SFP-1M-BX34-U-C

MSA and TAA 100Base-BX SFP Transceiver (SMF, 1310nmTx/1490nmRx, 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 MSA compliant SFP transceiver provides 100Base-BX throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nmTx/1490nmRx 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. 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.

ProLabs' 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.")

TAA COMPLIANT

Rev. 012126

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4.5	V	
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Operating Relative Humidity	RH	5		85	%	
Power Supply Current	Icc			300	mA	
Data Rate			155		Mbps	

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage		Vcc	3.13	3.3	3.47	V	
9µm Core Diameter SMF		L		20		km	
Tx_Disable Negate Time		t_on			1	ms	
Tx_Enable Assert Time		t_off			10	µs	
Time to Initialize, Including Reset of Tx_Fault		t_int			300	ms	
Tx_Fault Assert Time		t_fault			100	µs	
Tx_Disable to Reset		t_reset	10			µs	
LOS Assert Time		t_loss_on			100	µs	
LOS De-Assert Time		t_loss_off			100	µs	
Serial ID Clock Rate		f_serial_clock			400	kHz	
MOD_DEF(0:2) – High		VH	2		Vcc	V	
MOD_DEF(0:2) – Low		VL			0.8	V	
Tx_Disable	**Disable**		2.0		Vcc	V	
	Enable		0		0.8	V	
Tx_Fault	**Fault**		2.0		Vcc	V	
	Normal		0		0.8	V	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λC	1260	1310	1360	nm	
Spectral Width (RMS)	σ			4	nm	
Average Output Power	POUT	-14		-8	dBm	
Extinction Ratio	ER	9			dB	1
Rise/Fall Time (20-80%)	Tr/Tf			1.3	ns	
Data Input Swing Differential	VIN	400		1800	mV	
Input Differential Impedance	ZIN	90	100	110	Ω	
Output Optical Eye	IUT-T G.957 Compliant					
Receiver						
Wavelength Range	λC	1470	1490	1510	nm	
Receiver Sensitivity	Pmin			-32	dBm	2
Receiver Overload	Pmax	-3			dBm	
LOS De-Assert	LOSD			-32	dBm	
LOS Assert	LOSA	-45			dBm	
LOS Hysteresis		1			dB	4
Data Output Swing Differential	VOUT	400		1800	mV	
LOS	High	2.0		Vcc	V	
	Low			0.8	V	

Notes:

1. Measured with a PRBS 2^{23}-1 test pattern @155Mbps and BER ≤$1x10^{-10}$.

Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	5
2	Tx_Fault	Transmitter Fault Indication.	3	1
3	Tx_Disable	Transmitter Disable. Module disables on “high” or “open.”	3	2
4	MOD_DEF2	Module Definition 2. 2-Wire Serial ID Interface.	3	3
5	MOD_DEF1	Module Definition 1. 2-Wire Serial ID Interface.	3	3
6	MOD_DEF0	Module Definition 0. Grounded within the module.	3	3
7	Rate Select	Not Connected. Function Not Available.	3	
8	LOS	Loss of Signal.	3	4
9	VeeR	Receiver Ground.	1	5
10	VeeR	Receiver Ground.	1	5
11	VeeR	Receiver Ground.	1	5
12	RD-	Inverse Received Data Out.	3	6
13	RD+	Received Data Out.	3	7
14	VeeR	Receiver Ground.	1	5
15	VccR	3.3 ± 5% Receiver Power.	2	7
16	VccT	3.3 ± 5% Transmitter Power.	2	7
17	VeeT	Transmitter Ground.	1	5
18	TD+	Transmitter Data In.	3	8
19	TD-	Inverse Transmitter Data In.	3	8
20	VeeT	Transmitter Ground.	1	5

Notes:

1. Tx_Fault is an open collector/drain output that should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” output indicates a laser fault of some kind. "Low" indicates normal operation. In the low state, the output will be pulled to <0.8V.
2. Tx_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7kΩ to 10kΩ resistor. Its states are:

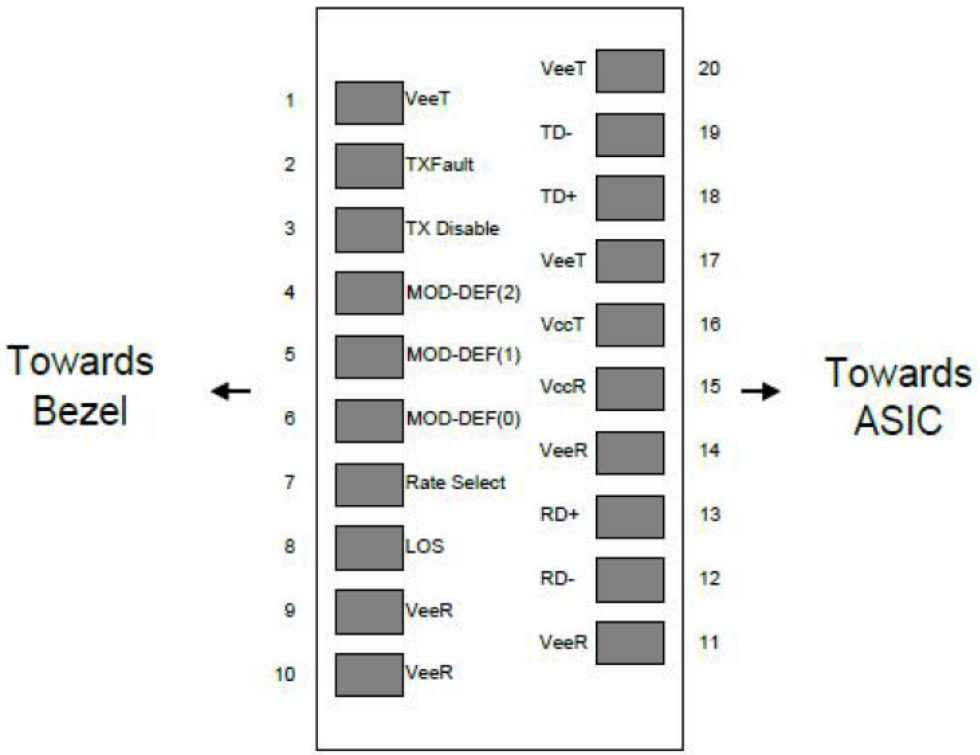
   Low (0V – 0.8V): Transmitter On.
   (0.8V and 2.0V): Undefined.
   High (2.0V – 3.465V): Transmitter Disabled.
   Open: Transmitter Disabled.

3. MOD_DEF0, 1, & 2. These are the module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board. The pull-up voltage shall be VccT or VccR.

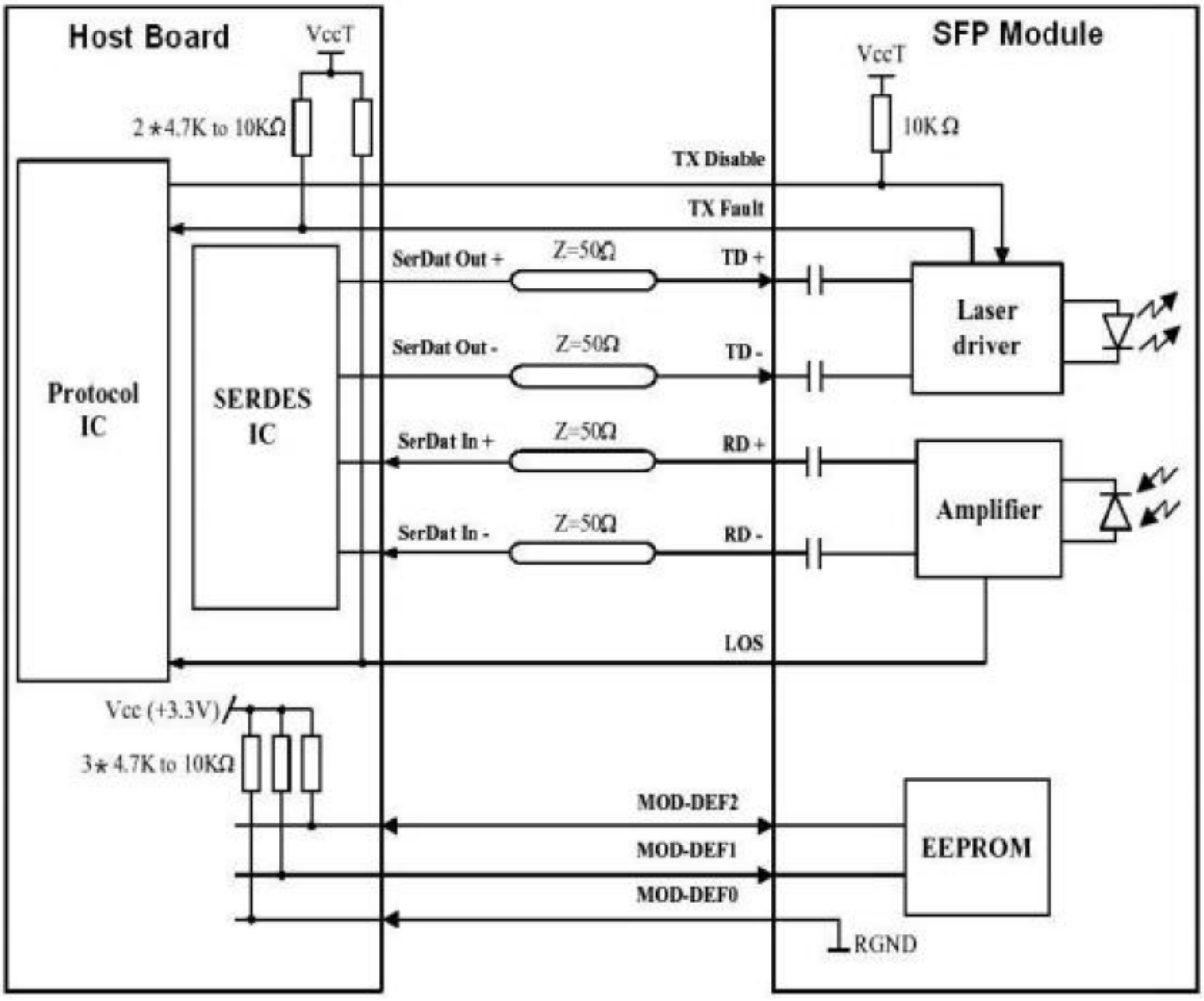
   MOD_DEF0 is grounded by the module to indicate that the module is present.
   MOD_DEF1 is the clock line of the 2-wire serial interface for optional serial ID.
   MOD_DEF2 is the data line of the 2-wire serial interface for optional serial ID.

4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up with a 4.7kΩ to 10kΩ resistor. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). "Low" indicates normal operation. In the low state, the output will be pulled to <0.8V.
5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC-coupled, 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V±5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply filtering network is used, hot-plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module. The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 400mV-2000mV (200mV-1000mV single-ended).

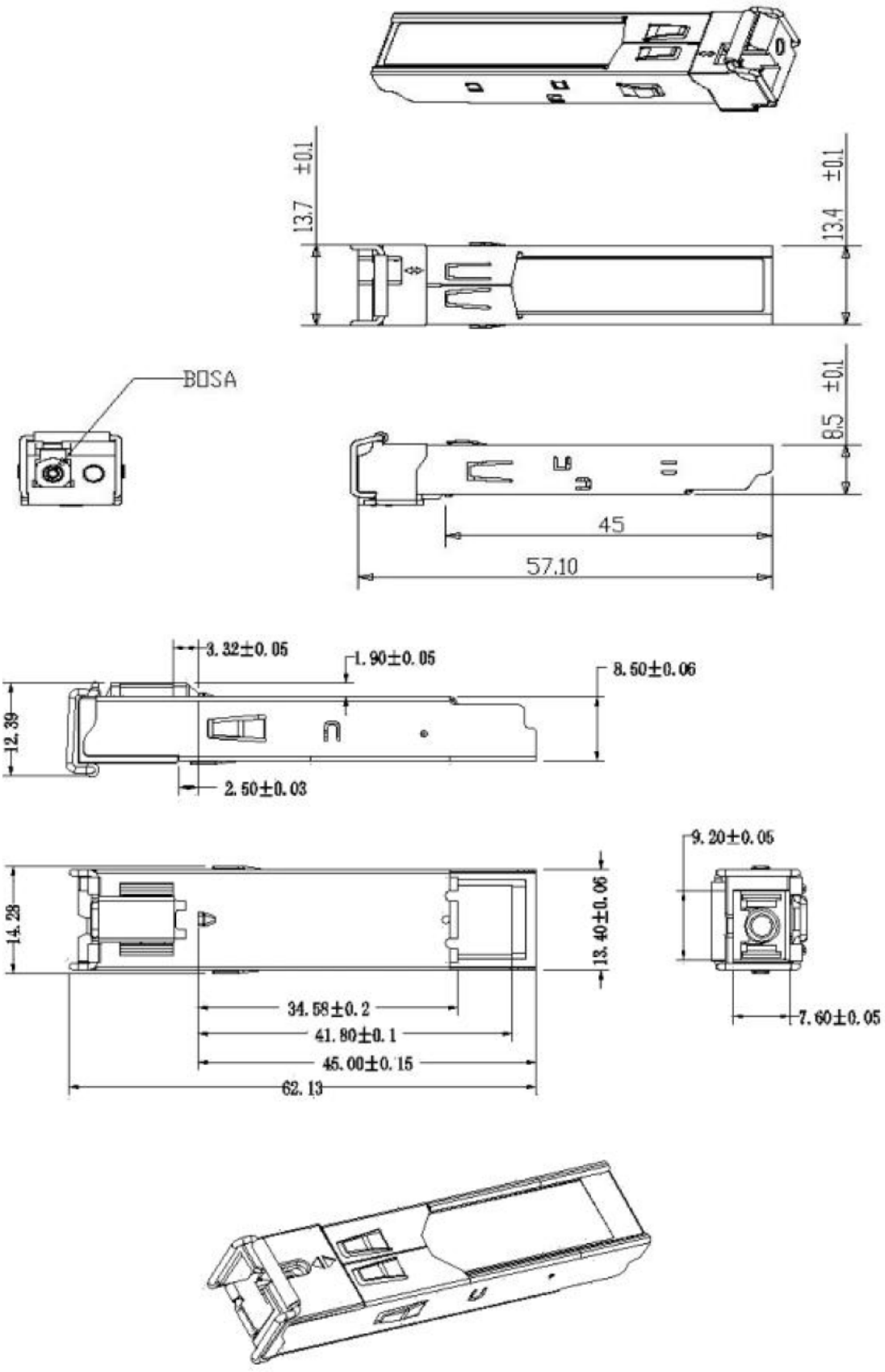
Pin Connectors



Recommended Application Interface Circuit



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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