

## SFP-1GB-BXU35-80-C-AO

Cisco® Compatible TAA 1000Base-BX SFP Transceiver (SMF, 1310nmTx/1550nmRx, 80km, LC, DOM)

### Features

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



### Applications

- 1000Base Ethernet

### Product Description

This Cisco® SFP transceiver provides 1000Base-BX throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1310nmTx/1550nmRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® 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. Digital optical monitoring (DOM) support is also present to allow 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.

AddOn's 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."



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V <sub>cc</sub>	-0.5		4.0	V	
Storage Temperature	T <sub>stg</sub>	-40		85	°C	
Operating Case Temperature	T <sub>c</sub>	-10	25	70	°C	
Operating Relative Humidity	RH	5		95	%	
Power Supply Current	I <sub>cc</sub>			300	mA	
Data Rate		0.1		1.25	Gbps	

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V <sub>cc</sub>	3.135	3.3	3.465	V	
Module Supply Current	I <sub>cc</sub>			300	mA	
Power Dissipation	P <sub>DISS</sub>			1000	mW	
Transmitter Differential Input Voltage (TD+/-)		300		2200	mVp-p	1
Receiver Differential Output Voltage (RD+/-)		600		1200	mVp-p	2
Low-Speed Output: Transmitter Fault (Tx_Fault)/Loss of Signal (LOS)	V <sub>OH</sub>	2.0		V <sub>cc</sub>	V	3
	V <sub>OL</sub>	0		0.8	V	
Low-Speed Input: Transmitter Fault (Tx_Fault), MOD_DEF1, MOD_DEF2	V <sub>IH</sub>	2.0		V <sub>cc</sub>	V	4
	V <sub>IL</sub>	0		0.8	V	
<b>Timing Characteristics</b>						
Tx_Disable Assert Time	T <sub>off</sub>			10	μs	
Tx_Disable Negate Time	T <sub>on</sub>			1	ms	
Time to Initialize (Includes Reset of Tx_Fault)	T <sub>init</sub>			300	ms	
Tx_Fault From Fault to Assertion	T <sub>fault</sub>			100	μs	
Tx_Disable Time to Start Reset	T <sub>reset</sub>	10			μs	
Receiver LOS Assert Timer (On to Off)	T <sub>D</sub> , Rx_LOS			80	μs	
Receiver LOS Assert Timer (Off to On)	T <sub>A</sub> , Rx_LOS			80	μs	
Serial I2C Clock Rate	I2C_Clock			100	kHz	

### Notes:

1. Internally AC coupled and terminated to 100Ω differential load.
2. Internally AC coupled but requires a 100Ω differential termination or internal to Serializer/Deserializer.
3. Pulled up externally with a 4.7kΩ to 10kΩ resistor on the host board to the V<sub>ccT/R</sub>.
4. MOD\_DEF1 and MOD\_DEF2 must be pulled up externally with a 4.7kΩ to 10kΩ resistor on the host board to the V<sub>ccT/R</sub>.

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Launch Optical Power	Po	0		5	dBm	
Center Wavelength	$\lambda_C$	1260	1310	1360	nm	
Extinction Ratio	ER	9			dB	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Optical Rise/Fall Time	Tr/Tf			260	ps	
POUT @Tx_Disable Asserted	Poff			-45	dBm	
Eye Diagram	IEEE Std 802.3-2005 1000Base-BX-D Compatible					
<b>Receiver</b>						
Wavelength Range		1470	1550	1600	nm	
Receiver Sensitivity	S			-26	dBm	1
Receiver Overload	Pol	-3			dBm	1
Optical Return Loss	ORL	12			dB	
LOS De-Assert	LOSD			-27	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis		0.5	3	5	dB	

### Notes:

1. Measured with a PRBS 2<sup>7</sup>-1 test pattern, @1.25Gbps, and BER<10<sup>-12</sup>.

## Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	
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	
10	VeeR	Receiver Ground.	1	
11	VeeR	Receiver Ground.	1	
12	RD-	Inverse Received Data Out.	3	5
13	RD+	Received Data Out.	3	5
14	VeeR	Receiver Ground.	1	
15	VccR	3.3±5% Receiver Power.	2	6
16	VccT	3.3±5% Transmitter Power.	2	6
17	VeeT	Transmitter Ground.	1	
18	TD+	Transmitter Data In.	3	7
19	TD-	Inverse Transmitter Data In.	3	7
20	VeeT	Transmitter Ground.	1	

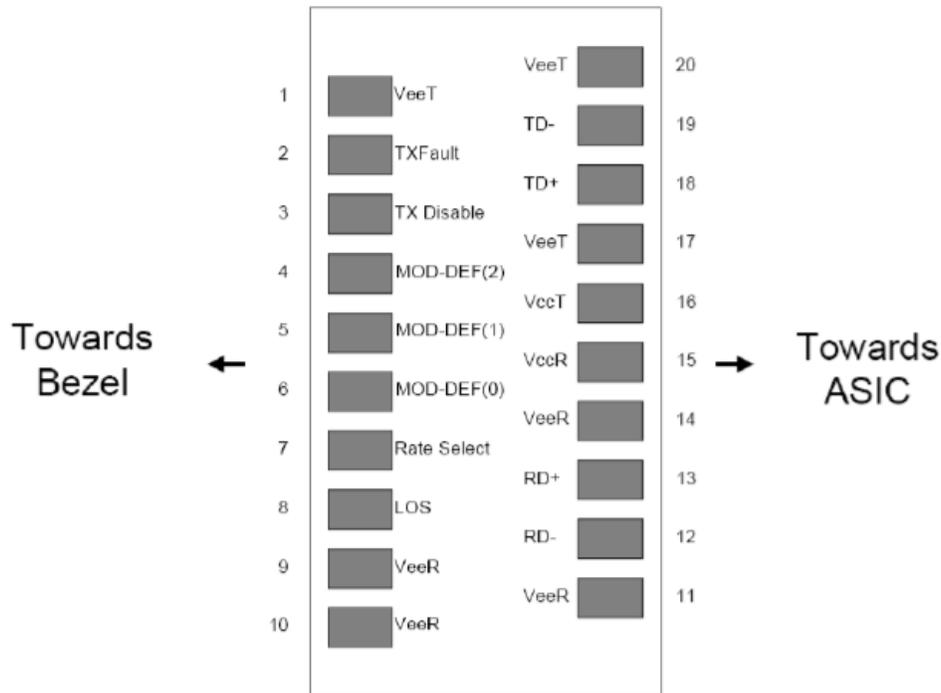
### Notes:

- Tx\_Fault is an open collector/drain output which 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.
- 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.
  - Between (0.8V and 2.0V): Undefined.
  - High (2.0V – VccT): Transmitter Disabled.
  - Open: Transmitter Disabled.
- 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 2-wire serial interface for optional serial ID.
  - MOD-DEF2 is the data line of 2-wire serial interface for optional serial ID.
- LOS (Loss of Signal) is an open collector/drain output which should be pulled up with a 4.7kΩ to 10kΩ

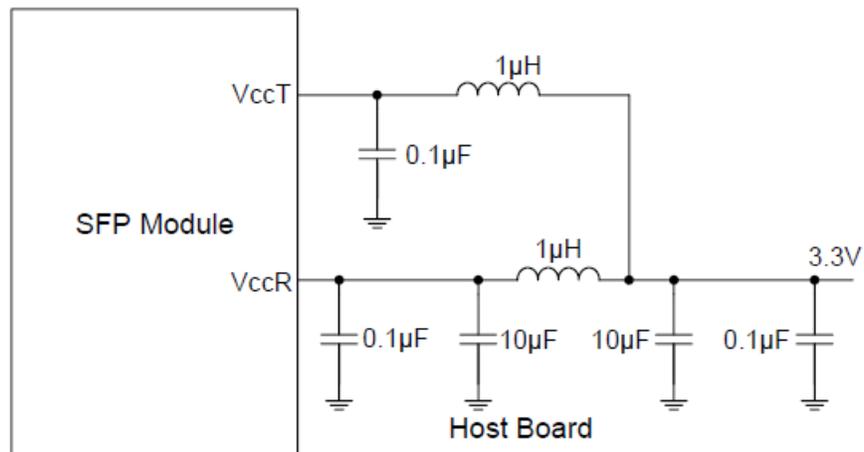
resistor on the host board to supply  $<V_{ccT}+0.3V$  or  $V_{ccR}+0.3V$ . When "high," this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). "Low" indicates normal operation. In the "low" state, the output will be pulled to  $<0.8V$ .

5. 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.
6. VccR and VccT are the receiver and transmitter power supplies. They are defined as  $3.3V\pm5\%$  at the SFP connector pin. The in rush current will typically be more than 30mA above steady state supply current after 500ns.
7. TD-/+ : These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential terminations inside the module. They are AC coupled differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus requires on host board.

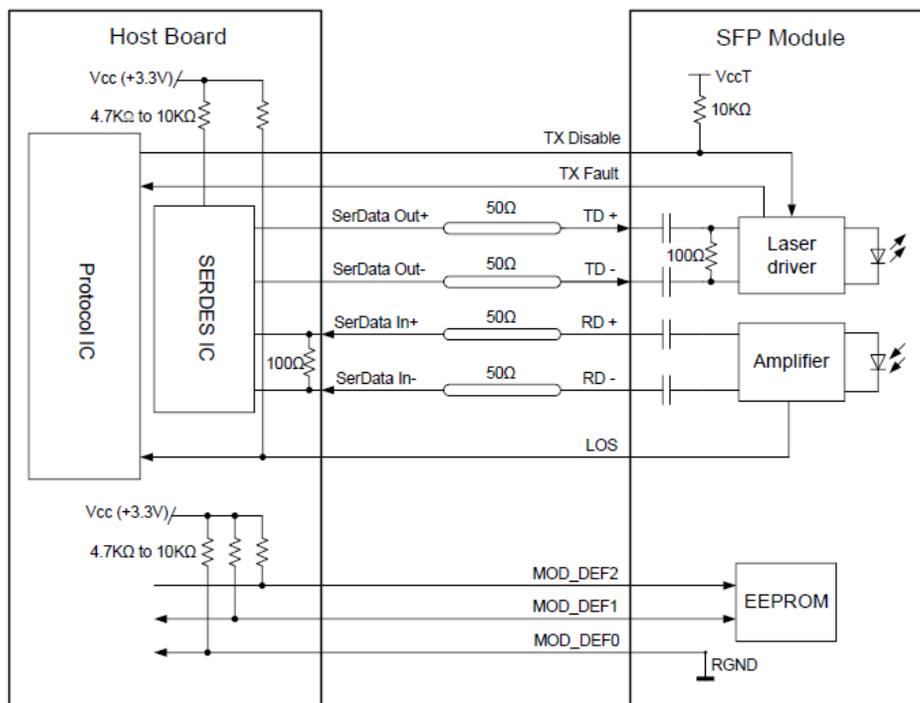
### Pin Connectors



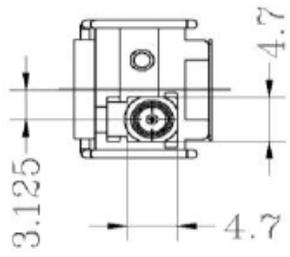
### Recommended Host Board Power Supply Circuit



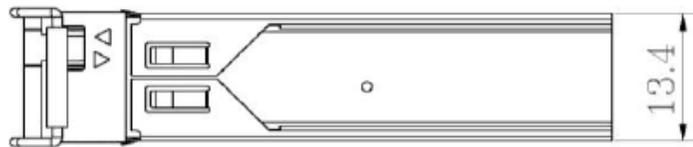
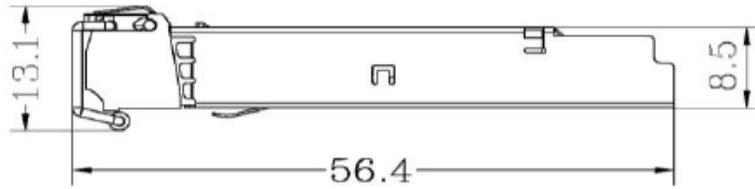
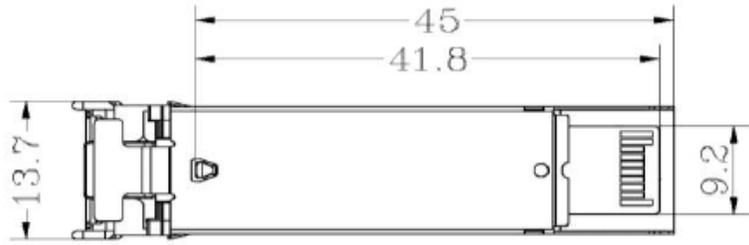
### Recommended Application Interface Circuit



**Mechanical Specifications**



Unit:mm



## 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 engrained 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 from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



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