臻鼎科技控股
Zhen Ding Tech. Holding

From Invisible to Indispensable — PCB Takes Center Stage in the AI Era

The grand TPCA Show 2025 opened at the Nangang Exhibition Center, with Zhen Ding Tech. Group (Stock Code: 4958) Chairman Charles Shen highlighting at the "Semiconductor X PCB Heterogeneous Integration Summit Forum" today (23rd) that from personal computers and mobile devices to cloud data centers, AI, and AIoT, the evolution of all electronic products is deeply tied to the development of PCBs and semiconductors. As AI and advanced packaging technologies continue to advance, PCBs are no longer silent supporters but are now being recognized as key forces driving industrial transformation.

Shen noted that the role of PCBs is shifting from "signal connection" to "system support." In today's era of high-performance computing, logic chips and high-bandwidth memory are increasingly integrated within the same platform. This means PCBs must accommodate larger sizes and more complex multilayer structures while maintaining signal integrity, thermal performance, and power distribution. For instance, the growing demand for AI servers and GPU accelerator cards has led to increases in PCB size and thickness, as well as more challenging structural and circuit precision requirements. Shen added that Taiwan currently leads the world with 69% global market share in semiconductors and 51% in packaging and testing, while its IC substrate share stands at 35%. With AI and heterogeneous integration accelerating, these figures are expected to rise further — reinforcing the PCB's strategic importance as a core driver of industrial upgrading.

To achieve faster and more stable signal transmission, new materials and manufacturing processes are critical. From low-loss, high-heat-resistant substrates to ultra-high-speed materials with extremely low dielectric constants (Dk) and dissipation factors (Df), as well as precision drilling processes requiring over 100,000 holes per board with interlayer alignment controlled within 10 micrometers — Zhen Ding has been proactively collaborating with materials and equipment suppliers from the early stages of development. Through these strategic partnerships, the company accelerates material maturity and process optimization. This front-end collaborative R&D model not only enhances supply chain resilience but also forms Zhen Ding's unique technological ecosystem.

Furthermore, Zhen Ding continues to optimize its global capacity layout. In mainland China, it is expanding production of AI high-end HDI and HLC boards, as well as resolving bottlenecks in high-end flexible board output. In Thailand, following certification by major clients in the server and optical communication sectors, the second plant is under rapid construction. Meanwhile, at the Kaohsiung AI Park, new capacity for high-end ABF substrates and HLC+HDI is scheduled to begin trial production by year-end. These strategic capacity plans will provide Zhen Ding with greater supply flexibility and localized responsiveness, allowing it to meet shifting market demands in AI and high-performance computing, and strengthening its position as a key player in the global semiconductor and advanced packaging supply chain.

President Chen-Fu Chien also noted that PCB manufacturing complexity is increasingly comparable to that of semiconductors. Minimizing manual intervention throughout production is essential to ensure stable yields and consistent quality. For example, a single high-end AI server motherboard may involve over 130 process steps and more than 100,000 drill holes, where even minute deviations can affect system performance. To address these demanding challenges, digital transformation has become central to Zhen Ding's competitiveness. By integrating AI and data analytics, the company advances process optimization, automated production, and intelligent decision-making, significantly improving manufacturing yield — marking not just a technological upgrade, but also a major step toward smart management and sustainable operations.

Looking ahead, AI is accelerating global transformation — and PCBs are stepping from behind the scenes to the center stage. Shen believes 2026 will be a pivotal growth year for Zhen Ding, as demand for AI smartphones, foldable devices, AI glasses, high-end AI servers, and IC substrates is expected to surge across the board. As AI applications become more pervasive, they will drive structural upgrades throughout the entire supply chain. Shen emphasized that Zhen Ding will continue to anchor its operations around the "One ZDT" strategy, deepening vertical integration across semiconductors, advanced packaging, and PCBs, while promoting smart manufacturing and global expansion through data-driven decision-making and long-term investment strategies. Together with industry partners, Zhen Ding aims to create a new ecosystem of "Semiconductor + Advanced Packaging + PCB," ushering in a new wave of growth for Taiwan's electronics industry in the post-Moore era.

▲Zhen Ding Tech. Group Chairman Charles Shen shared insights on how AI is driving the upgrading and transformation of the PCB industry at the “Semiconductor X PCB Heterogeneous Integration Summit Forum.”

▲The “Semiconductor X PCB Heterogeneous Integration Summit Forum” brought together industry leaders to explore emerging development trends in the PCB industry in the era of AI.

About Zhen Ding Technology Holding Limited

Zhen Ding Technology Holding Limited (Taiwan Stock Exchange: 4958) specializes in the research, development, production, and sales of a diversified range of products, including flexible printed circuit board (FPC) and surface mount assembly (SMA), substrate-likes PCBs (SLP), high-density interconnect (HDI) PCBs, high-layer-count and high-density (HLC-HDI) boards, multilayer rigid printed circuit boards (RPCB) and IC substrates (ICS). These products are widely used in end products such as computer information, consumer electronics, communications networks, automotive electronics, AI server high-speed computing, optical module and medical applications. The company offers professional one-stop shopping, full-solution services to customer worldwide. According to Prismark’s global PCB industry rankings by revenue, Zhen Ding has been ranked the world’s largest PCB manufacturer for eight consecutive years, from 2017 to 2024. For more detailed information,

please visit the company website: www.zdtco.com.

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