

E1MG-LHA-OM-C

1.25Gbps SFP Transceiver

Features

- Up to 1.25Gb/s data links
- Duplex LC connector
- Hot-pluggable SFP footprint
- 1550nm DFB laser transmitter
- RoHS compliant and Lead Free
- Up to 80km on 9/125um SMF
- Metal enclosure for lower EMI
- Single +3.3V power supply
- Low power dissipation <800mW
- Commercial and industrial operating temperature optional
- SFP MSA SFF-8074i Compliant
- TAA Compliant

Applications

- 1000Base-ZX
- 1x Fiber Channel

Product Description

This Brocade® E1MG-LHA-OM-C compatible SFP transceiver provides 1000Base-ZX throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It 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.

ProLab's SFP transceivers are RoHS compliant and lead-free.

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2.
- Immunity compatible with IEC 61000-4-3.
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2.
- RoHs compliant with 2002/95/EC 4.1&4.2 2005/747/EC.

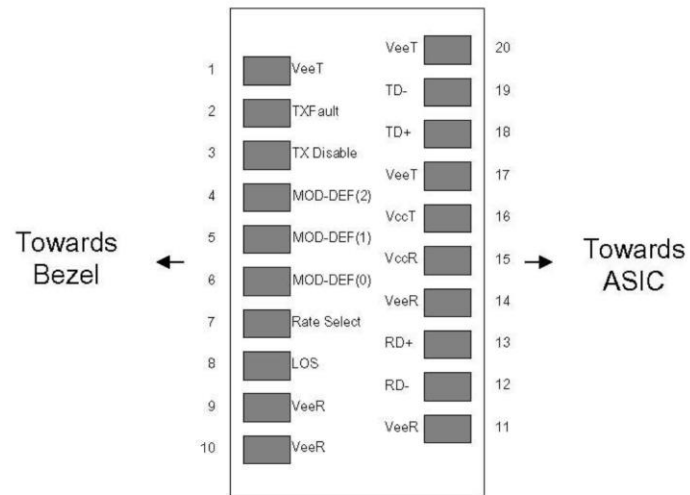
Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1
2	TX Fault	Transmitter Fault.	
3	TX Disable	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF (2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required.	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VeeR	Receiver Ground (Common with Transmitter Ground)	1
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.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
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.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground)	1

Notes:

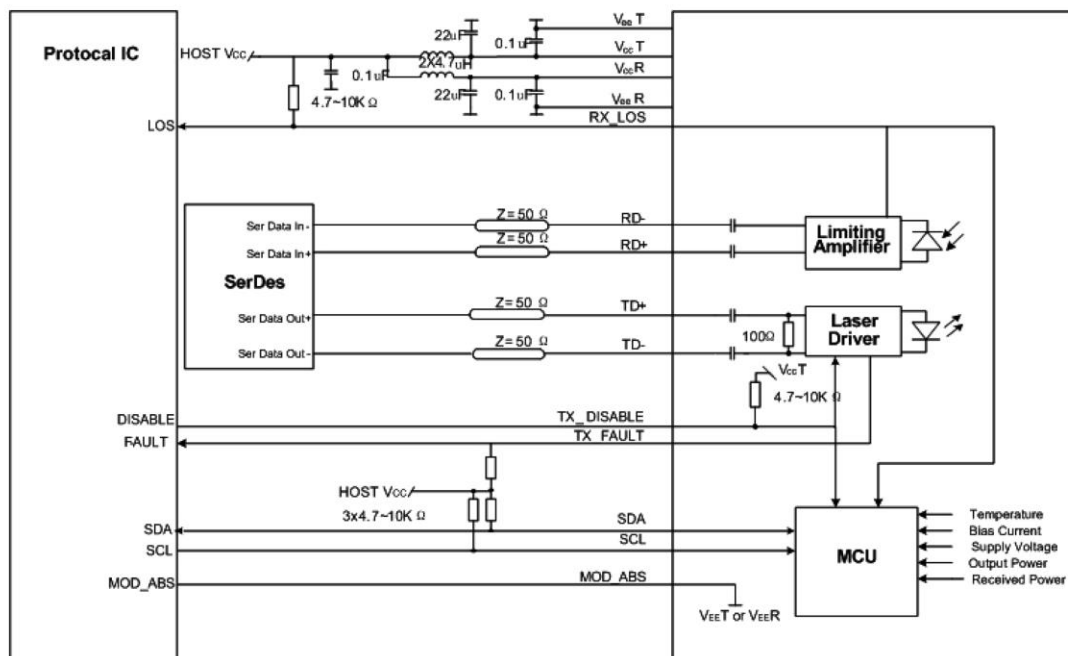
1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable <0.8V.
3. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF (0) pulls line low to indicate module is plugged in.

4. LOS is open collector output. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



Pin-out of connector Block on Host board

Recommend Circuit Schematic



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 Humidity	RH	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V _{cc}	3.13	3.30	3.47	V
Power Supply Current	I _{cc}			250	mA
Case Operating Temperature – Commercial	T _c	0		70	°C
Case Operating Temperature – Industrial	T _i	-40		85	°C
Data Rate (Gigabit Ethernet)			1.25		Gbps
Data Rate (Fiber Channel)			1.063		Gbps
9/125μm G.652 SMF	L _{max}			80	km

Electrical Characteristics (TOP=25°C, V_{cc}=3.3V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Input differential impedance	R _{in}		100		Ω	1
Single ended data input swing	V _{in} , pp	250		1200	mV	
TX Disable-High		V _{cc} -1.3		V _{cc}	V	
TX Disable-Low		V _{ee}		V _{ee} +0.8	V	
TX Fault-High		V _{cc} -0.5		V _{cc}	V	
TX Fault-Low		V _{ee}		V _{ee} +0.5	V	
Receiver						
Single ended data output swing	V _{out} , pp	300	400	800	mV	2
Data output rise time	t _r			175	ps	3
Data output fall time	t _f			175	ps	3
LOS-High		V _{cc} -0.5		V _{cc}	V	
LOS-Low		V _{ee}		V _{ee} +0.5	V	

Notes:

1. AC coupled.
2. Into 100-ohm differential termination.
3. 20% - 80%

Optical and Electrical Characteristics

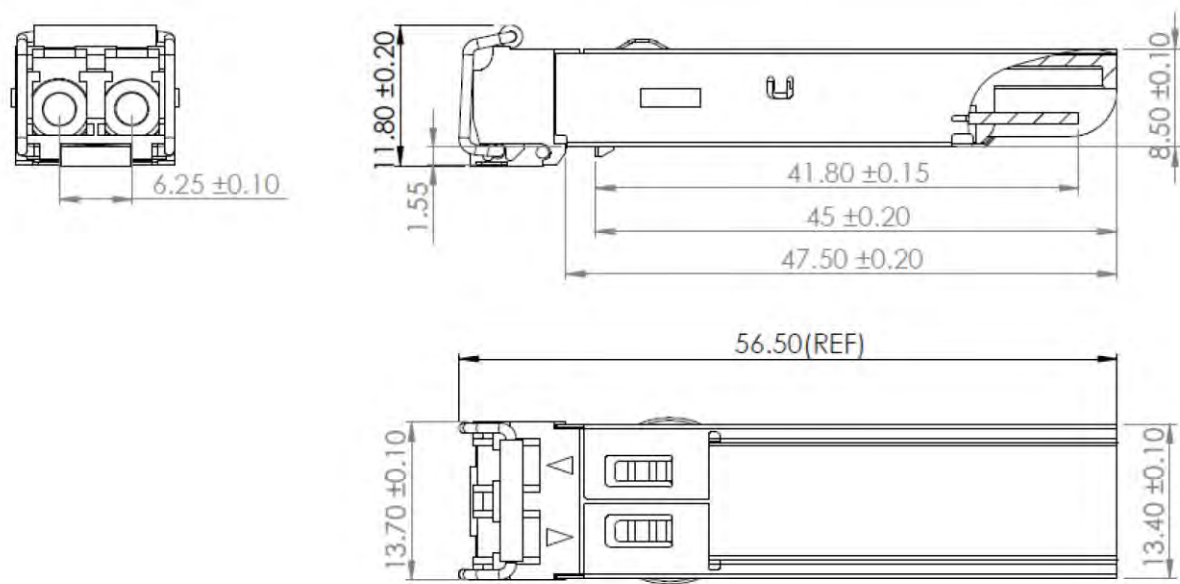
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Opt. Power	PO	0		+5	dBm	1
Optical Wavelength	λ	1530	1550	1570	nm	
Spectral Width	σ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Rise/Fall Time	tr/tf			260	ps	2
Total Jitter	TJ			200	ps	
Optical Extinction Ratio	ER	9			dB	
Receiver						
RX Sensitivity @1.25 Gbs	RSENS			-25	dBm	3,4
Maximum Received Power	RX _{MAX}	0			dBm	
Optical Center Wavelength	λ_C	1270		1600	nm	
LOS De-Assert	LOSD			-26	dBm	
LOS Assert	LOSA	-40			dBm	
LOS Hysteresis		0.5		5	dB	

Notes:

1. Class 1 Laser Safety.
2. Unfiltered, 20%-80%. Complies with GE and 1x FC eye masks when filtered.
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2⁷-1 at 10⁻¹⁰ BER.

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:

