LT de-rating trend for Unimicron as it continues to lose market share in AI HDI business.

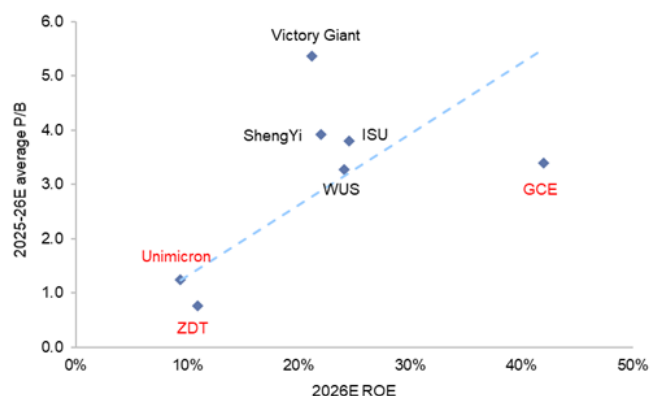
Our TP implies 16.1x average 2025-26E P/E, which is slightly above the average of the company's P/E ratio since 2008. This in our view is reasonable due to its relatively robust earnings growth (37% earnings CAGR in 2024-2027E).

Our valuation methodology change from PB/ROE to sector-blended P/B is mainly due to our less favorable view on the overall ABF substrate industry cycle outlook, and hence we believe P/B methodology is appropriate to better evaluate the company's value. Given that the company's high-end products are in a clear upcycle while the legacy products are in the bottom cycle, we believe this blended-based P/B would make the overall company value valuation more precise.

**Exhibit 57: Key AI PCB suppliers' 2025-26E average PE vs. 2025-27E EPS CAGR**

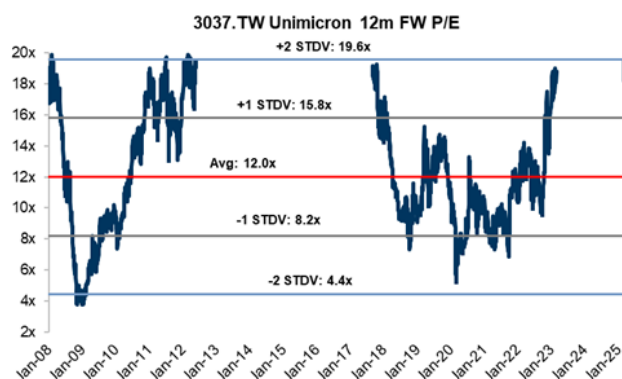
Non-covered names estimate from BBG consensus

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

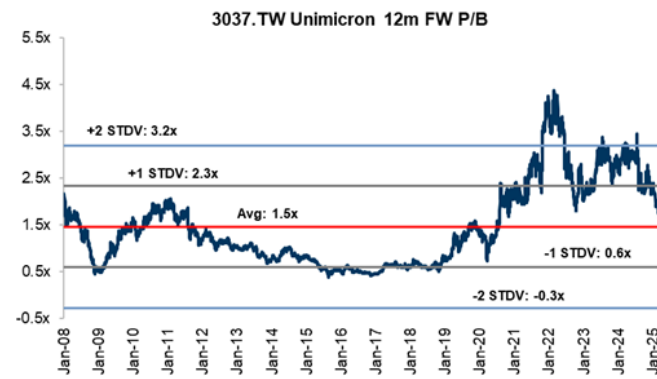
**Exhibit 58: Key AI PCB suppliers' 2025-26E average PB vs. 2026E ROE**

Non-covered names estimate from BBG consensus

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

**Exhibit 59: Unimicron— P/E multiple is still trading at a higher level, with overly positive consensus outlook from ABF industry/AI PCB**

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 60: Unimicron's PB is still trading at a mid-cycle valuation**

Source: Company data, Goldman Sachs Global Investment Research

### Risks to the investment case

- 1. Slower/Faster-than-expected PC demand recovery:** PC still accounts for 50+% of total ABF substrate market demand or 30%+ of Unimicron's ABF revenue in coming years, and we believe any slower / faster than expected PC demand recovery in 2025-27 would have a major impact on NYPCB's ABF substrate revenue/profit.
- 2. Slower/Faster-than-expected ABF substrate upgrades:** We continue to believe the pace of ABF substrate industry technology upgrades will continue to be the key demand driver for the overall ABF substrate market. Having said that, Unimicron has been adapting to the market and focusing on technology-related upgrades which has made Unimicron better positioned vs. the peers in the past 2 years downcycle. As such, slower or faster than expected pace of ABF substrate upgrades could pose risk to our estimates and rating.
- 3. Slower/Faster than-expected AI server PCB market share loss progress:** We believe Unimicron could start losing its market share and leadership position in the AI server HDI market, given the company's slower than expected yield rate ramp up progress in the past 4 quarters. We believe any slower / faster than expected AI

server PCB market share loss progress will pose risk to our estimates and rating.



## Downgrade Kinsus to Sell (from Neutral) on less favorable mid- to-low-end ABF substrate market growth outlook, with new TP of NT\$63

3189.TW		12m Price Target: NT\$63		Price: NT\$74.1		Downs ide: 15.0%	
Sell		GS Forecast					
			12/24	12/25E	12/26E	12/27E	
Market cap: NT\$34.3bn / \$1.1bn	Revenue (NT\$ mn) New		30,535.0	37,138.5	39,611.2	45,117.1	
Enterprise value: NT\$31.1bn / \$957.6mn	Revenue (NT\$ mn) Old		30,535.3	38,510.9	45,028.4	49,962.0	
3m ADTV :NT\$465.0mn/ \$14.2mn	EBITDA (NT\$ mn)		7,228.3	8,816.4	9,572.1	10,818.5	
Taiwan	EPS (NT\$) New		0.11	3.61	5.57	7.82	
Taiwan Electronic Components	EPS (NT\$) Old		0.11	5.21	9.50	11.27	
	P/E (X)		NM	21.1	13.7	9.7	
M&A Rank: 3	P/B (X)		1.5	1.1	1.0	0.9	
Leases incl. in net debt & EV?: Yes	Dividend yield (%)		1.0	1.4	2.2	3.1	
	CROCI (%)		11.3	16.7	11.2	11.6	
			12/24	3/25E	6/25E	9/25E	
	EPS (NT\$)		(0.55)	0.61	0.82	1.33	

Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 28 Apr 2025 close.

We downgrade Kinsus to Sell from Neutral, with a revised 12m TP of NT\$63 (from NT\$110). While we remain positive on Kinsus' increasing exposure in the gaming substrate business, and expect the company to continue to see an increase in market share, we don't expect the gaming substrate demand to grow significantly in next few years to offset the drag to earnings from the company's consumer electronics related products (including BT) in the coming quarters (34% of Kinsus' revenue was contributed by BT substrate in 2024).

Moreover, while Kinsus continues to focus on AI server GPU substrate testing and qualification and expects to reach 10% market share in 2025, we believe the target looks optimistic given our outlook for NT demand for the segment. As discussed in the Unimicron company section, we expect a weaker than expected AI server GPU substrate demand in 2H25 with high inventory built up in 1H25, and believe Unimicron would see less spillover orders from Ibiden. For Kinsus, we expect lower market share compared to Unimicron given Kinsus' exposure is still limited to the mid- to-low-end of the ABF substrate market. Within the broader ABF substrate, we expect the company to reach single digit market share by 2026, with potentially some testing orders in 2025.

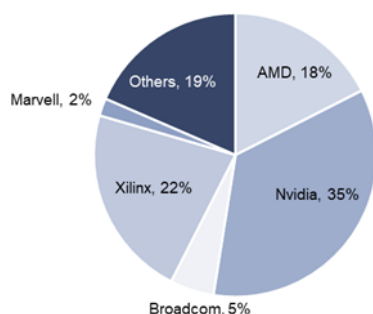
On the other hand, we note Kinsus is increasing its focus on qualification and testing for several high-end projects, and also expanding exposure from computing to networking, which we believe is well positioned to supply to the high-end switch ICs in 2025. We believe this could be positive for Kinsus' overall ABF substrate business outlook given the diversification to high-end customers. However, we believe the new projects are still in the early stages and are unlikely to contribute significantly to the overall



revenue/profits for the company in the near-term. We expect this momentum to be more significant after mid-2026E when we expect the industry S/D to reach a balance, until which time we expect peers with strong positioning in key high-end projects to sustain their market share during the ongoing industry downcycle.

**Exhibit 61: Kinsus ABF customer breakdown in 2025E**

Kinsus ABF customer breakdown in 2025E

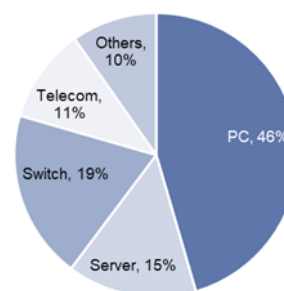


Estimate based on GSe & company's 2024 data

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 62: Kinsus' ABF end applications breakdown**

Kinsus ABF application breakdown in 2025E



Source: Company data, Goldman Sachs Global Investment Research

## Financial Estimates

### Earnings revision

We cut our 2025/26/27E earnings by 30/41/31% to factor in our less positive view on the demand for legacy ABF substrate business applications as well as the less favorable than previously expected AI server substrate revenue (we cut 2025/26/27 revenue estimate by 4/12/10%, and cut OPM estimate by 2.5/4.2/2.7ppt in 2025/26/27E to factor in the less favorable product mix and utilization rate).

**Exhibit 63: Kinsus earnings revision table**

Kinsus P&L (NT\$ mn)	2025E New	2025E Old	Diff.	2026E New	2026E Old	Diff.	2027E New	2027E Old	Diff.
Sales	37,138	38,511	-4%	39,611	45,028	-12%	45,117	49,962	-10%
Gross Profit	9,279	12,306	-25%	10,462	15,185	-31%	12,487	17,073	-27%
EBIT	2,987	4,051	-26%	4,031	6,461	-38%	5,551	7,475	-26%
Net Income	1,639	2,350	-30%	2,527	4,282	-41%	3,548	5,082	-30%
EPS (NT\$)	3.61	5.21	-31%	5.57	9.50	-41%	7.82	11.27	-31%
<b>Ratio analysis</b>									
Gross margin	25.0%	32.0%	-7.0ppt	26.4%	33.7%	-7.3ppt	27.7%	34.2%	-6.5ppt
EBIT margin	8.0%	10.5%	-2.5ppt	10.2%	14.3%	-4.2ppt	12.3%	15.0%	-2.7ppt
Net margin	4.4%	6.1%	-1.7ppt	6.4%	9.5%	-3.1ppt	7.9%	10.2%	-2.3ppt

Source: Company data, Goldman Sachs Global Investment Research

### Where we are vs. consensus?

Our 2025/26E net income estimates are 36/16% lower than Bloomberg consensus, where our 2025/26E OPM estimate is 1.1ppt/2.1ppt lower than Bloomberg consensus (operating income is 9% /17% lower than consensus), as we believe that there are no clear mid-term catalysts despite a better than previously expected gaming GPU demand in the 1Q25.

**Exhibit 64: Kinsus GSe v. BBG consensus**

Kinsus' P&L (NT\$m)	2025E			2026E			2027E		
	G S est.	Consensus	Diff (%)	GS est.	Consensus	Diff (%)	G S est.	Consensus	Diff (%)
Revenue	37,138	35,815	4%	39,611	39,484	0%	45,117	45,638	-1%
Gross profits	9,279	10,918	-15%	10,462	12,645	-17%	12,487		
Operating profits	2,987	3,271	-9%	4,031	4,840	-17%	5,551	5,583	-1%
Net earnings	1,639	2,692	-39%	2,527	3,000	-16%	3,548	3,579	-1%
EPS, NT\$	3.61	5.66	-36%	5.57	6.56	-15%	7.82	7.93	-1%
Gross margin (%)	25.0%	30.5%	-5.5ppt	26.4%	32.0%	-5.6ppt	27.7%		
EBIT margin (%)	8.0%	9.1%	-1.1ppt	10.2%	12.3%	-2.1ppt	12.3%	12.2%	0.1ppt
Net margin (%)	4.4%	7.5%	-3.1ppt	6.4%	7.6%	-1.2ppt	7.9%	7.8%	0.0ppt

Source: Company data, Goldman Sachs Global Investment Research, Bloomberg

**Exhibit 65: Kinsus P&L table**

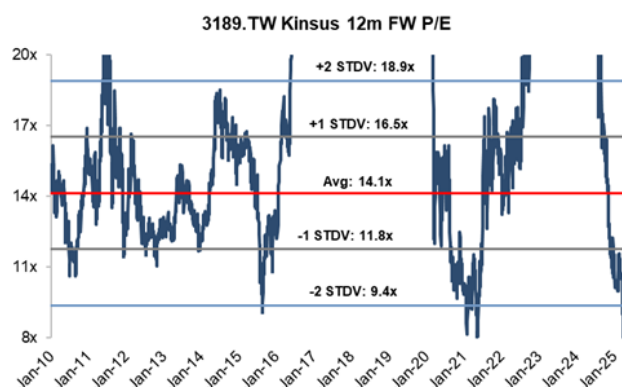
NT\$m	1Q24	2Q24	3Q24	4Q24	1Q25E	2Q25E	3Q25E	4Q25E	1Q26E	2Q26E	3Q26E	4Q26E	2023	2024E	2025E	2026E	2027E
Revenue	6,994	7,300	8,197	8,043	8,620	9,292	9,964	9,263	8,989	9,700	10,431	10,490	26,833	30,535	37,138	39,611	45,117
Gross profit	1,890	2,124	2,408	2,246	1,942	2,300	2,525	2,512	2,328	2,550	2,752	2,831	6,757	8,668	9,279	10,462	12,487
Operating expense	(1,569)	(1,769)	(1,985)	(2,250)	(1,440)	(1,625)	(1,604)	(1,622)	(1,517)	(1,583)	(1,665)	(1,665)	(5,715)	(7,572)	(6,292)	(6,431)	(6,936)
Operating income	321	355	422	(3)	501	674	921	891	811	966	1,087	1,166	1,042	1,095	2,987	4,031	5,551
Pretax income	469	470	562	102	700	774	1,021	891	911	1,066	1,187	1,151	1,426	1,603	3,385	4,316	5,736
Taxes expense	(76)	(49)	(74)	(73)	(88)	(139)	(174)	(223)	(164)	(192)	(214)	(207)	(256)	(272)	(623)	(777)	(1,032)
Net income	25	89	185	(249)	276	374	602	386	550	633	706	638	48	49	1,639	2,527	3,548
EPS, NT\$	0.05	0.20	0.41	(0.55)	0.61	0.82	1.33	0.85	1.21	1.39	1.55	1.40	0.11	0.11	3.61	5.57	7.82
<b>Ratio analysis and assumption</b>																	
<b>As % of sales</b>																	
Gross margin	27.0%	29.1%	29.4%	27.9%	22.5%	24.7%	25.3%	27.1%	25.9%	26.3%	26.4%	27.0%	25.2%	28.4%	25.0%	26.4%	27.7%
Operating expense ratio	22.4%	24.2%	24.2%	28.0%	16.7%	17.5%	16.1%	17.5%	16.9%	16.3%	16.0%	15.9%	21.3%	24.8%	16.9%	16.2%	15.4%
Operating margin	4.6%	4.9%	5.1%	0.0%	5.8%	7.3%	9.2%	9.6%	9.0%	10.0%	10.4%	11.1%	3.9%	3.6%	8.0%	10.2%	12.3%
Net margin	0.4%	1.2%	2.3%	-3.1%	3.2%	4.0%	6.0%	4.2%	6.1%	6.5%	6.8%	6.1%	0.2%	0.2%	4.4%	6.4%	7.9%
<b>QoQ growth (%)</b>																	
Revenue	-6.6%	4.4%	12.3%	-1.9%	7.2%	7.8%	7.2%	-7.0%	-3.0%	7.9%	7.5%	0.6%	-	-	-	-	-
Gross profit	-18.2%	12.4%	13.4%	-6.7%	-13.6%	18.4%	9.8%	-0.5%	-7.3%	9.5%	7.9%	2.9%	-	-	-	-	-
Operating income	-53.9%	10.6%	18.8%	-100.8%	NM	34.5%	36.6%	-3.3%	-9.0%	19.2%	12.5%	7.3%	-	-	-	-	-
Net income	-91.1%	261.5%	109.2%	-234.6%	-210.7%	35.7%	60.9%	-35.9%	42.6%	15.0%	11.5%	-9.7%	-	-	-	-	-
Revenue	2.3%	13.0%	35.6%	7.4%	23.2%	27.3%	21.6%	15.2%	4.3%	4.4%	4.7%	13.2%	-37%	14%	22%	7%	14%
Gross profit	18.0%	43.5%	76.5%	-2.8%	2.7%	8.3%	4.9%	11.8%	19.9%	10.9%	9.0%	12.7%	-57%	28%	7%	13%	19%
Operating income	-1.2%	120.7%	-398.4%	-100.5%	56.0%	89.7%	118.2%	NM	61.8%	43.3%	18.1%	31.0%	-90%	5%	173%	35%	38%
Net income	205.7%	362.4%	-172.4%	-190.3%	1026.8%	322.9%	225.2%	-254.7%	99.4%	69.0%	17.2%	65.2%	-99%	3%	3252%	54%	40%

Source: Company data, Goldman Sachs Global Investment Research

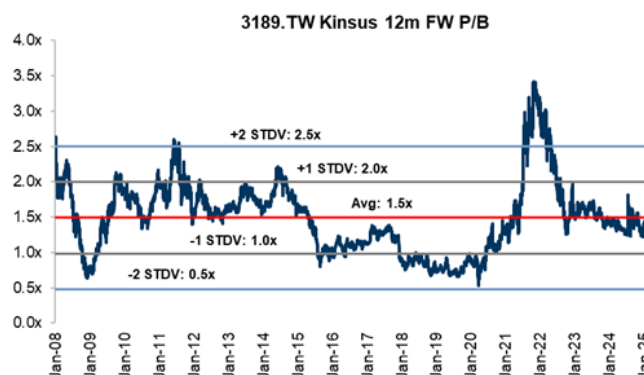
**Valuation**

We downgrade Kinsus to Sell from Neutral with a 12-month target price of NT\$63, implying 17% downside to our TP vs. 36% avg. upside for our Taiwan technology component coverage. Our target price is based on the new valuation methodology - 0.9x blended P/B in 2H25-1H26 (1.2x STDV lower than past 15+ years average of 1.5x vs. 15x avg 2025-26E PB/ROE earlier), composed of 0.5x 2H25-1H26 P/B for non-China/non-AI business (89% of 2H25-1H26 profit) and 4x 2H25-1H26 P/B for China/AI business (11% of 2H25-1H26 profit). The 0.5x 2H25-1H26 P/B for non-China/non-AI business is in-line with ABF industry bottom level P/B multiple, while the 4x 2H25-1H26 P/B for China/AI business is in-line with ABF industry peak level P/B ratio. We consider this multiple appropriate given that the company has no catalyst in the mid-term in our view.

Our valuation methodology change from PB/ROE to sector-blended P/B is mainly due to our less favorable view on the overall ABF substrate industry cycle outlook, and hence P/B methodology is appropriate to better evaluate the company's value. Given that the company's high-end products are in a clear upcycle while the legacy products are in a bottom cycle, we believe this blended-based P/B would make the overall company value valuation more precise.

**Exhibit 66: Kinsus— P/E multiple is already trading in downcycle valuation**

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 67: However, we do believe more downside for Kinsus PB in the near term, considering the lack of catalysts**

Source: Company data, Goldman Sachs Global Investment Research

**Risks/factors that would make us more positive**

- 1. Slower-than-expected capacity expansion from other ABF peers:** We expect the ABF supply demand outlook in coming years to turn more positive from mid-2026, as we discussed in the previous section. However, if any ABF suppliers turn less proactive on expanding new capacity, the overall supply demand outlook for the overall ABF substrate market will be more positive to the company.
- 2. Faster-than-expected PC demand recovery:** As mentioned in the previous section, we expect PC to still account for 50+% of total ABF substrate market demand in 2025-27E. We believe a faster-than-expected PC demand recovery in 2025-27E would present significant upside risk to our ABF substrate revenue/profit estimates for Kinsus.
- 3. Faster-than-expected smartphone demand recovery:** Given BT substrate still accounts for 30+% of Kinsus' revenue, and 60%+ of Kinsus' BT products are related to the smartphone market, we believe any faster than expected smartphone demand in 2025-27E would present significant upside risk to our ABF substrate revenue/profit estimates for Kinsus.

**Investment thesis, PT methodology and risks****Investment Thesis - Unimicron Technology**

Unimicron is a key supplier of ABF substrates (27% market share in 2024) and BT substrates, and also produces FPC/HDI/PCB products. We are positive on the company's long-term growth opportunity given: (1) its long-term relationship with customers (70%+ ABF shipments are covered by LTAs); (2) a diversified customer base globally; (3) high-end share gainer position during industry upcycle. However, we believe the current ABF substrate industry will not be back to an upcycle before 2H26, and believe Unimicron should see weak end market demand in the coming quarters with limited catalysts. Separately, the company is the major supplier of the AI server PCB industry with 30%+ market share in 2024, but we do believe the company will continue

to lose market share to peers given less favorable production yield rate and the possible AI server PCB design change. Overall, we are Neutral rated on the name, considering the unfavorable near term outlook, despite our positive view in the LT, and believe the company is fairly valued (1.4x one year forward PB, which is 0.1x STDV below the past 15+ year average PB of 1.5x).

### Price Target Risks and Methodology - Unimicron

**Valuation methodology:** Our 12m TP of NT\$90 for Unimicron is based on the 1.4x blended 2H25-1H26 PB (0.1x STDV below the past 15+ year average PB of 1.5x).

**Key upside/downside risks:** (1) slower/faster-than-expected PC demand recovery, (2) slower/faster-than-expected ABF substrate upgrading pace, and (3) slower/faster-than-expected AI server PCB market share loss progress.

### Investment Thesis - NYPCB

NYPCB manufactures and markets printed circuit boards (PCBs) and integrated circuit (IC) substrates (including ABF and BT substrates). We are Neutral-rated on NYPCB given the relatively low exposure to the high-end ABF substrate market which we believe should see solid demand uptrend in coming years. However, we are still positive on NYPCB's outlook in the longer term on the potential for the company to acquire more high-end ABF substrate orders, given (1) we find most investors still regard NYPCB as a mature technology-focused vendor, but we expect the company to have solid ABF high-end expertise in the coming years considering the company's solid operation efficiency and proactive high-end capacity transformation plan; and (2) constructive ABF up-cycle sustainability; we believe the market still underestimates the structural ABF content upgrade momentum, which should serve as a long-term secular catalyst instead of a cyclical driving force. We expect the ABF supply/demand gap to return to supply tightness in the coming years with strong high-end product upgrades demand, which should be key drivers for NYPCB's ABF business. However, we see relatively weak upside potential for NYPCB in 2025, given most of its high-end capacity will be used to qualify for future product development in 2H25E. We believe the company is fairly valued and trading at a 1.4x one-year forward PB, which is 0.3x STDV below the company's past 15+ year average PB (1.8x).

### Price Target Risks and Methodology - NYPCB

**Valuation methodology:** Our 12m TP of NT\$98 for NYPCB is based on 1.4x one-year forward blended PB, which is 0.3x STDV below the company's past 15+ year average PB (1.8x).

**Key upside/downside risks:** (1) Slower/Faster-than-expected PC demand recovery, (2) Slower/Faster-than-expected ABF substrate upgrading speed, and (3) Slower/Faster-than-expected NYPCB new high-end capacity qualification progress.

### Investment Thesis - Kinsus

Kinsus is one of the key IC substrates suppliers globally with ~10% ABF/BT substrates market share in 2024, and ~22% of total 2024 revenue contributed by its contact lens

subsidiary. With our conservative view on the overall ABF substrate market demand trend until 2H26, we believe Kinsus' performance will be much weaker than high-end ABF peers considering the company's limited exposure to the high-end ABF substrate market. Also, we think price competition could be intensified in the long term given the new mid-to-low-end ABF substrate suppliers entering the market, suggesting a less favorable outlook. We believe Kinsus, as an experienced substrate supplier, can also upgrade its product portfolio in the long term, but see limited catalysts for the company in the next 12 months and are hence Sell-rated. The company is trading at 0.9x blended 12-month forward PB (1.2x STDV lower than past 15+ year average PB of 1.5x).

### Price Target Risks and Methodology - Kinsus

**Valuation methodology:** Our 12m TP of NT\$63 for Kinsus is based on 0.9x one-year forward blended PB, which is 1.2x STDV below the company's past 15+ year average PB (1.5x).

**Key upside risks:** (1) Slower-than-expected capacity expansion from other ABF peers, (2) Faster-than-expected PC demand recovery, and (3) Faster-than-expected smartphone demand recovery.

### Investment Thesis - Ibiden

Ibiden is a Japan-based company that primarily operates an electronics business, which manufactures ABF substrates and printed circuit boards (PCBs) for CPU makers, and a ceramics business, which mainly manufactures Diesel Particulate Filter (DPF) devices to remove black smoke (soot) emitted from diesel engines. Amid the broad trend toward CPUs with higher performance, miniaturization and performance upgrades for IC chips are approaching their limit, and as a result there is growing demand for multilayered and finer ABF substrates to improve performance. Against this backdrop, we expect Ibiden to benefit from the shift toward higher value-added ABF substrates, driving structural top-line expansion and margin gains in the electronics business. In terms of structural changes across the industry as a whole, we identify: (1) The key source of demand for FC packaging is shifting from consumer products such as PCs and smartphones to industrial applications such as servers and network equipment, which creates the need for larger FC packaging with a higher number of layers and greater complexity. (2) Larger and more complex FC packaging requires more advanced technology, where Japanese companies have the opportunity to leverage their competitive edge. It also pushes up ASP and creates a greater production load, which reduces underlying production capacity. As a result of these factors, we believe FC packaging is becoming a more reliable source of steady and high earnings for manufacturers of FC packaging. We are Buy-rated on Ibiden as we believe investors have yet to fully price in potential tailwinds for the company from these medium-term structural changes. We view valuation as attractive considering the growth potential of the ABF substrate business.

### Price Target Risks and Methodology - Ibiden

**Valuation methodology:** We are Buy-rated on Ibiden with a 12-month price target of

¥6200. Our target price is based on FY3/26-FY3/27E EV/GCI vs. CROCI/WACC, in-line with our sector average EV/DACF multiple of 8X. Our target price implies a FY3/26E P/E of 24X and FY3/27E PE of 20X.

**Key risks** include road map changes of main customers, weaker PC and server demand, and a reduction in diesel vehicle sales.

# Disclosure Appendix

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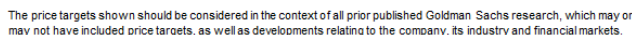
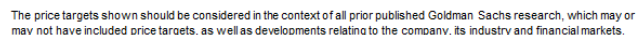
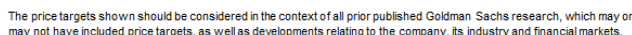
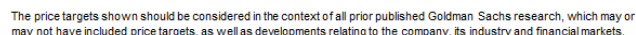
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### Price target and rating history chart(s)



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