

Optical Module OSFP Packaging



Overview

A Comprehensive Guide to 400G OSFP Ethernet Explore 400G OSFP Ethernet optical transceivers for modern data centers, AI and HPC networks. Learn OSFP advant.

Key Takeaways

OSFP packaging defines standardized form factors for high-speed optical modules, including OSFP1600 and OSFP-XD, enabling high-density, high-bandwidth, and thermally optimized deployments.

Overview of OSF

P PackagingOSFP (Octal Small Form-Factor Pluggable) is a compact optical module standard designed for high-speed data transmission in data centers and AI clusters. It specifies mechanical dimensions, electrical interfaces, thermal management, and hot-pluggability, ensuring compatibility across devices and simplifying maintenance and upgrades.

OSF

P modules support 400G, 800G, and 1. 6T bandwidth, with the OSFP1600 standard providing eight 200G host electrical interfaces for a total of 1. 6T bandwidth while remaining backward compatible with existing OSFP modules.

OSFP-XD: Extended Density PackagingOSFP-XD (OSFP eXtended Density) is an evolution of the OSFP standard that doubles the number of high-speed electrical channels from 8 to 16, enabling single-port 1. 6T rates and future upgrades to 3. 2T.

Key features include: High-power support: Optimized for heat dissipation and energy efficiency in high-speed modules. Copper cable compatibility: Supports passive DAC interconnects for short-reach connections. Increased port density: Expands system capacity within limited rack space, ideal for hyperscale data centers, AI training clusters, and HPC environments.

Thermal and electrical optimization: Modified heatsink and paddlecard design to support 200 Gb/s electrical interfaces and reduce parasitic effects. OSFP-XD modules are slightly longer and taller than standard OSFP modules, with a 20% increase in volume and 12% more internal space for passive DAC applications, allowing designers to balance heat sink size and internal volume for optimal performance. Deployment and Applications OSFP and OSFP-XD modules are widely used in AI data centers, high-performance computing, and hyperscale networks.

They provide: High-density deployment: Multiple modules per rack unit without increasing floor space. Flexible bandwidth scaling: Supports 100GE, 200GE, 400GE, and 800GE connectivity options. Efficient thermal management: Integrated heat sinks and optimized electrical layouts ensure reliable operation under high power loads.

Future-proof design: OSFP-XD lays the foundation for 3.2T and higher-speed optical modules, supporting long-term expansion plans. Summary OSFP packaging, including OSFP1600 and OSFP-XD, provides a standardized, high-performance, and thermally optimized solution for modern optical networks.

By increasing channel density, supporting higher power, and maintaining backward compatibility, these modules enable scalable, high-bandwidth deployments in AI, HPC, and hyperscale data centers while simplifying maintenance and upgrades.

Article Content

A Comprehensive Guide to 400G OSFP Ethernet

Explore 400G OSFP Ethernet optical transceivers for modern data centers, AI and HPC networks. Learn OSFP advantages, use cases, and

Cisco OSFP 800G Transceiver Modules Data Sheet

It is compliant with IEEE 802.3 800GBASE-VR8 and OSFP MSA module requirements with integrated heat sink. Optical signals are carried over

800G Optical Transceiver Overview: QSFP-DD and OSFP Packages

This article provides an overview of 800G optical transceivers, focusing on the QSFP-DD and OSFP packages. Explore the features, differences of these high-speed transceiver form factors

Optical Module Package Market 2025

Optical Module Package Market was valued at 8942 million in 2024 and is projected to reach US\$ 20220 million by 2032, at a CAGR of 12.7%

Welcome to OSFPmsa

A: No, due to mechanical and electrical differences, OSFP modules are not compatible with OSFP-XD ports, and vice-versa. Mechanical keying features on the modules prevents insertion into the wrong

Analysis Of 400G Optical Module Packaging Types--ETU-LINK

Compare QSFP-DD, OSFP, and QSFP112 — the three mainstream 400G optical module packaging types. Learn about power consumption, port density, backward compatibility, and

QSFP-DD vs OSFP vs QSFP112: Which 400G Module Packaging

400G optical module packaging comparison: Choose QSFP-DD, OSFP, or QSFP112 for data center, AI, or HPC based on compatibility, power, and cost. Optimize network performance and upgrades.

Cisco QSFP-DD and OSFP 800G ZR/ZR+ Coherent

Cisco QSFP-DD and OSFP 800G coherent optical modules are supported on Cisco switches and routers. For more details, refer to the Cisco

800Gb/s OSFP Transceivers | Optical Interconnect | Amphenol

Amphenol's 800G OSFP optical modules include 2xDR4 (plus), 2xFR4 (plus), 2xLR4, AOC, and AOC breakout series, which adopt LC or MPO optical ports and are compatible with

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

OSFP (Octal Small Form-Factor Pluggable) is a newer module form factor designed for 400G and beyond. It is slightly larger than QSFP-DD, allowing for higher power budgets and better thermal

Optical Module Package Types Overview

Optical transceiver module (optical transceiver), referred to as optical module, is an important device in optical communication system. There are many

Cisco OSFP 800G Transceiver Modules Data Sheet

The OSFP 800G transceiver modules are Cisco's new generation of pluggable transceiver modules based on the OSFP specification. They offer

NVIDIA Corporation

1.6 Terabits Per Second Per Port Switches to Deliver 3.5x Energy Savings and 10x Resilience in AI Factories Joint Inventions and Collaborations With TSMC, Coherent, Corning

Common optical module package types: SFP, SFP+, SFP28, QSFP+,

Package Type and Interface: Understand the interface types of your system and choose optical modules that are compatible with the system's interfaces, such as SFP, SFP+, QSFP,

Use of Advance Packaging to Reduce Optical Module PCB Losses

Advance optical modules are using mSAP (modified Semi Additive Package) to save cost and power – mSAP was developed in the last 7-10 years in support of smart phones and watches.

How to choose between 800G optical-mode QSFP-DD and OSFP packages

800G Transceiver Form Factors Advantages 800G QSFP-DD Form Factor: Dual-density four-channel small pluggable high-speed module. QSFP-DD is currently the preferred package for

800G Optical Modules Explained: Standards, Types

Discover everything about 800G optical modules—standards, packaging, types & applications. Learn how they power AI, HPC & next-gen data

Comparing COB vs. BOX Packaging for Optical Modules

Explore the differences between COB and BOX packaging in optical modules. Discover their applications, costs, and suitability, limitation

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

