Manufacturer s Optical Core Router OSFP



Overview

Designed for high thermal capacity, electrical scalability, and forward compatibility, OSFP modules now drive connectivity across 400G, 800G and the emerging 1.6T generation.

Key Takeaways

OSFP (Octal Small Form Factor Pluggable) modules are high-performance optical transceivers supporting 400G, 800G, and 1. 6T speeds, widely used in modern data centers and AI-scale networks.

Overview of OSF

P TechnologyOSFP modules are designed for high-density, high-speed optical connectivity with enhanced thermal management and electrical scalability. They support power budgets up to 60W, enabling sustained performance in AI clusters and GPU-to-GPU topologies. The native 8-lane architecture allows seamless upgrades to higher speed classes without changing the mechanical form factor, making OSFP ideal for ultra-dense switch and router deployments.

Key Features and BenefitsHigh-Speed Connectivity: Supports 400GE, 800GE, and emerging 1. 6Tbps links, with breakout options such as 8x100G or 2x400G for flexible network scaling. Thermal Efficiency: Larger housing and improved airflow paths compared to QSFP-DD, critical for power-intensive applications.

Interoperability: Compliant with IEEE 802. 3 standards, CMIS 5. 3, 400ZR/800ZR, OpenZR+, and OpenROADM MSA agreements, ensuring compatibility across multiple vendors and network layers.



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Deployment Flexibility: OSFP modules support short-reach (50–500m), medium-reach (2 km), and long-reach (up to 10 km or 120 km with coherent designs) applications, suitable for intra-data center, metro, and service provider networks.

Supplier Offerings

Cisco: Offers 800G OSFP transceivers with multiple connectivity options (100G, 200G, 400G, 800G), certified for Cisco OSFP ports, and optimized for AI and high-performance computing networks. Smartoptics: Provides 400G and 800G OSFP modules compliant with 400ZR/800ZR, supporting DR4, FR4, and LR4 transmission distances, with breakout capabilities for flexible deployment. Acacia: Supplies OSFP modules powered by Delphi DSP ASICs and silicon photonics, supporting DCI, metro, and service provider networks with coherent 800G pluggables and extended reach up to 120 km.

C-LIGHT: Offers 1. 6T OSFP-RHS transceivers for next-generation data centers, along with 400G and 800G OSFP modules for various distances, optimized for AI, HPC, and hyperscale GPU clusters.

Deployment Considerations

When integrating OSFP modules into optical core routers, network engineers should consider: Thermal management for high-power modules, especially in dense racks. Compatibility with existing switch/router ports and breakout configurations. Line rate and reach requirements to select the appropriate OSFP variant (SR, DR, FR, LR, or coherent).

Future scalability to support emerging 1. 6T speeds without redesigning the front panel.

OSF

P modules are increasingly the preferred choice for modern data centers, AI clusters, and high-performance optical networks, offering a balance of high bandwidth, thermal efficiency, and interoperability across multiple vendors.

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Article Content

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

Designed for high thermal capacity, electrical scalability, and forward compatibility, OSFP modules now drive connectivity across 400G, 800G and the emerging 1.6T generation.

Cisco OSFP 800G Transceiver Modules Data Sheet

The Cisco ® OSFP 800G transceiver modules provide 800 Gigabit Ethernet (GE), 2x 400GE, 4x 200GE, and 8x 100GE connectivity options,

400G and 800G OSFP transceivers | Smartoptics

OSFP was among the first form factors to support native 800G, making it a key enabler for ultra-high-speed deployments. It is fully compliant with 400ZR and 800ZR, ensuring energy-efficient, high

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 ground up for AI, cloud, and HPC infrastructures. With open MSA

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

Juniper 800G Optical Transceivers and Cables Guide

Juniper''s 800G transceivers use the OSFP800 and QSFP-DD800 form factors (referred as OSFP and QSFP-DD respectively). For a list of all 800G optics and their supported platforms, see

OSFP Product Family » Acacia

Octal Small Form-factor Pluggable (OSFP) solution that fits into high-density switch and router client ports for optical interconnect links. Powered by Greylock and Delphi DSP ASICs, and silicon

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

Lightrend

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The company since its inception, Lightrend has been focusing on the development of 1G/10G/25G/40G/100G/400G/800G optical transceivers, with the broad product portfolio including

Understanding the Flat-Top OSFP Optical Transceiver: Compatibility ...

Explore the OSFP Flat Top Optical Transceiver''s compatibility with 800G modules, direct attach cables, and its applications in high-speed optical communication.

Juniper 800G Optical Transceivers and Cables Guide

Use the information in this topic to remove OSFP or QSFP-DD optical transceivers and fiber-optic cables. Juniper Networks transceivers are hot-removable and hot-insertable field

Understanding OSFP Cable Assemblies: The Key to

Discover how OSFP cable assemblies revolutionize data interconnect solutions, supporting 400G speeds and advanced signaling like

OSFP Technology: Revolutionizing High-Speed

OSFP-based 800G/1.6T optical modules are becoming the norm. – Data Center Expansion: Hyperscale data centers need higher port density (e.g.,

OSFP Connector Guide: 400G and 800G Modules, DAC, AOC, ACC,

OSFP optical modules include 400G SR8/DR8 and 800G DR8 /FR8 variants. They deliver low latency, high bandwidth, and built-in FEC for error-free transmission up to 10km.

Understanding OSFP Modules: Your Guide to High-Speed Optical ...

Discover how OSFP modules provide high-speed optical connectivity for data center applications. Learn about the different form factors, data rates, and compatibility options available.

What is OSFP Octal Small Form Factor Pluggable?

The OSFP is the third MSA aimed at creating a 400 Gigabit Ethernet optical transceiver form factor. It follows the CDFP (see “CDFP Rev. 3.0 for 400-Gbps optical modules now available”)

Cisco Optics | Transform Your Network

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800G OSFP 2xDR4 Finned Top Transceiver Manufacturer | Cisco

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The 800G OSFP 2xDR4 Finned Top is a premium single-mode optical transceiver designed for high-radix Cisco networking environments. Operating at 1310nm with 112G PAM4 signaling, it delivers

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