# **addon**

#### M-GBXU-AO

Brocade® (Formerly) M-GBXU Compatible TAA 100Base-BX SFP Transceiver (SMF, 1310nmTx/1550nmRx, 10km, LC, DOM)

## **Features**

- INF-8074 and SFF-8472 Compliance
- Simplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



## **Applications**

- 100Base Ethernet
- Access and Enterprise

#### **Product Description**

This Brocade® (Formerly) M-GBXU compatible SFP transceiver provides 100Base-BX throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nmTx/1550nmRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Brocade® (Formerly) 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. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn'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."



# **Regulatory Compliance**

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4.
- ESD to the LC Receptacle: compatible with IEC 61000-4-3.
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010.
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1, 2.
- RoHS: compliant with EU RoHS 2.0 directive 2015/863/EU.

# **Absolute Maximum Ratings**

Parameter	Symbol	Min.	Тур.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Тс	0		70	°C
Operating Humidity	RH	5		95	%
Data Rate			155		Mbps

# Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

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Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.13	3.30	3.47	V	
Power Supply Current	Icc			250	mA	
Transmitter						
Single-Ended Data Input Swing	VIN, pp	250		1200	mV	
Input Differential Impedance	RIN		100		Ω	1
Receiver						
Single-Ended Data Output Swing	VOUT, pp	300	400	800	mV	2
Output Differential Impedance	ZOUT		100		Ω	

## Notes:

- 1. AC coupled.
- 2. Into  $100\Omega$  differential termination.

**Optical Characteristics** 

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Transmitter						
Optical Power (Average)	P <sub>AVE</sub>	-15		-8	dBm	1
Optical Extinction Ratio	ER	10			dB	
Optical Wavelength	Τλ	1275	1310	1350	nm	
Spectral Width	σ			3	nm	
Optical Rise/Fall Time	Tr/Tf			1500	ps	2
Total Jitter (Peak-to-Peak)	J <sub>TXp-p</sub>			0.07	UI	3
Total Jitter (RMS)	$J_{TXrms}$			0.007	UI	
Receiver						
Receiver Sensitivity	S			-30	dBm	4
Receiver Overload	P <sub>max</sub>	-2			dBm	5
Receiver Wavelength	Rλ	1530	1550	1570	nm	
LOS De-Assert	LOSD			-32	dBm	
LOS Assert	LOSA	-40			dBm	
LOS Hysteresis	LOSH	0.5		5	dB	

# Notes:

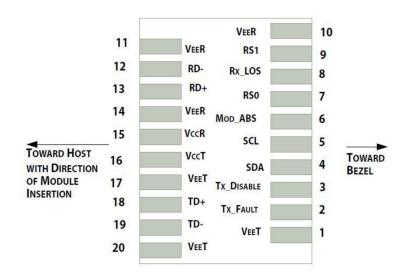
- 1. Class 1 Laser Safety.
- 2. Unfiltered, 20-80%. Complies with OC-3 eye masks when filtered.
- 3. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and  $\Delta$ DJ.
- 4. Measured with PRBS  $2^{23}$ -1 at  $10^{-10}$  BER.
- 5. Exceeding the receiver overload can physically damage the module. Please use appropriate attenuation.

### **Pin Descriptions**

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. LVTTL-O.	2
3	Tx_Disable	Transmitter Disable. Laser output disabled on "high" or "open." LVTT-I.	3
4	SDA	2-Wire Serial Interface Data (Same as MOD-DEF2 in INF-8074i). LVTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTL-I.	
6	MOD_ABS	Module Absent. Connect to VeeT or VeeR in the module.	4
7	RS0	Rate Select 0. Not used.	5
8	LOS	Loss of Signal indication. "Logic 0" indicates normal operation. LVTTL-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

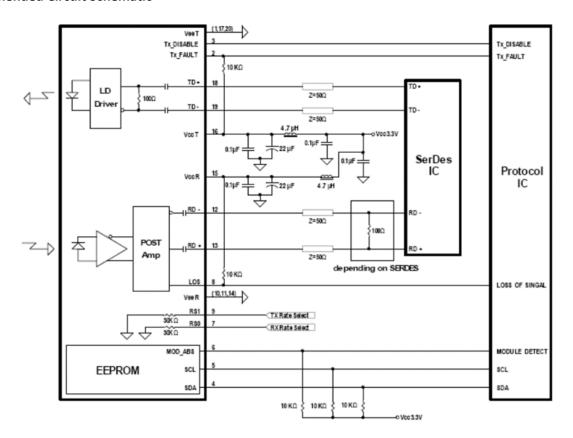
#### Notes:

- 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 Host\_Vcc with resistor in the range  $4.7K\Omega$  to  $10K\Omega$ . 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 +0.5V.
- 3. Tx\_Disable is an input contact with a  $4.7K\Omega$  to  $10K\Omega$  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 the Host\_Vcc with a resistor in the range from  $4.7K\Omega$  to  $10K\Omega$ . 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 the Host Board

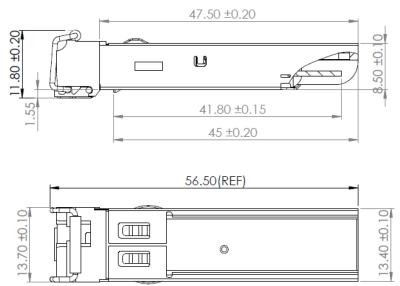
# **Recommended Circuit Schematic**



## **Mechanical Specifications**

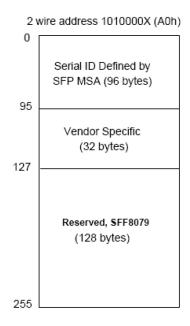
Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).

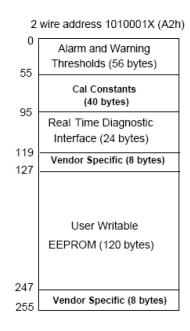




#### **EEPROM Information**

EEPROM memory map-specific data field description is as below:





#### **About AddOn Networks**

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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