

The optical chips mainly used in the 400g optical module



Article Overview

A 400G optical module primarily uses DSP chips, laser chips, photodetector chips, and driver/TIA chips to achieve high-speed optical transmission.

Core Components

1. DSP (Digital Signal Processing) Chip The DSP chip acts as the “brain” of the module, handling complex signal processing tasks such as encoding, decoding, and compensation for fiber impairments like chromatic dispersion and polarization mode dispersion. It supports high-speed PAM4 modulation at 56 Gbaud or higher, enabling 400G transmission. Leading DSP suppliers include Broadcom, Marvell (via Inphi), and Credo . 2. Laser Chip Laser chips generate the optical signals for transmission. Common technologies include Electro-Absorption Modulated Lasers (EML) and Silicon Photonics (SiPh), with EML being dominant. These lasers are used in DR4, FR4, or LR4 module types. Major suppliers are Lumentum, II-VI Incorporated (Coherent), and HGTECH . 3. Photodetector (PD) Chip Photodetector chips convert incoming optical signals back into electrical signals. They must provide high bandwidth and low noise to match the laser output. Types vary depending on the module design, but they are essential for accurate optical-to-electrical conversion . 4. Driver and TIA Chips Driver chips control the laser emission, while Transimpedance Amplifiers (TIA) amplify the electrical signals from the photodetector. These analog front-end components ensure signal integrity and proper modulation/detection performance .

Advanced Integration...

Article Content

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400G Optical Transceiver Module: Design Insights

Two common types of photodetectors used in 400G optical modules are the high-speed photodiode (Positive-Intrinsic-Negative, PIN)

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400G QSFP-DD Optical Transceiver Overview Beginner's Benefits

400G optical modules are primarily used for optoelectronic conversion, where electrical signals are converted into

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Ultimate Guide to QSFP-DD 400G Optical Modules: Everything

The QSFP-DD 400G optical module has become a key element in the fast-changing field of data transmission

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QSFP-DD 400G SR4 Optical Module: The New Choice for High

In an era where technology is advancing at an unprecedented pace, the demand for high-speed, reliable network

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How 400G Optical Modules Are Shaping Next-Gen Networks

Discover key factors driving the rapid adoption of 400G optical transceivers, including AI, 5G, coherent optics, and

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Optimized Design of 400G Optical Transceiver Module

The optical section and passive optical components mainly include vertical-cavity surface-emitting laser (VCSEL)

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400G OSFP/QSFP-DD/QSFP112 Module Introduction and Selection

This article explores the technical characteristics, product lineup, and use cases of 400G OSFP/QSFP-DD/QSFP112

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In-depth Analysis of 400G SR8 Optical Transceiver

Can I use QSFP-DD 400G SR8 optical transceivers at one end and OSFP 400G SR8 optical transceivers at the other end for

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Exploring 400G Optical Module Typical Applications

Conclusion Currently, mainstream 400G optical modules are widely used in various network scenarios, including data

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400G Optical Modules Explained: SR4 Vs. DR4 Vs. FR4 Vs. LR4

Key differences between SR4, DR4, FR4, and LR4 400G optical modules. Expert advice from Asterfusion engineers

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Overview of 400G Optical Modules

Although only one optical chip is used in a 400G optical module, the cost is high. In 10G/25G modules, optical chips

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Article: Understanding the Full 400G Optical Module Suite & Their Use ...

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Introduction With increasing demand for higher

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White Paper HiSilicon Optoelectronics 400G All

is used in the 400G CFP2 optical module to minimize the physical size. Because of their unique optical characteristics, silicon

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In-depth Analysis of 400G SR8 Optical Transceiver

The NADDOD 400G SR8 transceiver employs COB packaging for both the receiver and transmitter optical chips (VCSEL, PD) as

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400G optical module

What are the functional differences between 10G, 25G, 40G, and 400G optical modules? What is a 400G optical

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What chips are required for a 400g optical module? | Weyland

The 400G optical module is not a single-chip product but a high-speed optoelectronic hybrid system. In this system: □□

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(PDF) 400G Silicon Photonics Integrated Circuit ...

PDF | 400G-FR4 silicon photonics transmit-receive chipsets, compatible with co-packaged-optics, on-board-optics, and

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Exploring the Power of 400G ZR: Benefits, Applications, and Types

Among them, the 400G ZR transceiver module is mainly used for long-distance data transmission. This article will

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Understanding the Full 400G Optical Module Suite & Their Use Cases

The 400G module ecosystem provides many form factors, reach categories, and breakout options to handle a wide

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Silicon Photonics Applied for 400G Data Center

The difference between a 400GBASE-DR4 QSFP-DD PAM4 optical transceiver module and a silicon photonic one just

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Understanding the 400G DR4/DR4+ and FR4 Optical Transceivers

For 400G DR4/DR4+ & FR4 transceivers, both the transmit and receive end optical chips (EML, PD) and electrical

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400G Coherent Optical Devices: Architecture, Applications & Trends

Explore the architecture, key technologies, applications, and future trends of 400G coherent optical devices in modern

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Understanding the Latest in 400g Transceiver Technology: Your

Explore our complete guide to 400G transceiver technology, including QSFP-DD modules and cables designed for

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What specifications of optical chips are used in 400g optical modules ...

The 400G optical transceiver (400G Optical Transceiver) is one of the mainstream devices in modern data centers

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400G vs 800G Optical Modules: Differences, Use Cases, and

Compare optical modules for data centers and AI clusters. Learn key differences in standards, power, cabling, and

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Optical Modules: Differences Between 100G, 400G, 800G

400G optical modules are mainly used for photoelectric conversion. Electrical signals are converted into optical

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400G Optical Transceiver Module: Design Insights

Explored the internal structure and working principles of 400G optical transceiver modules, covering key components such as DSP

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400G Optical Modules: The Most In-Depth Q& A You'll Ever Need!

Recently, we've received numerous inquiries from users about 400G optical modules. As a mainstream optical

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Know Your 400G Transceiver | Juniper Networks

A 400G transceiver uses multiple lanes of optical signals and advanced modulation techniques to achieve higher capacities. 400G

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Understanding 400G Transceivers and Cables: Key Questions

A1: 400g optical transceivers are optical modules that are mainly used for photoelectric conversion with a

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Broadcom's 400G/lane Optical Solutions Pave the Path Toward 200T ...

Building upon its first-to-market 400G EML and PD debuted at OFC 2025, Broadcom is launching the Taurus

Contact Us

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