Lightmatter and GUC Partner to Produce Co-Packaged Optics (CPO) Solutions for AI Hyperscalers

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Collaboration combines GUC's ASIC design leadership with Lightmatter's industry-leading 3D CPO platform to redefine AI infrastructure scalability

MOUNTAIN VIEW, Calif. & HSINCHU, Taiwan — Lightmatter®, the leader in photonic interconnect solutions for AI, and Global Unichip Corp. (GUC), the Advanced ASIC leader and a key enabler for hyperscaler AI infrastructure, today announced a strategic partnership to bring commercial Passage™ 3D Co-Packaged Optics (CPO) solutions to market.

The collaboration integrates Lightmatter's revolutionary Passage photonic interconnect with GUC's state-of-the-art ASIC design services and advanced packaging expertise. This joint solution is specifically engineered to overcome the critical connectivity bottlenecks currently limiting the scaling of next-generation AI and High-Performance Computing (HPC) workloads for the world's largest data center operators.

"The fundamental architecture of computers is changing. The world has hit a wall in per silicon area performance, the network is becoming the computer, and that network needs to run on light. GUC has unmatched ASIC engineering execution in this rapidly-evolving landscape. Pairing their silicon expertise with our photonic interconnects provides the industry with a concrete path to escape the energy and performance traps of legacy signaling, enabling the massive scale-up required for tomorrow's intelligence," said Nick Harris, founder and CEO of Lightmatter.

Redefining AI Interconnect with Passage

The integrated solution will leverage GUC's advanced node chiplet and packaging workflows to incorporate Passage, a silicon photonics-based platform that sets a new standard for AI interconnect performance. Passage delivers unprecedented bandwidth density and power efficiency for XPU and switch chip-to-chip communications, pushing the performance boundaries of world's largest and most complex foundation models.

These advantages mark a decisive evolution beyond existing solutions, which are fundamentally constrained by physical I/O limits—or 'shoreline'—of the chip, restricting the maximum bandwidth and radix per optical engine (OE). By seamlessly extending the scale-up domain of AI clusters across multiple racks, the Passage platform substantially improves training time and token throughput for the next wave of frontier AI models.

"To enable our hyperscale customers to deliver the most competitive services, we need partners with proven, superior technology," said Igor Elkanovich, CTO of GUC. "Integrating Lightmatter's Passage CPO platform into our world-class ASIC designs allows us to bring to market a joint solution that fundamentally redefines AI interconnect. Our combined expertise solves complex challenges—architectural, thermal, mechanical, and signal integrity, and ensures that customers receive a robust, power-efficient, and scalable CPO platform that accelerates their path to large-scale AI deployment."

Analyst Perspective on Market Impact

“Optical interconnect is no longer a luxury; it is a necessity for hyperscale AI to continue its exponential growth path,” said Dr. Wei-Chung Lo, Deputy General Director at Electronic & Optoelectronic System Research Laboratories (EOSL) of Industrial Technology Research Institute (ITRI), Taiwan. “The combination of GUC’s extensive experience in custom AI silicon design for top-tier cloud providers and Lightmatter’s innovation signals to the market that the supply chain is maturing, providing a credible blueprint for hyperscalers to address the critical bandwidth and power constraints of the next generation of AI clusters.”

About Lightmatter

Lightmatter is leading the revolution in AI data center infrastructure, enabling the next giant leaps in human progress. The company’s groundbreaking Passage™ platform—the world’s first 3D-stacked silicon photonics engine—and Guide®—the industry’s leading high-bandwidth light engine—connect thousands to millions of XPUs. Designed to eliminate critical data bottlenecks, Lightmatter’s technology delivers unprecedented bandwidth density and energy efficiency for the most advanced AI and high-performance computing workloads, fundamentally redefining the architecture of next-generation AI infrastructure. Visit www.lightmatter.co to learn more.

About GUC (Global Unichip Corp.)

GLOBAL UNICHIP CORP. (GUC) is the Advanced ASIC Leader who provides the semiconductor industry with leading IC implementation and SoC manufacturing services, using advanced process and packaging technology. Based in Hsinchu, Taiwan, GUC has developed a global reputation with a presence in China, Europe, Japan, Korea, North America, and Vietnam. GUC is publicly traded on the Taiwan Stock Exchange under the symbol 3443. TSMC is GUC’s single largest shareholder who holds 35% of the company’s total shares. TSMC is also GUC’s sole foundry supplier as well as the closest partner in advanced process and packaging technologies. For more information, visit: www.guc-asic.com

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