

RIVO MULTITRADE OPTICAL SYSTEMS

High-cost high-speed optoelectronic connection QSFP-DD



Overview

TE's QSFP-DD products work cost effectively in 15-18W applications leveraging proprietary heat sink technology.

Key Takeaways

QSFP-DD (Quad Small Form-factor Pluggable Double Density) modules enable ultra-high-speed optical connections up to 800G per port, supporting next-generation data center and high-performance computing applications.

QSFP-DD is a high-density optical transceiver form factor designed to double the number of electrical lanes compared to traditional QSFP modules, supporting eight lanes per module. Each lane can operate at speeds of 28 Gbps NRZ, 56 Gbps PAM4, or 112 Gbps PAM4, enabling aggregate data rates of 400G to 800G per port . This makes QSFP-DD ideal for web-scale data centers, AI/ML workloads, and service provider networks .

Key Features

- **High-Speed Performance:** QSFP-DD modules leverage advanced modulation techniques like PAM4 to maximize data throughput without increasing module size .
- **Backward Compatibility:** QSFP-DD ports support legacy QSFP+, QSFP28, and QSFP56 modules, allowing gradual network upgrades .

- **Thermal Management:** Modules incorporate rising heatsinks or proprietary cage designs to handle high power dissipation (up to 15–18W) while maintaining signal integrity .
 - **Flexible Connectivity:** Supports copper, multimode fiber, and single-mode fiber, as well as linear pluggable optics (LPO) for low-latency PCIe Gen 5 interconnects .
 - **High Density:** QSFP-DD enables super-high-density connections, allowing multiple 100G or 400G lanes to be aggregated efficiently in compact switch or server designs .
- Applications
- **Data Centers:** High-density 400G and 800G connections for server-to-server and rack-to-rack interconnects .
 - **High-Performance Computing (HPC):** Supports AI/ML workloads requiring low-latency, high-bandwidth links .
 - **Service Providers:** Enables scalable, high-radix network designs with backward compatibility for existing infrastructure .
 - **Next-Generation Networking:** Facilitates migration to higher speeds while maintaining compatibility with lower-speed QSFP modules .
- Advantages
- **Scalable Bandwidth:** Eight-lane architecture doubles throughput without increasing module size .
 - **Energy Efficiency:** Optimized thermal designs reduce cooling requirements and power consumption .
 - **Future-Proofing:** Supports emerging coherent and high-power optical modules for evolving network demands .
 - **Low Latency:** Linear pluggable optics provide sub-5W, low-latency links for PCIe Gen 5 applications . QSFP-DD represents a premium, high-cost solution due to its advanced design, high-speed capabilities, and flexibility, making it a cornerstone technology for next-generation optical networking .

Article Content

QSFP-DD Optical Transceivers for High-Speed Connections

Network operators are looking for cost-optimized optical solutions that provide increased density and reduced power

QSFP-DD Connectors | High Speed I/O | Amphenol

Amphenol's QSFP-DD high-speed connector family features a scalable, high-performance interconnect platform with

QSFP-DD Connectors, Cages and Cable Assemblies

TE's QSFP-DD products work cost effectively in 15-18W applications leveraging proprietary heat sink technology. Our new

QSFP-DD CONNECTORS & CABLE ASSEMBLIES PRODUCT

High Speed 400G Pluggable I/O Solutions TE Connectivity's (TE) QSFP-DD (quad small form-factor pluggable double density)

Cisco QSFP-DD800 Transceiver Modules Data Sheet

The Cisco family of QSFP-DD800 modules leverages the cornerstone of high-speed, high-density pluggable form factors, QSFP. The

Comprehensive Guide to QSFP - MapYourTech

Pin Configuration and Functions QSFP modules utilize a high-density card-edge connector providing both high-speed

QSFP-DD Connectors, Cages and Cable Assemblies

QSFP-DD provides high-performance computing capability. The QSFP interconnects density is doubled with electrical interface,

QSFP-DD Connector System

Telecommunication and data center customers have increasing bandwidth requirements and, therefore, require high-density

400 Gigabit QSFP-DD Fiber Optic Transceivers | Ultra-High-Speed

These QSFP-DD (Double Density) modules provide 400Gbps of throughput, delivering double the bandwidth of the previous

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

