#### E1MG-100BXU-OPC

Brocade® (Formerly) E1MG-100BXU Compatible TAA 100Base-BX SFP Transceiver (SMF, 1310nmTx/1550nmRx, 10km, LC, DOM)

#### **Features**

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



## **Applications:**

- 100Base Ethernet
- Access and Enterprise

### **Product Description**

This Brocade® (Formerly) E1MG-100BXU 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. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Brocade® (Formerly). It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

# **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)

| •                              | =        | •    |      |      |      |       |
|--------------------------------|----------|------|------|------|------|-------|
| 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:

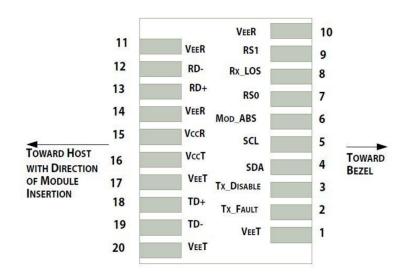
- 1. Class 1 Laser Safety.
- 2. Unfiltered, 20-80%. Complies with OC-3 eye masks when filtered.
- 3. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and  $\Delta$ DJ.
- 4. Measured with PRBS  $2^{23}$ -1 at  $10^{-10}$  BER.
- 5. Exceeding the receiver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

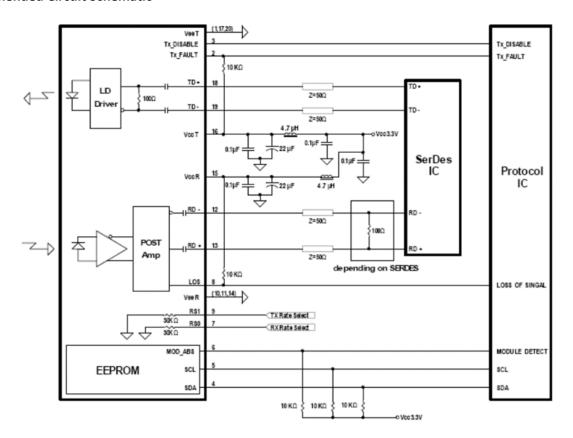
### Notes:

- 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

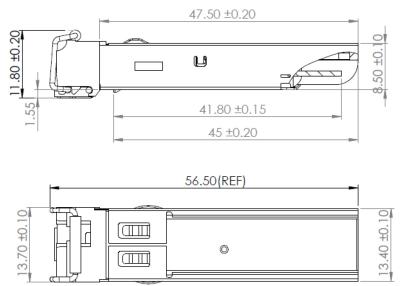
## **Recommended Circuit Schematic**



### **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:

