

XBR-000193-PRO

8PK Brocade® XBR-000193 Compatible TAA Compliant 16GBase-SW Fibre Channel SFP+ Transceiver (MMF, 850nm, 300m, 0 to 70C, LC)

Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- Fibre Channel
- Access and Enterprise

Product Description

This 8-pack of Brocade® XBR-000193 compatible SFP+ transceivers provides 16GBase-SW Fibre Channel throughput up to 300m over multi-mode fiber (MMF) using a wavelength of 850nm via an LC connector. Each is guaranteed to be 100% compatible with the equivalent Brocade® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Brocade®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Proline's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products.



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	V _{cc}	-0.5	4.0	V
Storage Temperature	T _S	-40	85	°C
Operating Case Temperature	T _c	-5	70	°C
Operating Humidity	RH	5	95	%
50/125µm G.652 MMF (OM3)	L _{max}		300	m

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V _{cc}	3.13	3.30	3.47	V	
Power Supply Current	I _{cc}			300	mA	
Transmitter						
Differential data input swing	V _{in,pp}	120	600	850	mV	
Input differential impedance	Z _{in}	90	100	110	Ω	
TX Disable-High		2.0		V _{cc} +0.3	V	
TX Disable-Low		V _{ee} -0.3		0.8	V	
TX Fault-High		2.0		V _{cc} +0.3	V	
TX Fault-Low		V _{ee} -0.3		0.8	V	
Receiver						
Differential data output swing	V _{out, pp}	300	600	850	mV	
Output differential impedance	Z _{in}	90	100	110	Ω	
LOS-High		2.0		V _{cc} +0.3	V	
LOS-Low		V _{ee} -0.3		0.8	V	

Optical Characteristics

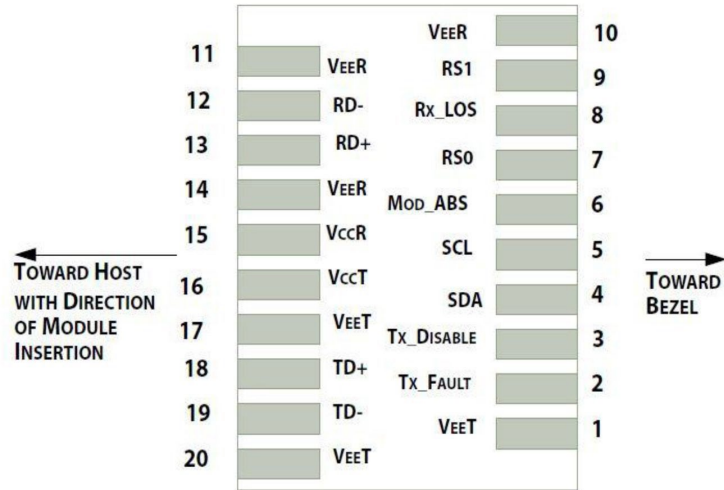
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power (average)	P_{AVE}	-7.3		-1	dBm	
Optical Modulation Amplitude	P(OMA)	-4.3	-2		dBm	
Extinction Ratio	ER	3			dB	
Transmitter and Dispersion Penalty	TDP			3.9	dB	
Average Launch power OFF TX	Poff			-30	dBm	
Optical Wavelength	$\lambda\lambda$	840	855	860	nm	
Optical Return Loss Tolerance	ORLT			12	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Eye Diagram		Compatible with IEEE 802.3-2005				
Receiver						
Receiver Sensitivity	PIN			-9.9	dBm	
Receiver Sensitivity @ FEC rate	PIN-OMA			-11.1	dBm	
Receiver Overload	P_{max}	-1			dBm	
Optical Center Wavelength	λ_C	840		860	nm	
LOS De-Assert	LOSD			-13	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTTTL-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0. Not used	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not used	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

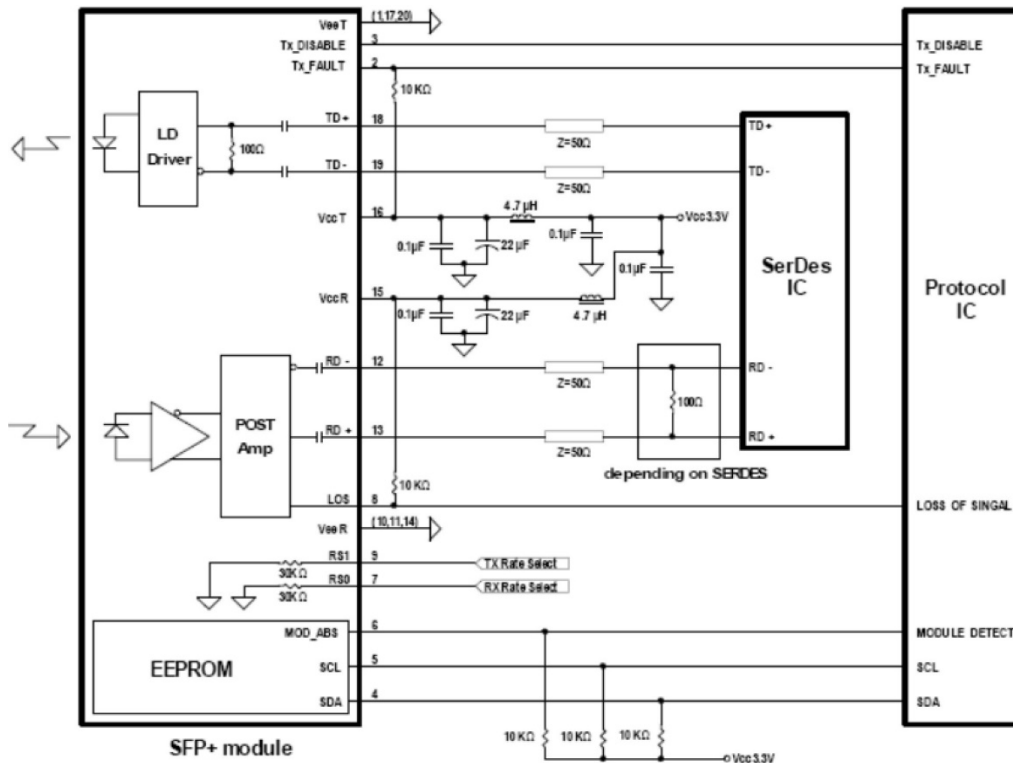
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resistor in the range 4.7K Ω to 10K Ω . Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx_Disable is an input contact with a 4.7K Ω to 10K Ω pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc_Host with a resistor in the range from 4.7K Ω to 10K Ω . Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



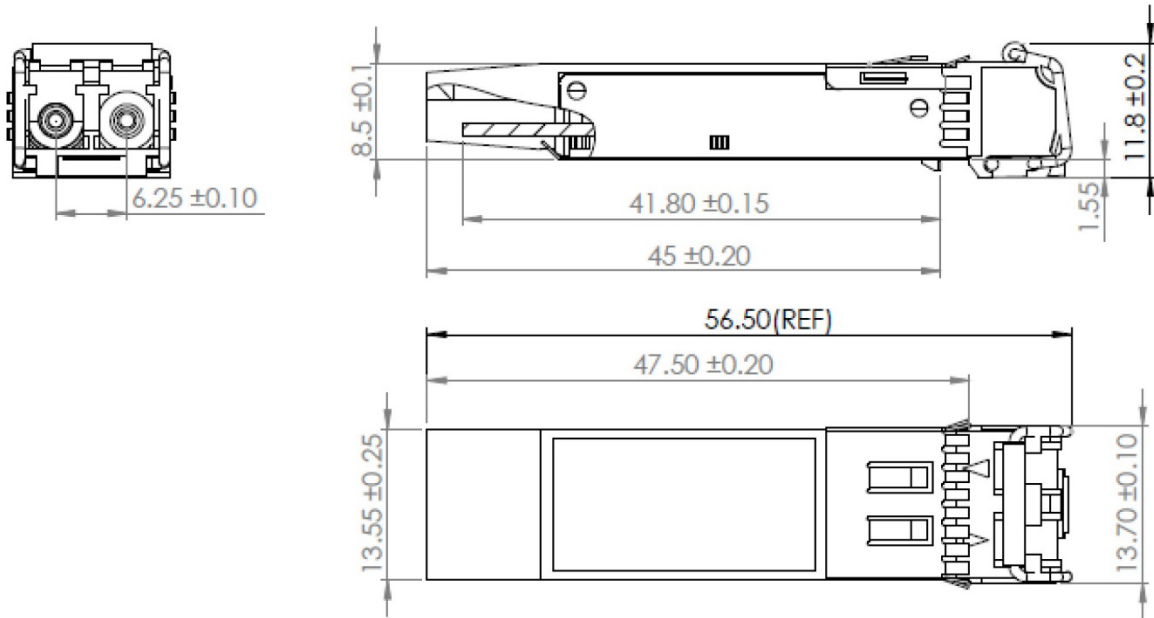
Pin-out of connector Block on Host board

Recommended Circuit Schematic



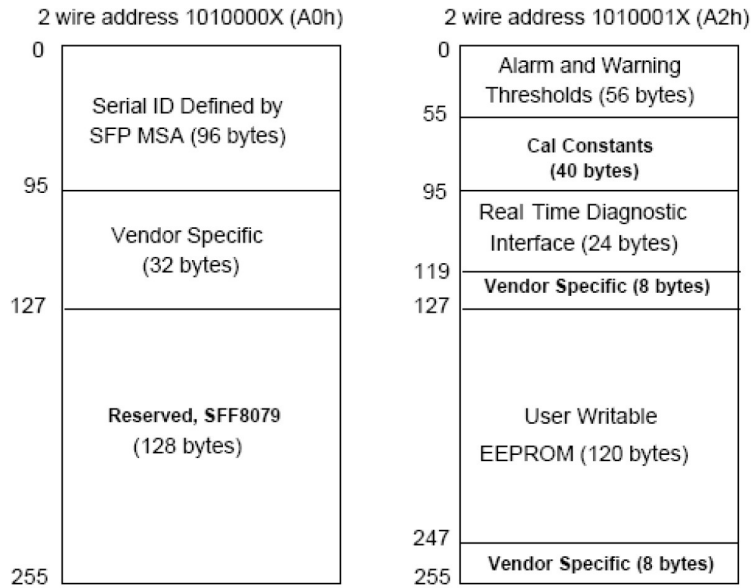
Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



EEPROM Information

EEPROM memory map specific data field description is as below:



About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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