

Supply of IC packaging substrates for AI servers



Overview

A surge in demand for ABF substrates driven by AI applications has created ripple effects across the semiconductor packaging supply chain.

Key Takeaways



Inside that server is a high-performance chip — and holding that chip together is a tiny but critical component called an IC package substrate. One Japanese company makes over half of the world's supply for servers. 2 billion to keep up with. TrendForce's latest foundry industry findings point out that AI demand has surged rapidly since 2023, leading to capacity bottlenecks in 3 nm–2 nm wafers and 2. The shortage of CoWoS has persisted, extending upstream to production equipment and downstream to substrates. By technology: organic AICS market recovers, reaching \$14. 2 billion in 2024, with a growing market share of build-up IC substrates – GCS is coming closer to commercialization with strategic investments and pilot lines set up globally – SLP shipments reached 392 million units in 2024, with. The Japanese company Ibiden, headquartered in Ogaki, in the province of Gifu, maintains a prominent position in the global market for substrates for semiconductor packages. Essa company almost exclusively supplies the substrates used in artificial intelligence chips from Nvidia, the world leader in. Many AI mainboards use hybrid architectures—a combination of 20–30 traditional multilayer core layers for power distribution and two to eight HDI layers for ultra-dense signal routing. Other PCB Categories, 2023–2024. 2 billion to keep up with AI's insatiable appetite. When. Large dies and multi-die packages need vast pin counts, high-speed links to memory, clean power delivery, and robust thermal paths—all of which depend heavily on substrate design and materials. This article looks at how IC substrates support AI/HPC architectures, what design teams must consider for.

Article Content

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Top 10 Companies in the IC Substrate Packaging Industry (2025):

As semiconductor complexity increases and form factors shrink, IC substrate manufacturers are innovating in materials, interconnect technologies, and thermal management.

Steady AI IC substrate orders and rising utilization boost

-advertisement- Orders for IC substrates for generative AI servers remain strong, and factory utilization rates are rising. Consequently, Japanese IC

Nvidia Supplier Ibiden Considers Accelerating Expansion to Meet AI

Ibiden Co., a major supplier of chip packaging substrates for Nvidia's cutting-edge semiconductors, is considering accelerating its production capacity to meet the growing market

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Increasingly, processors and memory are being packaged close together on a single substrate for applications such as AI servers. For example, on the Nvidia H100 the GPU is connected

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AI server boom to fuel PCB industry optimism in 2025

Furthermore, advanced packaging technology is driving substrate designs towards larger areas, more layers, and finer circuits to meet the demand for more transistors and input/output (I/O). Currently,

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AI accelerators and HPC: latest innovations in the

While the advanced packaging represented and still represents the stage of innovation to empower the More than Moore era, the advanced IC

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IC Substrate The Core Cornerstone of Chip Packaging,

Conclusion: IC Substrates — The "Invisible Cornerstone" of the Semiconductor Industry Chain From mobile phones to AI servers, and from new

A Fine Future: IC Substrates Essentials, Part I

A growing demand for high-performance computing (HPC), driven by advanced AI applications, among others. It is important to note that miniaturizing is not a goal for data center

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