

SFP-1GB-BX47-U-80-I-OPC

MSA and TAA 1000Base-BX SFP Transceiver (SMF, 1490nmTx/1570nmRx, 80km, LC, DOM, -40 to 85C)

Features

- INF-8074 and SFF-8472 Compliance
- Simplex LC Connector
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 1000Base-BX Ethernet
- 1x Fibre Channel
- Access (FTTx) and Enterprise

Product Description

This MSA compliant SFP transceiver provides 1000Base-BX throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1490nmTx/1570nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It is capable of withstanding rugged environments and can operate at temperatures between -40 and 85C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows 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.

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.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	-40		85	°C
Operating Humidity	RH	5		85	%
Data Rate (GBE)	DR		1.25		Gbps
Data Rate (FC)	DR		1.063		Gbps

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.15	3.30	3.47	V	
Power Supply Current		Icc			300	mA	
Power Dissipation		P _{DISS}			1	W	
Transmitter							
LVPECL Differential Inputs		VIN	400		1800	mVp-p	1
Input Differential Impedance		ZIN	90	100	110	Ω	2
Tx_Disable	Disable		2		Vcc+0.3	V	
	Enable		0		0.8	V	
Tx_Fault	Fault		2		Vcc+0.3	V	
	Normal		0		0.8	V	
Receiver							
LVPECL Differential Outputs		VOUT	400		2000	mVp-p	1
Output Differential Impedance		ZOUT	90	100	110	Ω	
Tx_Disable Assert Time		T _{off}			10	us	
Rx_LOS	LOS		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF (0.2)		VOH	2.5		Vcc+0.3	V	3
		VOL	0		0.5	V	3

Notes:

1. AC coupled inputs.
2. $RIN > 100k\Omega$ @ DC.
3. With Serial ID.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Power (Average)	P _{AVE}	0		5	dBm	1
Optical Extinction Ratio	ER	9			dB	
Center Wavelength	λ _C	1470	1490	1510	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Rise/Fall Time (20-80%)	Tr/Tf			0.26	ns	
POUT @ Tx_Disable Asserted	POUT			-35	dBm	
Output Optical Eye		Compliant with IEEE 802.3				2
Receiver						
Receiver Sensitivity (Average)	R _{AVE}			-24	dBm	3
Receiver Overload	P _{max}	-3			dBm	
Receiver Wavelength	Rλ	1550	1570	1590	nm	
LOS De-Assert	LOSD			-25	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis		0.5			dB	

Notes:

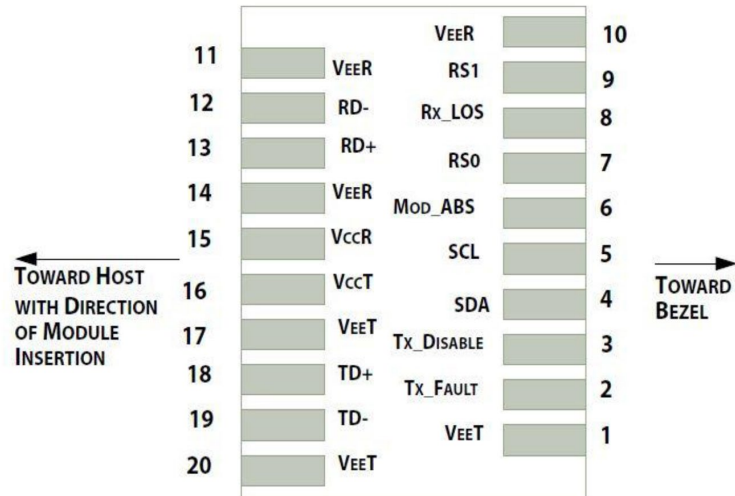
1. Output power is power coupled into a 9/125 μ m single-mode fiber.
2. Filtered. Measured with a PRBS 2⁷-1 test pattern @1250Mbps.
3. Minimum average optical power is measured at BER less than 1E⁻¹² with 1.25Gbps, 2⁷-1 PRBS, and ER=9dB.

Pin Descriptions

Pin	Symbol	Name/Description	Note
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 (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTTL-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. 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

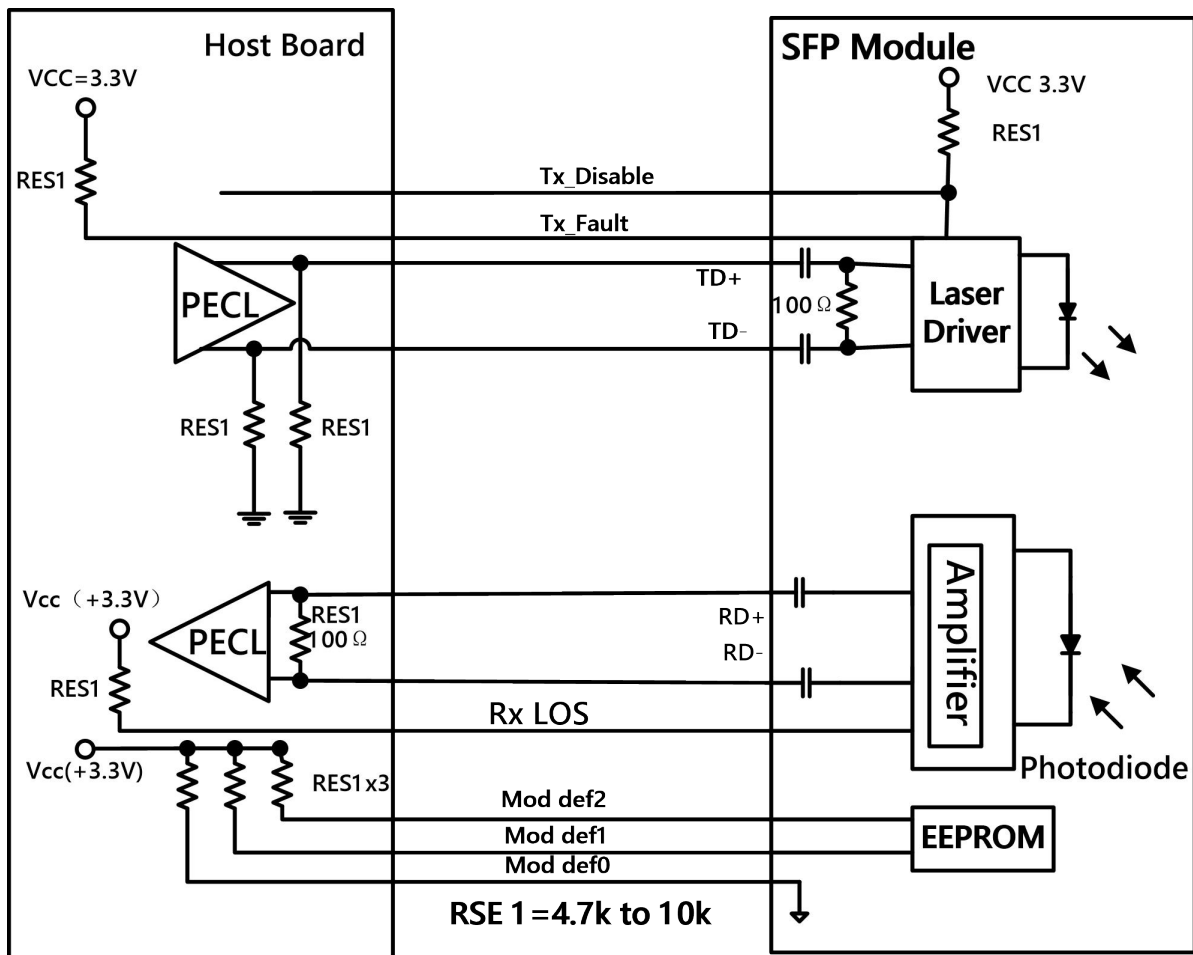
Notes:

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 Host_Vcc with resistor in the range 4.7kΩ to 10kΩ. 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 4.7kΩ to 10kΩ pull-up resistor to the VccT inside the module.
4. MOD_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contact up to the Host_Vcc with a resistor in the range from 4.7kΩ to 10kΩ. MOD_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.

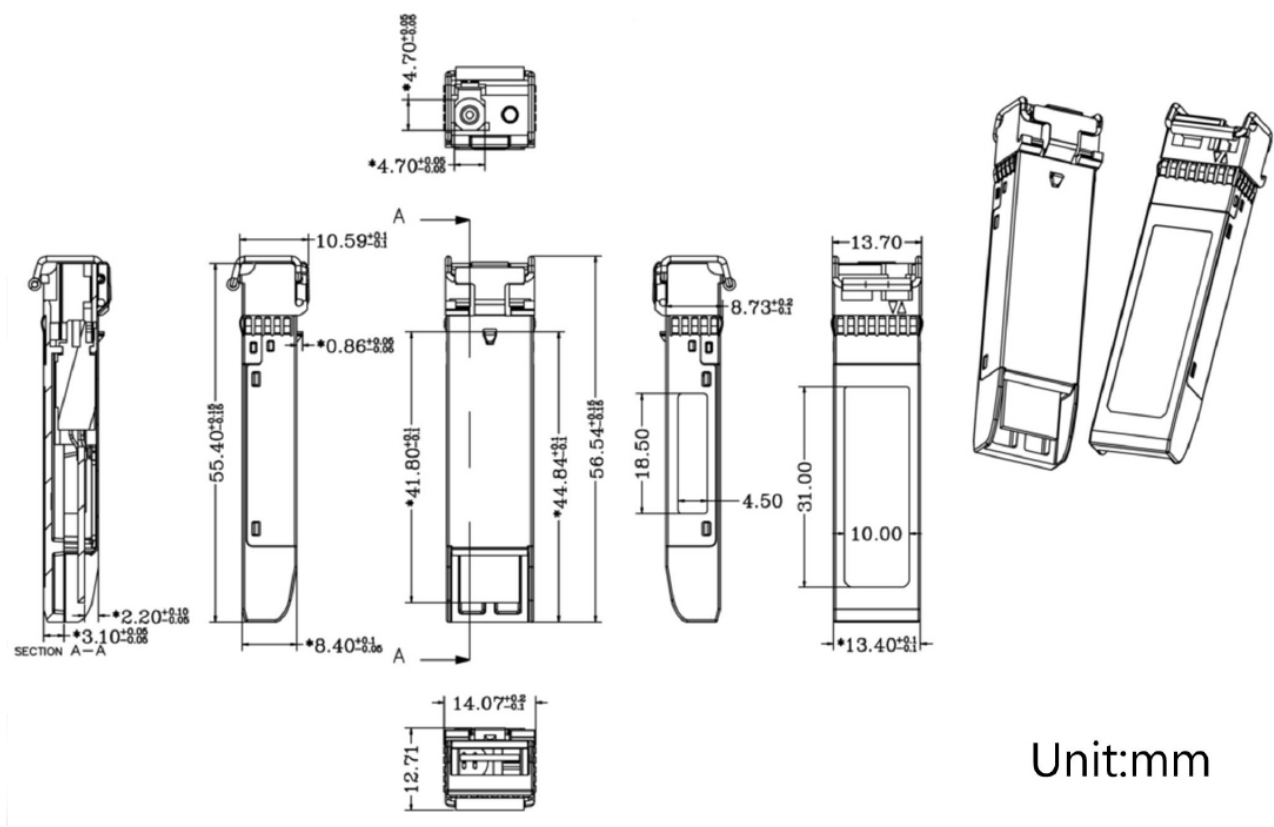


Pin-Out of Connector Block on the Host Board

Recommended Circuit Schematic



Mechanical Specifications



EEPROM Information

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

2 wire address 1010000X (A0h)		2 wire address 1010001X (A2h)	
0	Serial ID Defined by SFP MSA (96 bytes)	0	Alarm and Warning Thresholds (56 bytes)
95		55	Cal Constants (40 bytes)
127	Vendor Specific (32 bytes)	95	Real Time Diagnostic Interface (24 bytes)
	Reserved, SFF8079 (128 bytes)	119	Vendor Specific (8 bytes)
255		127	User Writable EEPROM (120 bytes)
		247	Vendor Specific (8 bytes)
		255	