Raw Materials for Optical Module CPO

Article Overview

CPO optical modules rely on silicon photonics, high-density substrates, metals for bumps and pads, and optical materials like glass and polymers to integrate optics and electronics efficiently.

Core Materials

Silicon Photonics (SiPh): The foundation of CPO modules is silicon photonic chips, which serve as interposers for optical waveguides, modulators, and photodetectors. Silicon provides high precision for optical alignment and supports integration with electronic ASICs . High-Density Substrates: CPO modules use silicon interposers or organic substrates to support 2.5D/3D integration. These substrates provide mechanical support, electrical routing, and thermal management for tightly packed optical and electronic components . Metals for Electrical Interconnects: Copper (Cu) pillars, solder bumps (Sn/Ag), and nickel-gold (Ni/Au) pads are used for flip-chip bonding and electrical connections between ASICs and photonic chips. These metals ensure reliable electrical conductivity and mechanical stability . Optical Materials: Glass and polymer waveguides are used for embedded optical paths. Glass is preferred for its chemical and optical stability, maintaining alignment under high temperatures, while polymers can be used for flexible routing . Laser and Photodetector Materials: High-power lasers and photodetectors are typically made from III-V semiconductors (e.g., InP, GaAs) for efficient light emission and detection. Thermoelectric coolers (TECs) may also be included to manage heat from these components . Die Attach and Encapsulation Materials: Epoxies, adhesives, and underfill materials are used to attach dies and provide mechanical stability, thermal conduction, and protection from environmental stress ....

Article Content

Feb 07, 2026

Co-Packaged Optics (CPO) 2026: Complete Technical

CPO switches are shipping in 2026. Learn how co-packaged optics work, which platforms

May 21, 2026

Next generation Co-Packaged Optics Technology to Train & Run

A co-packaged optic module design was developed to support electronic and optics compatibility, industry standards where

Sep 11, 2025

Co-Packaged Optics (CPO) Market Size to Hit USD 1,055.11 Million

The global co-packaged optics (CPO) market size is evaluated at USD 95.04 million in 2025 and is predicted to hit

Apr 13, 2026

Electronic Chip Package and Co-Packaged Optics

Meanwhile, the optical module, enabled by silicon photonics, is now treated similarly to

Oct 19, 2025

Co-packaged optics (CPO) – A comprehensive overview

Co-packaged optics (CPO) is an innovative technology that has gained significant attention in electronics and optical

Dec 05, 2025

Next-Gen Optics Need Next-Gen Materials: CPO Challenges and the

Among the key players in this space, Henkel stands out with a broad portfolio of optical-grade adhesives, die attach

Feb 11, 2026

Co-Packaged Optics — a deep dive | APNIC Blog

OFC 2025 made one thing clear: The transition to Co-Packaged Optics (CPO) switches in data centres is inevitable,

Aug 22, 2025

Co-packaged optics are inching closer to

Before CPO achieves actual commercial status for network applications in the DCs, it may gain more popularity in high-power

Nov 01, 2025

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

Co-packaged optics (CPO) is a disruptive approach to increasing the interconnecting bandwidth density and energy

Oct 25, 2025

What Is CPO? 800G, 1.6T, and Taiwan''s Optical-Communications

The optical-module market is pushing from 800G toward 1.6T, which is what makes optical-communications and

Jan 26, 2026

What is Co-Packaged Optics (CPO) Technology? | Corning

Instead of relying on traditional pluggable optics, CPO uses tightly integrated optical and electrical components within the same

Jan 26, 2026

Global Co-packaged Optical (CPO) Modules Supply, Demand and

Related Reports The global Co-packaged Optical (CPO) Modules market size is expected to reach $ 947 million by 2031, rising at a

Oct 30, 2025

Optics Primer, Part 3: Co-Packaged Optics (CPO)

Near package optics (NPO) brings the optics module on the same substrate or very close to the switch package, but

May 06, 2026

The Rise of Co-Packaged Optics

In this scenario, Co-Packaged Optics (CPO) is now gaining momentum, emerging mainly as

Oct 24, 2025

75ECTC2025_SpecialSessionsTemplate_MGSlidesFinal5_27_2025

This session will focus on the advanced materials considerations, integration complexities and emerging research directions in CPO

May 02, 2026

Co-packaged Optics

Co-packaged optics (CPO) are heterogeneous integration packaging methods to integrate the optical engine (OE) which consists of

Mar 31, 2026

The Rise of Co-Packaged Optics: A Deep Dive into CPO Optical

Core Technology Enablers: Silicon Photonics (SiPh), advanced packaging (2.5D/3D integration), and high-density

May 08, 2026

Standing in the Light: A Comprehensive Guide to the Optical Module

"Standing in the Light: Understanding the Optical Module and CPO Industry Chain" This article analyzes the critical role

Sep 04, 2025

Foxconn CPO Switch Target Strains Optical Module Supply Chain, 2026

This ramp-up is driving surging demand for high-speed optical modules, micrometer-precision PCB carrier

Jan 21, 2026

The Evolution of Optical Modules: Powering the Future

Data centers, the beating hearts of this digital revolution, are tasked with processing and

Sep 22, 2025

Deploying Robust and Scalable Co-Packaged Optics Fiber ...

Introduction Co-packaged optics (CPO) is a much-anticipated revolution in the architecture of high-bandwidth switches and

Oct 07, 2025

Broadcom CPO: Highest Power Efficiency and Bandwidth Density

Co-Packaged Optics (CPO) is an advanced integration of optics and silicon on a single packaged substrate

May 11, 2026

Co-Packaged Optics (CPO) Supply Chain — Interactive Map · 2026

Interactive field guide to the co-packaged optics (CPO) supply chain: InP laser, hybrid bond, silicon photonics chiplet, switch ASIC.

Sep 09, 2025

Progress in Research on Co-Packaged Optics

In the 5G era, the demand for high-bandwidth computing, transmission, and storage has led to the development of

Mar 12, 2026

CN118426118A

The invention relates to the technical field of optical packaging, and particularly discloses a CPO optical module packaging structure

Nov 02, 2025

The Rise of Co-Packaged Optics: A Deep Dive into

A CPO optical module integrates optical and electronic components to boost data center

Jun 25, 2026

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

This section will explore the evolution of the market from copper to co-packaged copper and from digital signal

Aug 07, 2025

What are Co-Packaged Optics?

We explain co-packaged optics (CPO), why they''re important for data centers and networking, and the photonics

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: https://www.chromadecksigns-eastrand.co.za
Email: sales@chromadecksigns-eastrand.co.za
Phone: +32 2 318 5792
Address: Avenue Louise 500, 1050 Brussels, Belgium

This document is for informational purposes only. Specifications subject to change without notice.