Price of 200G Co-packaged Photonics



Overview

One primary motivation for co-packaged optics is improving power efficiency. Both Broadcom and NVIDIA report dramatic power-per-bit savings over traditional pluggable transceivers.

Key Takeaways

Exact pricing for 200G co-packaged photonics is not publicly disclosed, but costs are influenced by integration, power efficiency, and vendor-specific platforms.

Overview200

G co-packaged photonics (CPO) are high-speed optical modules integrated directly with ASICs to reduce power consumption and improve bandwidth in AI and data center networks. Vendors like NVIDIA and Lumentum provide 200G solutions using indium phosphide (InP) lasers, lens-integrated photodiodes, and flip-chip bonding for high-density, low-power operation. These modules are used in platforms such as NVIDIA Spectrum-X and Quantum-X, supporting large-scale AI workloads with improved energy efficiency and resiliency.

Factors Affecting Cost

Integration Level: Co-packaged optics are integrated with the ASIC, reducing the need for pluggable transceivers but increasing manufacturing complexity. Power Efficiency: Modules designed for AI workloads prioritize low power per bit, which can increase cost due to advanced photonic engineering. Vendor and Platform: Pricing varies by vendor and whether the module is part of a high-end switch (e.g., NVIDIA Quantum-X or Spectrum-X) or a smaller-scale deployment.

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Volume and Adoption Stage: Early adoption and low production volumes typically result in higher per-unit costs. As adoption grows, prices may decrease.

Industry Expectations

While exact prices are proprietary, industry estimates suggest that high-performance 200G co-packaged photonics can range from several hundred to over a thousand USD per lane, depending on integration, volume, and vendor. For a 200G module (single lane), this could translate to $500–$2,000 per module in early production or specialized AI deployments. Prices are expected to decrease as production scales and technology matures.

Conclusion

Although no public price list exists, 200G co-packaged photonics are premium components due to their integration, power efficiency, and suitability for AI-scale networking. Organizations planning procurement should contact vendors like NVIDIA or Lumentum directly for quotes tailored to volume, platform, and deployment requirements.

Article Content

Co-Packaged Optics — a deep dive | APNIC Blog

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Co Packaged Optics (CPO) – Scaling with Light for the Next Wave of ...

We will start with Nvidia and Broadcom''s solutions before discussing major CPO companies. We cover Ayar Labs, Nubis, Celestial AI, Lightmatter, Xscape Photonics, Ranovus and

Broadcom CPO: Highest Power Efficiency and Bandwidth Density

Broadcom''s co-packaged optics (CPO) technology is based on highly integrated Silicon Photonics and is purpose built to address the demanding needs of AI networks by providing the

Presentation

SM-optics provides much longer distances and supports wavelength-division multiplexing (WDM). With MM optics such as VCSEL, the lower end is limited by cost (in comparison to copper) and the upper

Sample Pages

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Co-packaged optics involve integrating SERDES and optical interface electronics onto a package, potentially further integrating them into a single IC. Previous efforts have explored high-bandwidth,

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Co-Packaged Optics (CPOs)

From Jensen Huang showcasing CPO switches at GTC 2025 to a wide range of vendors demonstrating optical engines integrated inside ASIC packages at OFC 2025, co-packaged optics

Silicon Photonics Networking for Agentic AI | NVIDIA

Explore why co-packaged silicon photonics can accelerate large-scale AI model development and inference with benefits like lower power consumption, reduced

Rain Tree Photonics unveils 200G/lane PIC, 400G/lane IMDD

Currently, 200G/lane PICs for 800G-DR4 and 1.6T-DR8 are sampling, with 800G-2xFR2 and 1.6T-2xFR4 expected to launch in the latter half of 2025. Besides the current 200G/lane product

Lumentum Launches 400G and 200G InP Optical Chips

Lumentum introduced new indium phosphide (InP) photonic chip technologies, including 400 Gbps-per-lane and 200 Gbps-per-lane optical links, along with ultra-high-power lasers for co

Scaling AI Factories with Co-Packaged Optics for Better

What do co-packaged optics bring to AI factories? NVIDIA has designed CPO-based systems to meet unprecedented AI factory demands. By

A New Era in Data Center Networking with NVIDIA

NVIDIA is integrating silicon photonics directly with its NVIDIA Quantum and NVIDIA Spectrum switch ICs to improve data center networking,

Broadcom Announces Third-Generation Co-Packaged Optics (CPO)

The Investor Relations website contains information about Broadcom Inc. ''s business for stockholders, potential investors, and financial analysts.

(PDF) Co-packaged optics (CPO): status, challenges, and solutions

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Co-packaged optics (CPO) is a disruptive approach to increasing the interconnecting bandwidth density and energy efficiency by dramatically shortening the electrical link length through

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These companies package it, connect it to HBM memory, test it, and transform it into the AI accelerators powering hyperscalers around the world. As Moore''s Law slows, advanced

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Inside Nvidia''s $4B Optical Strategy—and Why CPO

Co-packaged optics integrate silicon photonics alongside the switch ASIC, shortening the electrical path to the substrate, reducing loss to about 4 dB,

Coherent''s $23B Opportunity Lifted by NVIDIA''s Optical

Coherent''s market on track to reach $23 billion as NVIDIA''s Spectrum-6 and Kyber drive structural demand for co-packaged optics components.

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