Custom Tunable Optical Module OSFP

Overview

Understanding the OSFP Standard: The Open 400G/800G Optical OSFP (Octal Small Form Factor Pluggable) is a pluggable optical transceiver interface standard.

Key Takeaways

Tunable OSFP modules are high-performance, pluggable optical transceivers designed for scalable, high-speed data center and hyperscale networks, supporting 400G, 800G, and emerging 1. 6T bandwidths with advanced thermal and electrical management.

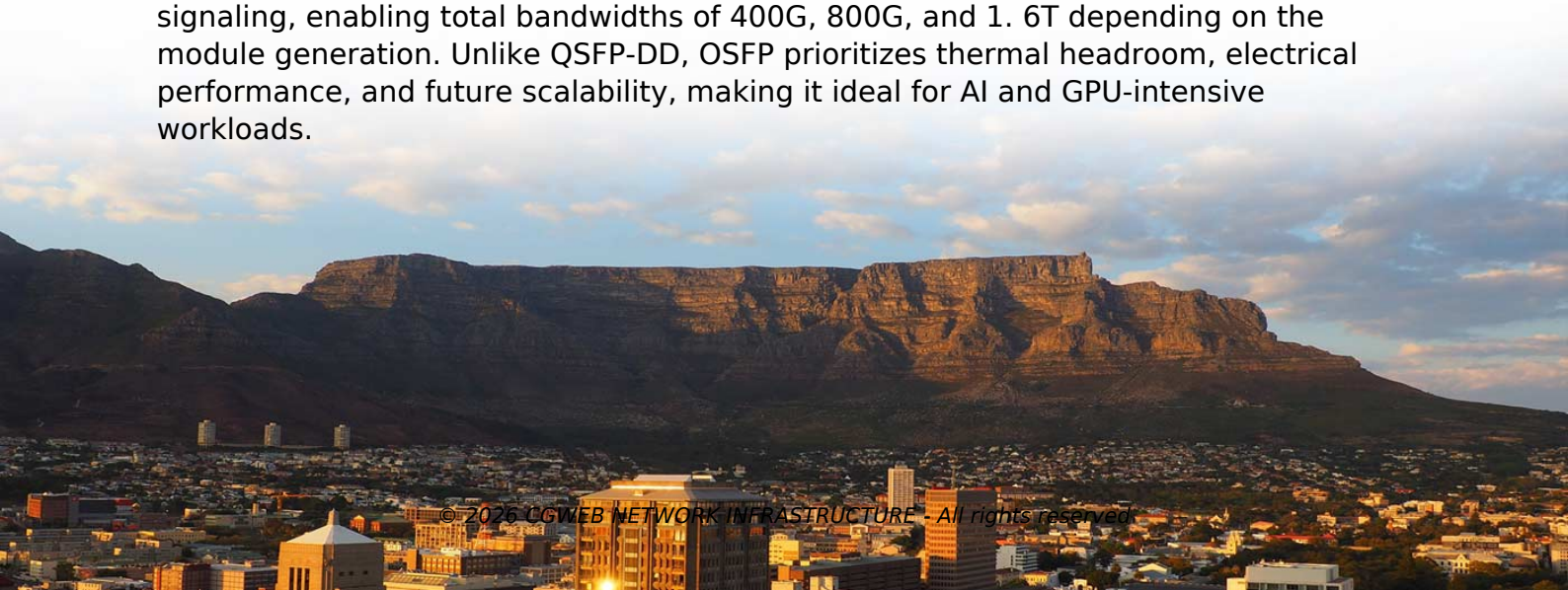
Overview of OSFP

The Octal Small Form-

Factor Pluggable (OSFP) standard is an open, vendor-neutral interface designed for high-density, high-speed optical connectivity in modern data centers, AI clusters, and hyperscale environments.

OSF

P modules support eight electrical lanes, each capable of 50G, 100G, or 200G PAM4 signaling, enabling total bandwidths of 400G, 800G, and 1. 6T depending on the module generation. Unlike QSFP-DD, OSFP prioritizes thermal headroom, electrical performance, and future scalability, making it ideal for AI and GPU-intensive workloads.



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Tunable Optical Capabilities

Tunable OSF

P modules allow dynamic adjustment of the optical wavelength, which is critical for Dense Wavelength-Division Multiplexing (DWDM) applications. This tunability enables: Flexible deployment across multiple channels without changing hardwareOptimized spectrum utilization for metro, regional, and data center interconnectsSupport for 800ZR and 800G ZR+ coherent optics, achieving distances up to 120 km for 800ZR and beyond 1000 km for 800G ZR+ Tunable modules leverage advanced DSP ASICs and silicon photonics, providing high-performance signal processing, low power consumption, and interoperability with OIF, OpenZR+, and OpenROADM standards.

Thermal and Electrical DesignOSFP modules are engineered for high thermal dissipation, with integrated heatsinks supporting 30–60W power budgets for 1. 6T modules. The form factor ensures efficient airflow and cooling, critical for AI cluster deployments and high-density switch configurations.

Electrical design supports break-out applications and maintains backward compatibility with previous OSFP generations, ensuring smooth upgrades from 400G to 1. 6T.

Applications

Tunable OSF

P modules are widely used in: Hyperscale data centers for AI/ML workloads requiring high concurrency and low-latency interconnects Data Center Interconnects (DCI), supporting long-reach coherent links with flexible wavelength assignment Service provider networks, enabling metro and regional optical transport with high spectral efficiency AdvantagesScalable bandwidth: Supports 400G, 800G, and 1. 6T in a single form factorHigh thermal capacity: Integrated heatsinks and optimized airflow for dense deploymentsInteroperability: Compliant with OSFP MSA, OIF, OpenZR+, and OpenROADM standardsFlexibility: Tunable wavelengths for DWDM networks and multi-rate Ethernet supportFuture-proof: Backward compatible with previous OSFP generations and supports emerging 3.

2T optics Tunable OSFP modules represent a key enabler for next-generation optical networks, combining high-speed performance, thermal efficiency, and wavelength flexibility to meet the demands of AI-driven, hyperscale, and service provider environments.

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Article Content

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 electrical lanes (Tx/Rx) per module. Each lane can operate up to 100G

OSFP OCTAL SMALL FORM FACTOR PLUGGABLE MODULE

Abstract: This specification defines the electrical connectors, electrical signals and power supplies, mechanical and thermal requirements of the OSFP Module, connector and cage systems. The OSFP

Custom 1/10/25/100/200/400G Transceiver Modules

Customize your 1/10/25/100/200/400G transceiver from data rate, connector type, compatilibity to form factor. With well-equipped lab, all FS custom optical transceivers are produced with high-quality

Welcome to OSFPmsa

A: The OSFP is a pluggable form factor with 8x high speed electrical lanes that support up to 400 Gbps (8x50G), 800 Gbps (8x100G), or 1.6 Tbps (8x200G). Up

800G/400G Coherent OSFP/QSFP-DD Transceiver Modules | Optical

FS 800G/400G Coherent OSFP/QSFP-DD optical transceiver module solutions offer a range of OSFP/QSFP-DD modules 120km/500km reach, and used for Edge DCI, LH, Regional, Metro 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

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.

400G ZR/ZR+ OSFP-DCO

The Lumentum 400ZR module on an OSFP form factor is designed for use by hyperscale data center operators and peering networks to provide high

Complete Guide to OSFP Transceiver: 400G/800G/1.6T

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The OSFP standard creates a high-speed optical transceiver form factor that enables data transmission at 400G, 800G, and 1.6T speeds. The

Understanding OSFP Modules: Your Guide to High

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

Lumentum

Visit Lumentum booth 1439 and connect with industry experts. Multiple demonstrations for scale-out and scale-up networking applications are being showcased: 1.6T DR4 OSFP Module

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

These digital coherent optics modules enable 800G traffic over amplified DWDM links up to 120 km for 800ZR and over 1000 km for 800G ZR+.

Optical module

An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications. Optical modules typically have an electrical interface on the side that

400G and 800G OSFP transceivers | Smartoptics

OSFP transceivers are slightly larger than QSFP-DD modules, allowing for higher power. OSFP''s larger surface area enhances thermal management. However, Smartoptics QSFP-DD modules offer the

What factors influence 400G optical transceiver modules price□

Discover the key factors that drive 400G optical transceiver pricing—from form-factor and component costs to market dynamics and sustainability.

Top 10 Optical Transceiver Manufacturers in the World

Sourcing optics for your data center? Discover the top 10 optical transceiver manufacturers in 2026. Compare global giants and factory-direct OEM alternatives.

SFP Modules Dubai | IRIX Fiber Optic Transceivers & SFP+ UAE

Professional SFP modules Dubai from IRIX. Cisco, HP compatible SFP, SFP+, QSFP+ fiber transceivers. 1G, 10G, 40G optical modules UAE.

Optimizing Optical Networks with DWDM Tunable SFP+ Modules

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FS''s 10G Tunable DWDM SFP+ Modules offer flexible, high-performance optical solutions for data centers, MANs, and cloud networks, enhancing bandwidth and resource efficiency.

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