

Product Brief

Highlights

- Provides high system reliability through rigorous qualification and certification processes
- Leverages unique design parameters to provide the highest performance with industry-leading Brocade switches and directors
- Helps eliminate issues related to SFP 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
- Connects servers, storage, and switches within 32 Gb/s Fibre Channel fabrics

Key Features

The Brocade 32 Gb/s SWL SFP+ modules are hot-swappable, low-voltage (3.3V) digital diagnostic optical transceivers that support high-speed serial links over multimode optical fiber at signaling rates up to 28.05 Gb/s. They comply with SFP+ mechanical (SFF-8402), optical, and electrical specifications (FC-P1-6) for LC duplex transceivers.

The Brocade 32 Gb/s SWL SFP+ is a multi-rated 850 nm SFP that complies with 28.05/14.025/8.5 Gb/s Fibre Channel specifications. Product highlights include:

- 850 nm multimode VCSEL transmitter

Brocade[®] 32 Gb/s SWL SFP+

Optimized, Certified Optical Transceivers for Extending Service Provider and Data Center Networks

Overview

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[®] 32 Gb/s Short Wavelength (SWL) SFP+, part of the Brocade family of Small Form-Factor Pluggable (SFP) optical transceivers, is optimized to fully leverage Brocade 32 Gb/s director 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 32 Gb/s SWL SFP+ modules support highly reliable operations in data center fabrics and are optimized for Brocade 32 Gb/s switching platforms. They undergo rigorous qualification and certification testing that results in an end-to-end solution that is easier to maintain—helping improve the availability of data center fabrics supporting mission-critical applications.

Family of Optical Transceivers

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

For additional ordering information, contact a Brocade representative or visit www.broadcom.com/brocade-customers-partners.

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.broadcom.com.

Regulatory and Standards Compliance

North America: UL/CSA 60950, CDRH Class 1

European Union: EN 60950, EN 60825 Class 1

Key Features (cont.)

- FC-PI-6 compliance for 28.05/14.025/8.5 Gb/s operation
- 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 LC duplex connector
- 100m link lengths at 28.05 Gb/s on OM4 fiber
- IEC 60825-1 Class 1/CDRH Class 1 laser, eye-safe
- RoHS compliant

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.

Ordering Part Number

- XBR-000212 (1-pack)
- XBR-000213 (8-pack)

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

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

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

Brocade 32 Gb/s SWL SFP+ Specifications

System	
Performance	Fibre Channel: 8.5, 14.025, and 28.05 Gb/s line speed, full duplex; auto-sensing of 8, 14, and 28 Gb/s port speeds
Media	Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), LC connector; Short Wavelength (SWL)
Operating parameters	Transmit (Tx): <ul style="list-style-type: none"> • Wavelength: 840 to 860 nm • Spectral width: 0.57 nm • Average power: -6.7 dBm to 1.6 dBm • RIN: -129 dB/Hz max • OMA: 479 μW min Receive (Rx): <ul style="list-style-type: none"> • Wavelength: 770 to 860 nm • Average power: 2 dBm max • Optical return loss: 12 dB min • Unstressed sensitivity: 95 μW, -10.2 dBm • SRS OMA: 263 μW, • 3 dB cutoff maximum: 18 GHz
Operating distances	OM2 50 μm (500 MHz\timeskm): <ul style="list-style-type: none"> • 8 Gb/s Fibre Channel: Distance: 0.5 to 50m • 16 Gb/s Fibre Channel: Distance: 0.5 to 35m • 32 Gb/s Fibre Channel: Distance: 0.5 to 20m OM3 50 μm (1500 MHz\timeskm): <ul style="list-style-type: none"> • 8 Gb/s Fibre Channel: Distance: 0.5 to 150m • 16 Gb/s Fibre Channel: Distance: 0.5 to 100m • 32 Gb/s Fibre Channel: Distance: 0.5 to 70m OM4 50 μm (3500 MHz\timeskm): <ul style="list-style-type: none"> • 8 Gb/s Fibre Channel: Distance: 0.5 to 190m • 16 Gb/s Fibre Channel: Distance: 0.5 to 125m • 32 Gb/s Fibre Channel: Distance: 0.5 to 100m OM5 50 μm (3500 MHz\timeskm): <ul style="list-style-type: none"> • 8 Gb/s Fibre Channel: Distance: 0.5 to 190m • 16 Gb/s Fibre Channel: Distance: 0.5 to 125m • 32 Gb/s Fibre Channel: Distance: 0.5 to 100m
Mechanical	
Size	Width: 14.80 mm (0.58 inches) Height: 12.21 mm (0.48 inches) Depth: 56.70 mm (2.23 inches)
Environment	
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Power	
Power Dissipation	1.0W