DATA SHEET

Brocade 16 Gbps SWL Optical Transceiver

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, director, and backbone platforms
- 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 16 Gbps Fibre Channel fabrics

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® 16 Gbps Short Wavelength (SWL) optical transceiver, part of the Brocade family of Small Form-Factor Pluggable (SFP) optical transceivers, is optimized to fully leverage Brocade 16 Gbps backbone, 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-toEnd Compatibility and Reliability

The Brocade 16 Gbps SWL optical transceivers support highly reliable operations in data center fabrics and are optimized for Brocade 16 Gbps 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.

Key Features

The Brocade 16 Gbps SWL SFPs are hot-swappable, low-voltage (3.3 V) digital diagnostic optical transceivers that support high-speed serial links over multimode optical fiber at signaling rates up to 14.025 Gbps. They comply with SFP+ mechanical (SFF-8432), optical, and electrical specifications (FC-PI-5) for LC duplex transceivers.

The Brocade 16 Gbps SWL optical transceiver is a multi-rated 850 nm SFP that complies with 14.025/8.5/

4.25 Gbps Fibre Channel specifications. Product highlights include:

- 850 nm multimode VCSEL transmitter
- FC-PI-5 compliance for 14.025/8.5/4.25 Gbps 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
- 100 m link lengths at 14.025 Gbps on OM3 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 4 Gbps, 8 Gbps, 10 Gbps, and 16 Gbps SFPs 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.

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

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 16 Gbps SWL Specifications

Systems				
Performance	Fibre Channel: 4.25, 8.5, and 14.025 Gbps line speed, full duplex; auto-sensing of 4, 8, and 14 Gbps port speeds			
Media	Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), LC connector; Short Wavelength (SWL)			
Operating parameters	Transmit (Tx): Wavelength: 830 to 860 nm Spectral width: 0.59 nm Average power: -8 dBm to -1 dBm RIN: -128 dB/Hz max Optical return loss: 12 dB max OMA: 331 µW, -4.8 dBm		Receive (Rx): Wavelength: 770 to 860 nm Average power: 0 dBm max Optical return loss: -12 dB min Unstressed sensitivity: 95 µW, -10.2 dBm SRS OMA: 170 µW, -7.7 dBm 3 dB cutoff maximum: 18 GHz	
Operating distances	OM1 62.5 µm (200-500 MHz*km) 4 Gbps Fibre Channel: Distance: 0.5 to 70 m 8 Gbps Fibre Channel: Distance: 0.5 to 21 m 16 Gbps Fibre Channel: Distance: 0.5 to 15 m	OM2 50 µm (500 MHz*km) 4 Gbps Fibre Channel: Distance: 0.5 to 150 m 8 Gbps Fibre Channel: Distance: 0.5 to 50 m 16 Gbps Fibre Channel: Distance: 0.5 to 35 m	OM3 50 µm (1500 MHz*km) 4 Gbps Fibre Channel: Distance: 0.5 to 380 m 8 Gbps Fibre Channel: Distance: 0.5 to 150 m 16 Gbps Fibre Channel: Distance: 0.5 to 100 m	OM4 50 µm (3500 MHz*km) 4 Gbps Fibre Channel: Distance: 0.5 to 400 m 8 Gbps Fibre Channel: Distance: 0.5 to 190 m 16 Gbps Fibre Channel: Distance: 0.5 to 125 m
Mechanicals				
Size	Width: 14.80 mm (0.58 inches) Height: 11.85 mm (0.47 inches) Depth: 56.50 mm (2.22 inches)			

Brocade 16 Gbps SWL Specifications *(continued)*

Environmentals	
Storage temperature	-40°C to 85°C
Power	
Power dissipation	0.8 W

Regulatory and Standards Compliance

- North America: UL/CSA 60950, CDRH Class 1
- European Union: EN 60590, 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-2 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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