

AI Server PCB



AI Overview

AI server PCBs are high-performance, multilayer printed circuit boards designed to handle extreme computational, thermal, and signal demands in AI servers. Overview AI server PCBs serve as the foundation for server chips, connecting CPUs, GPUs, TPUs, high-bandwidth memory, storage, and networking components. They are critical for data transmission, power distribution, and component interconnection, supporting the high-speed and high-density requirements of AI workloads. Compared to traditional server PCBs, AI server PCBs are 5-6 times more valuable due to their complexity and performance demands. Technical Specifications Layer Count: AI server PCBs typically have 20-40+ layers, with some prototypes reaching up to 68 layers to accommodate dense GPU and CPU configurations. Materials: Ultra-low-loss laminates like Tachyon 100G and Megtron 6/7/8 are used to reduce signal attenuation at high frequencies, ensuring high-speed data transmission and signal integrity. Precision: Line width and spacing can be as small as ≤ 40 microns, with via aspect ratios up to 25:1, enabling semiconductor-level precision. High-Speed Support: Designed for PCIe 5.0/6.0, CXL, NVLink, and signal rates up to 112 Gbps. Thermal Management: Advanced PCBs integrate power distribution networks (PDNs) and support liquid cooling systems to manage extreme heat from high-density components. Manufacturing Techniques: Include high-precision lamination, depth-controlled back drilling, uniform plating, and vacuum differential etching to maintain signal integrity and reliability. Market Trends The AI server PCB market is experiencing rapid growth, driven by the expansion of AI applications, cloud computing, and high-performance computing demands. The market value is estimated to exceed \$5 billion in 2025, with a projected CAGR of 15-20% from 2025 to 2033. Leading manufacturers include Ibiden, Samsung Electro-Mechanics, TTM Technologies, Shennan Circuits, and Fastprint Circuit Technology

Article Content

Nvidia next-gen "Kyber" AI rack delayed to 2028 on manufacturing

Nvidia's Kyber rack-scale AI system for 2027 Rubin Ultra chips is delayed to 2028 due to PCB issues.

AI Server PCB: The Right Manufacturer for Data

An AI server PCB is a specialized printed circuit board engineered to support the extreme demands of artificial intelligence workloads in enterprise and

AI Server PCB Manufacturing Guide: HDI, High-Speed Design,

Learn how AI server PCBs support GPU servers, AI accelerators, and data center hardware through HDI design, high-layer stackups, low-loss materials, controlled impedance, back

AI Boom Squeezes PCB Materials as Kingboard Lifts CCL Prices Again

AI servers and HPC platforms often rely on advanced PCB designs capable of handling higher speeds, greater thermal stress, and denser component layouts. This has made premium CCL

AI Server PCB Hardware Breakdown

This article explains the internal PCB composition of an AI server by disassembling the server hardware, so readers can gain a clearer understanding of the PCB types and their relative

AI servers spawn strong demands for PCB

AI servers require PCB boards with higher computing power, higher speed, and larger capacity for transmission. Thus the requirements for materials will also be higher. Specific to different

Ajinomoto Raises ABF Substrate Film Prices 30% as AI

Ajinomoto announces 30% price hike for ABF build-up film effective Q3 2026. Supply-demand imbalance for AI server substrates expected to persist

Next-Gen AI Servers Are Pushing PCB Technology Toward Ultra-HDI ...

Quick Answer Next-generation AI server platforms including GPU training clusters and high-radix networking switches are driving unprecedented demand for ultra-HDI PCB technology,

What Is an AI Server? Architecture, Components & PCB Requirements

Understanding those differences is essential for anyone involved in designing, manufacturing, or procuring the printed circuit boards that make AI servers function. This article breaks down AI server

Nvidia's Kyber NVL144 AI server rack system delayed to ...

Nvidia's Kyber NVL144 AI server rack faces over a year delay to 2028 due to manufacturing issues, impacting Rubin Ultra chips.

PCB Industry Trends 2026 | AI Drives High-Speed & HDI PCB Growth

The PCB industry in 2026 is driven by AI servers, high-speed interconnects, HDI PCB demand, and material supply constraints, reshaping global manufacturing trends.

Nvidia AI Server Delay Report Sends Asian PCB Stocks Sliding

Asian technology stocks slumped after a report that Nvidia Corp.'s next-generation AI server rack system has been delayed by more than a year due to manufacturing difficulties.

AI Server PCB

AI server PCBs serve as the fundamental electronic platform, connecting and supporting the processors, memory, accelerators, and power management systems required for artificial intelligence

Nan Ya PCB Accelerates AI Substrate Capacity as Advanced

Taiwan's Nan Ya PCB announces capacity expansion for high-end IC substrates targeting AI GPU and HPC applications, driven by NVIDIA and AMD advanced packaging orders that

Nvidia's next-gen AI rack system delayed to 2028 on ...

Nvidia 's next marquee product — the Kyber rack-scale architecture designed to house its 2027 Rubin Ultra chips — has been delayed by more than 12 months to 2028, according to research

NVIDIA Kyber NVL144 Delayed to 2028 on Manufacturing Snags

NVIDIA's Kyber NVL144 rack for Rubin Ultra chips is delayed to 2028 due to PCB midplane manufacturability issues, per SemiAnalysis. What this means for AI builders.

NVIDIA GB200 Supply Chain: The Global Ecosystem

Learn about the NVIDIA GB200 supply chain. We analyze the massive global ecosystem of hundreds of suppliers required, from TSMC's silicon to HBM3e and

Memory & Flash Crisis: March 2026 Update

The global memory market entered 2026 in a state of structural supply constraint. AI infrastructure demand has reallocated semiconductor

Deconstructing AI Servers: A Look Inside PCB Composition and Value

Explore AI server PCB architecture, including GPU boards, AI server motherboard PCB design, and insights into the PCB for AI server market and value distribution.

AI Server Demand Is Breaking the PCB Material Supply

AI server and data center hardware demand has created a structural PCB material supply shortage in 2026, with high-end CCL prices rising 30-40%

AI Server PCB

AI server PCBs are high-performance printed circuit boards specifically engineered for artificial intelligence servers.

Nvidia's next-generation AI servers reportedly delayed until 2028

Nvidia's Kyber rack-scale architecture, designed to house its 2027 Rubin Ultra chips, has been delayed by more than 12 months to 2028, according to research firm SemiAnalysis. This

Worldwide AI Server PCB Market 2026 – PW Consulting

Worldwide AI Server PCB Market 2026 Global AI Server PCB Market Size, Share & Industry Analysis, By Layer Count (18-28 Layers, Above 28 Layers), By Component Type (GPU)

AI Server PCB: Types, Design Guidelines & Key Features

This article delves into the features of AI server PCBs, the different types of PCBs used in AI computing systems, and essential AI server PCB design guidelines.

Ai Server PCB Market Size, Trends, 2026-2033

The Ai Server PCB Market is positioned for sustained growth driven by the proliferation of AI-enabled data infrastructure, edge computing, and high

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