DATA SHEET

Brocade 4×32 GFC (2 Km) QSFP28

HIGHLIGHTS

- Provides high system reliability through rigorous qualification and certification processes
- Leverages unique design parameters to provide the highest performance with industry-leading Brocade switch and backbone platforms
- Helps eliminate issues related to transceiver incompatibility, reducing downtime and support costs
- Helps eliminate issues resulting from unexpected design changes, providing ongoing end-to-end compatibility
- Optimizes connectivity with Brocade platforms to enable maximum cable distance
- Provides support for high throughput Inter-Chassis Links (ICLs) up to 2 km

Optimized, Certified Optical Transceivers for the Highest-Performance Data Center Fabrics

Today's enterprise data centers are undergoing an infrastructure transformation, requiring higher speeds, greater scalability, and higher levels of performance and reliability to better meet the demands of business. As speed and performance needs increase, optical transceivers—once considered a generic component of Fibre Channel switching technologies—have become an integral part of overall system design. However, optical transceiver design margins and parameters vary widely, and can be the difference between an optimized, highly reliable fabric and incompatibility issues that drive up support costs.

The Brocade® 4×32 GFC (2 Km) Quad Small Form-Factor Pluggable (QSFP28), part of the Brocade family of optical transceivers, are optimized to fully leverage Brocade Gen 6 backbone and switch products. Together, these optical transceivers provide state-of-the-art performance, helping IT organizations achieve new levels of infrastructure consolidation while expanding the capabilities of their applications and services.

End-to-End Compatibility and Reliability

The Brocade 4×32 GFC (2 Km) QSFP28 modules support highly reliable operations in data center fabrics and are optimized for Brocade 128 GFC switching platforms. They undergo rigorous qualification and certification testing that results in an end-to-end solution that is easier to maintain—helping to improve the availability of data center fabrics supporting mission-critical applications.

Key Features

The Brocade 4×32 GFC (2 Km) QSFP28 modules are hot-swappable, low-voltage (3.3 V) digital diagnostic optical transceivers that support high-speed serial links over single mode optical fiber at signaling rates up to 4×28.05 Gbps. They comply with the 128 GFC Fibre Channel standard (FC-PI-6P) and QSFP MSA mechanical specification (SFF-8661).

The Brocade 4×32 GFC (2 Km) QSFP28 modules are multi-rated CWDM4 QSFP28s that comply with 28.025 Gbps Fibre Channel specifications.

Product highlights include:

- 4 CWDM wavelengths (1271 nm, 1291 nm, 1311 nm, 1331 nm) driven by an EML laser
- Diagnostic features per SFF-8472 "Diagnostic Monitoring Interface for Optical Transceivers," providing real-time monitoring of:
  - Transmitted optical power
  - Received optical power
  - Laser bias current
  - Temperature
  - Supply voltage
- Industry-standard duplex LC connector
- 2 km link length on duplex singlemode fiber
- IEC 60825-1 Class 1/CDRH Class 1 laser, eye-safe
- Compliance with Restriction on Hazardous Substances (RoHS) directive

Family of Optical Transceivers

Brocade offers a comprehensive family of reliable optical transceivers to provide highly compatible, high-performance connectivity to Brocade backbone, director, and switch products.

For additional ordering information, contact a Brocade representative or visit www.brocade.com/howtobuy.

Maximizing Investments

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

Brocade 4×32 GFC (2 Km) QSFP28 Specifications

Systems	
Performance	Fibre Channel: 4×28.05 Gbps line speed, full duplex
Media	Hot-pluggable, industry-standard QSFP28, duplex LC connector, supports up to 2 km using duplex singlemode fiber
Operating parameters	Transmit (Tx): • 4 Wavelengths: – 1264.5 nm to 1277.5 nm – 1284.5 nm to 1297.5 nm – 1304.5 nm to 1317.5 nm – 1324.5 nm to 1337.5 nm • Average power: –6.5 to +2.5 dBm per channel • Optical return loss: 20 dB max • OMA: –4.0 to +2.5 dBm per channel Receive (Rx): • 4 Wavelengths: – 1264.5 nm to 1277.5 nm – 1284.5 nm to 1297.5 nm – 1304.5 nm to 1317.5 nm – 1324.5 nm to 1337.5 nm • Average power: –11.1 to 2.5 dBm per channel • SRS OMA: –6.4 dBm max per channel
Operating distances	2 km on duplex singlemode fiber • These distances assume 3.5 dBm total connector and patch panel losses
Mechanicals	
Size	Width: 18.35 mm (0.72 in.) ± 0.1 mm Height: 12.9 mm (0.51 in.) ± 0.1 mm Depth: 71.00 mm (2.82 in.) ± 0.5 mm
Environmentals	
Storage temperature	–40°C to 85°C (–40°F to 185°F)
Power	
Power dissipation	3.5 W max

Brocade 4×32 GFC (2 Km) QSFP28 Ordering Information

XBR-000285	• QSFP28, 4×32 GFC, 2 km on duplex singlemode fiber

Regulatory and Standards Compliance

- North America: UL/CSA 60950, CDRH Class 1
- European Union: EN 60950, EN 60825 Class 1

Caution:

- *Do not look through the optical ports, as it is a potential eye hazard.*
- *SFP is an ESD sensitivity Class 1 device. It should be handled accordingly.*

For information related to SFF Committee documentation, visit www.sffcommittee.org.

For information about supported SAN standards, visit www.brocade.com/sanstandards.

For information about switch and device interoperability, visit www.brocade.com/interoperability.

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