

Solution OSFP optical module 400G

Article Overview

In an OSFP optical module, "400G" refers to a total data transmission capacity of 400 gigabits per second, achieved through multiple high-speed lanes using PAM4 modulation.

What 400G Means in OSFP

The 400G designation indicates that the optical transceiver can handle 400 gigabits per second of data. OSFP (Octal Small Form-factor Pluggable) modules achieve this by using 8 electrical lanes, each operating at 50G using PAM4 modulation, which together sum to 400G total bandwidth . Some variants, like DR4, use 4 lanes at 100G each, still achieving 400G but with fewer lanes .

OSFP Form Factor Advantages

OSFP modules are slightly larger than QSFP-DD modules, which allows for better thermal management and higher power budgets (typically 8–12W for 400G, with some models up to 15W), . This makes them suitable for high-density, high-speed data center environments, including AI clusters and hyperscale networks .

Lane Architecture and Modulation

- 8×50G PAM4 lanes: Standard for most 400G OSFP modules, providing robust signal integrity and scalability .
- 4×100G PAM4 lanes: Used in 400GBASE-DR4 modules for single-mode fiber with up to 500 meters reach .
- PAM4 modulation: Pulse Amplitude Modulation with 4 levels doubles the data capacity per symbol compared to traditional NRZ signaling, enabling higher throughput without increasing the number of fibers .

Applications

400G OSFP modules are widely used for:

- Data center interconnects (TOR to spine connections)
- High-bandwidth Ethernet fabrics
- AI/ML cluster networking
- Flexible breakout configurations to 100G per lane

Article Content

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

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Compare QSFP-DD, QSFP28, and OSFP form factors. Learn about compatibility, power constraints, migration TCO,

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OSFP 400G Loopback Module

Description Designed and engineered to accommodate customers high usage 2000 cycles at -40°C to 85°C, the loopback module

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OSFP 400G DR4 Explained: Standards, Cabling, MPO-12, and Breakout

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A full comparison of 400G QSFP-DD, OSFP, and QSFP112 optical module form factors. Learn their differences in

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The CFP8's size is much larger than that of QSFP-DD or OSFP, at 102mm x 40mm x 9.5mm, which is about the size

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The deployment of 400GE client optics was accelerated by the demand from hyperscale web players and service providers, along

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Discover everything about 800G optical modules—standards, packaging, types & applications. Learn how they power

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OSFP 400G DR4 Explained: Standards, Cabling, MPO-12, and Breakout

Among the different optical standards that enable 400G, the OSFP 400G DR4 stands out for its parallel single-mode

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400G Optical Transceiver Guide | 400G OSFP SR4,

The 400G OSFP VR4 and 400G OSFP VR4 MM850 are optimized for very short-reach

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Understanding the OSFP Standard: The Open 400G/800G Optical

OSFP (Octal Small Form Factor Pluggable) is a pluggable optical transceiver interface standard that supports eight

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Understanding the OSFP 400G DR4 Optical Transceiver Module

Discover the OSFP 400G DR4 Optical Transceiver Module, a high-performance solution with a 1310nm wavelength,

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FS 800G/400G Coherent OSFP/QSFP-DD optical transceiver module solutions offer a range of OSFP/QSFP-DD modules

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Exploring the World of 400G OSFP Transceiver: Types, Connections,

Explore different types of 400G OSFP transceivers & their optical connections, including OSFP SR8, DR4, FR4.

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Selection Guide for Data Center 400G Optical Modules

Selecting 400G optical modules essentially involves balancing distance, fiber type, and cost. The SR4, DR4, and FR4

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Comprehensive Guide to 400G OSFP Optical Modules: Specs,

What Is a 400G OSFP Optical Module? OSFP (Octal Small Form-factor Pluggable) is an advanced pluggable optical

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A Comprehensive Guide to 400G OSFP Ethernet

Explore 400G OSFP Ethernet optical transceivers for modern data centers, AI and HPC

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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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The 400G 100G-PAM4 OSFP And QSFP112 Optical Modules From

The 400G 100G-PAM4 OSFP and QSFP112 optical modules from NVIDIA provide a high-speed, reliable solution for

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400G OSFP/QSFP112/QSFP-DD | Transceiver Modules

FS provides an expanding portfolio of 400G OSFP/QSFP112/QSFP-DD solutions featuring high-performance, high-bandwidth, and

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400G Modules Compared: QSFP-DD, OSFP & QSFP112

Unsure which 400G module fits your data center? Compare QSFP-DD, OSFP, and

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OSFP Transceivers: High-Density Optical Connectivity from 400G to

As hyperscale data centers shift toward AI-optimized fabrics and ultra-high-bandwidth switching platforms, the OSFP

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Understanding the OSFP Standard: The Open 400G/800G Optical

The OSFP standard marks a pivotal step toward scalable 400G and 800G optical networking, designed from the

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