SFP-1GB-BX91-D-120-AO

MSA Compliant 1000Base-BX SFP Transceiver (SMF, 1590nmTx/1510nmRx, 120km, LC, DOM)

Features:

- Operating Data Rate up to 1.25Gbps
- Single 3.3V Power Supply
- 120km with 9/125µm SMF
- Compliant with SFF-8472
- Compliant with MSA SFP Specifications
- Hot-Pluggable SFP
- Operating Temperature: 0 to 70 Celsius
- Class 1 Laser Safety Compliant
- RoHS Compliant and Lead-Free



Applications:

- 1000Base-BX Ethernet
- Access and Enterprise

Product Description

This MSA compliant SFP transceiver provides 1000Base-BX throughput up to 120km over single-mode fiber (SMF) using a wavelength of 1590nmTx/1510nmRx 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. 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.

AddOn's transceivers are RoHS compliant and lead-free.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate			1.063/1.25		Gbps	
Operating Temperature	Tc	0		70	℃	
Storage Temperature	Tstg	-40		+85	℃	
Operating Relative Humidity	RH	5		85	%	
Power Supply Voltage	Vcc	-0.5		3.6	V	
Power Budget			32		dB	

Notes:

1. Exceeding any one of these values may destroy the device permanently.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
CML Differential Inputs		VIN	400		1800	mVp-p	1
Input AC Common-Mode Voltage			0		25	mV	2
Input Differential Impedance		ZIN	90	100	110	Ω	3
Tx_Disable	**High**		2		Vcc+0.3	V	
	Low		0		0.8		
Tx_Fault	**High**		2		Vcc+0.3	V	4
	Low		0		0.8		5
Receiver							
CML Differential Outputs		VOUT	400		2000	mVp-p	6
Output Differential Impedance		ZOUT	90	100	110	Ω	
Rx_LOS	**High**		2		Vcc+0.3		4
	Low		0		0.8		5
MOD_DEF (0.2)		VOH	2.5		Vcc+0.3	V	7
		VOL	0		0.5		

Notes:

1. AC coupled inputs.
2. RMS.
3. RIN > 100kΩ @DC.
4. Io = 400μA; Host_Vcc.
5. Io = -4.0mA.
6. AC coupled outputs.
7. With serial ID.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Operating Wavelength	λ	1570	1590	1610	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Average Output Power	POUT	0		5	dBm	1
Extinction Ratio	ER	9			dB	
Average Power of Off Transmitter	Poff			-45	dBm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Tx_Disable Assert Time	T_off			10	us	
Output Optical Eye	Compliant with IEEE 802.3					2
Receiver						
Center Wavelength	λ_C	1490	1510	1530	nm	
Receiver Sensitivity	Pmin			-32	dBm	3
Receiver Overload	Pmax	-9			dBm	
LOS De-Assert	LOSD			-34	dBm	
LOS Assert	LOSA	-45			dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Output is coupled into a 9/125µm SMF.
2. Filtered, measured with a PRBS 2^7-1 test pattern @1.25Gbps.
3. Measured with ER=9, BER less than $1E^{-12}$, and PRBS 2^7-1 @1.25Gbps.

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-	Inverted 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+	Transmit Data In.	3	8
19	TD-	Inverted Transmit Data In.	3	8
20	VeeT	Transmitter Ground.	1	5

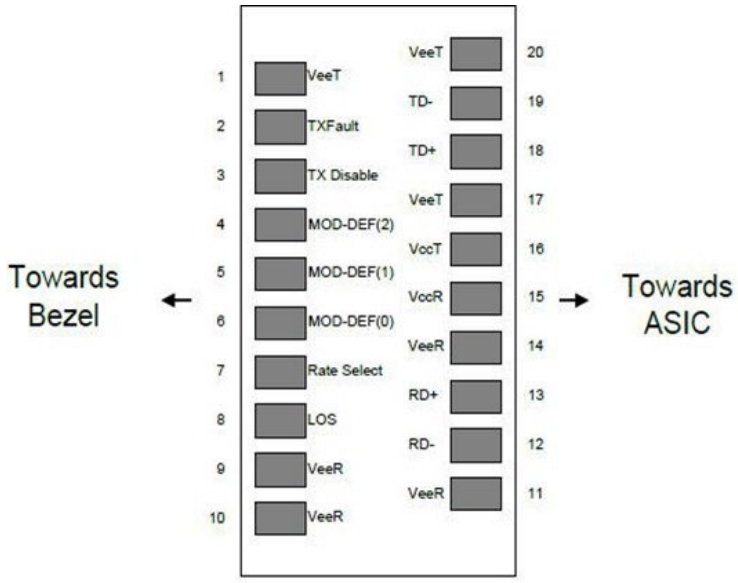
Notes:

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. When “high,” the 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 in the module with a 4.7kΩ to 10kΩ resistor. The states are:
   Low (0V – 0.8V): Transmitter On
   (>0.8V, <2.0V): Undefined
   High (2.0V – 3.465V): Transmitter Disabled
   Open: Transmitter Disabled.
3. MOD_DEF0, 1, & 2. These are module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board.
   MOD_DEF0 is grounded by the module to indicate that the module is present.
   MOD_DEF1 is the clock line of 2-wire serial interface for serial ID.
   MOD_DEF2 is the data line of 2-wire serial interface for 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. When “high,” this output indicates that 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, 100 differential lines which

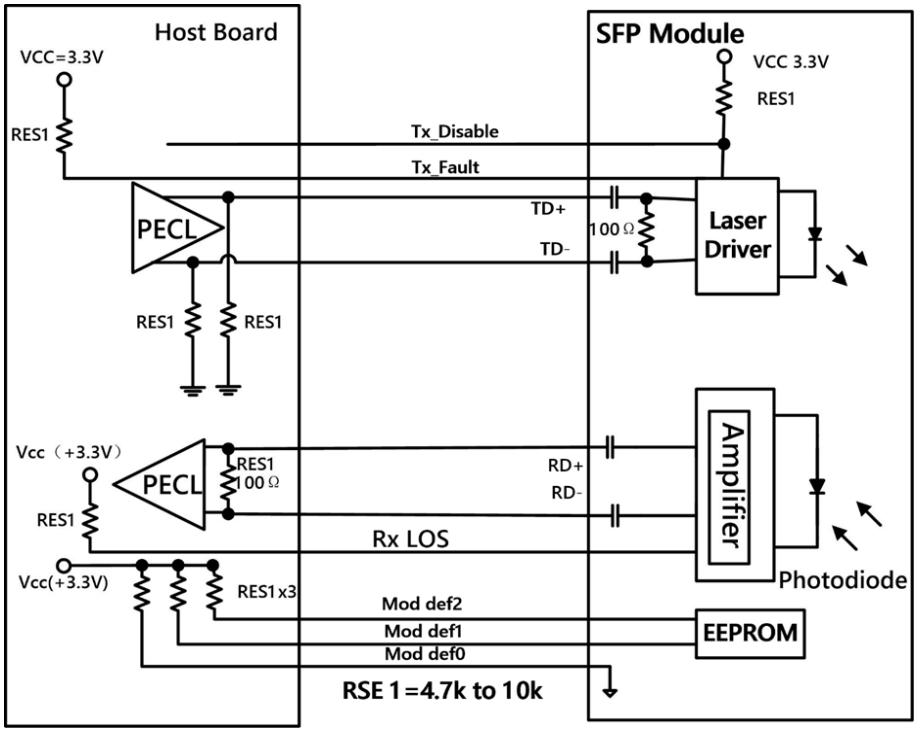
should be terminated with 100 (differential) at the user SERDES. The voltage swing on these lines will be between 400mV and 2000mV differential (200mV and 1000mV single-ended) when properly terminated.

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. VccR and VccT may be internally connected within the SFP module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module. The inputs will accept differential swings of 400mV to 2000mV (200mV to 1000mV single-ended).

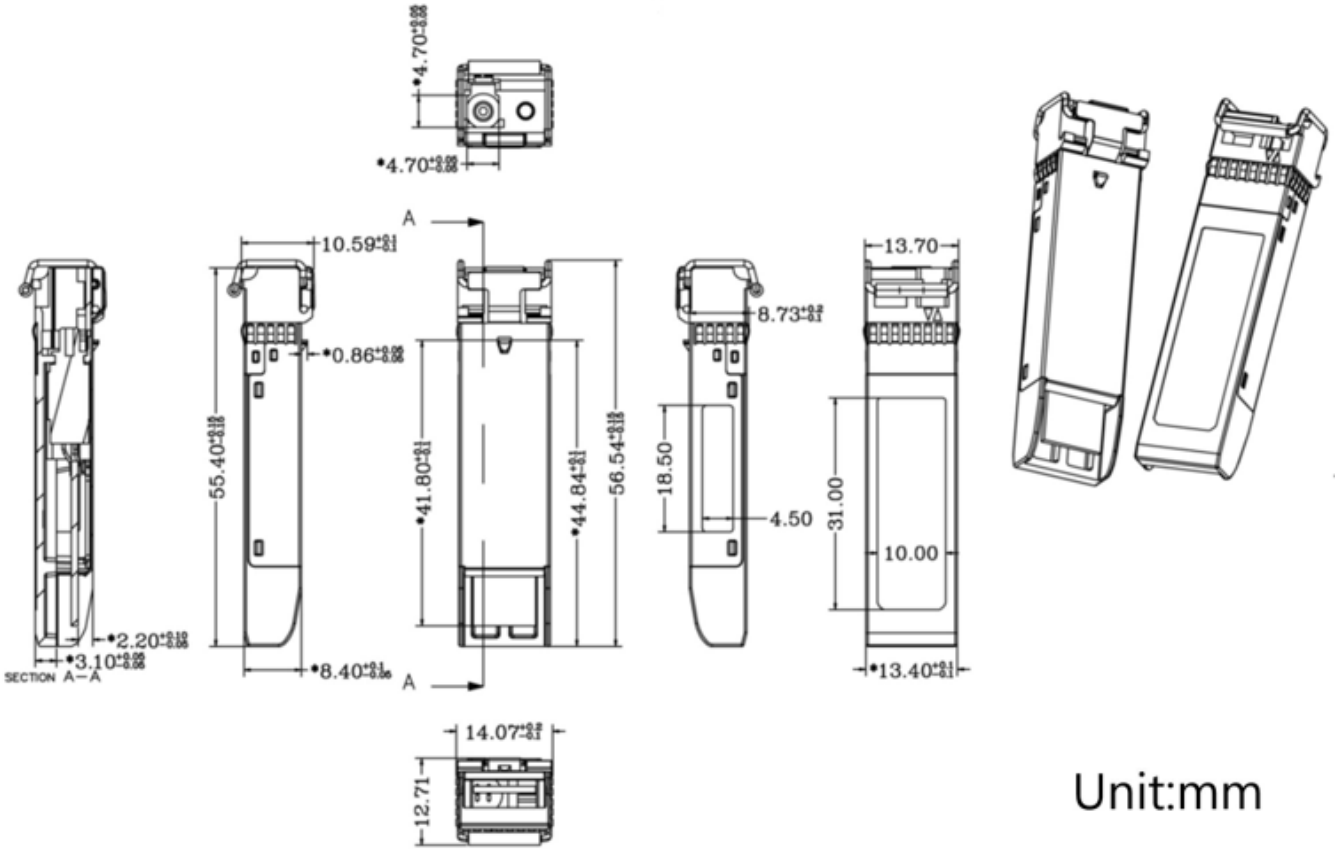
Pin-Out Details



Recommended Circuit Schematic



Mechanical Specifications



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 ingrained 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 ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.



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