100-01670-60-AO

Calix® 100-01670-C-60 Compatible 1000Base-BX SFP Transceiver (SMF, 1310nmTx/1490nmRx, 60km, LC, DOM, Rugged)

Features

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

Applications

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

Product Description

This Calix® 100-01670-60 compatible SFP transceiver provides 1000Base-BX throughput up to 60km over single-mode fiber (SMF) using a wavelength of 1310nmTx/1490nmRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Calix® 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."

Rev. 120921

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	Minimum		Maximum	Unit
Storage Temperature	T_S	-40		85	^oC
Relative Humidity	RH	5		95	%
Supply Voltage	V_{CC}	-0.5		4.0	V
Operating Case Temperature	Tc	-40	25	85	^oC
Data Rate		0.1		1.25	Gb/s

Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Module Supply Current	Icc			300	mA	
Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Power Dissipation	P_D			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)	VOH	2.0		Vcc	V	3
	VOL	0		0.8	V	
Low speed input: Transmitter Disable (TX_DISABLE),MOD_DEF 1, MOD_DEF 2	VIH	2.0		Vcc	V	4
	VIL	0		0.8	V	

Notes:

1. Internally AC coupled and terminated to 100 differential load
2. Internally Accoupled, but requires a 100 differential termination or internal to Serializer/Deserializer
3. Pulled up externally with a 4.7K- 10K resistor on the host board to $V_{CCT,R}$.
4. MOD_Def1 and Mod_Def2 must be pulled up externally with a 4.7K-10K resistor on the host board to $V_{CCT,R}$.

Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Transmitter						
Launch Optical Power	Po	0		5	dBm	
Center Wavelength Range	λc	1260	1310	1360	nm	
Extinction Ratio	EX	9			dB	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Rise/Fall Time	T_{rise}/T_{fall}			260	ps	
Pout @TX-Disable Asserted	P_{off}			-45	dBm	
Insertion Loss	IL		0.35		dB	
Eye Diagram	IEEE Std 802.3-2005 1000BASE-BX-U compatible					
Receiver						
Wavelength Range		1470	1490	1600	nm	
Receiver Sensitivity	S			-26	dBm	1
Receiver Overload	P_{OL}	0			dBm	1
Optical Return Loss	ORL	12			dB	
LOS De-Assert	LOS_D			-24	dBm	
LOS Assert	LOS_A	-35			dBm	
LOS Hysteresis		0.5	3	5	dB	

Notes:

1. Measured with PRBS 2^7-1 test pattern, 1.25Gb/s, EX=9dB, BER<10^{-12}.

Timing Characteristic

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Tx_disable assert time	T_off			10	us	
Tx_disable negate time	T_on			1	ms	
Time to initialize,include reset of TX_FAULT	T_init			300	ms	
TX_FAULT from the fault to assertion	T_fault			100	us	
TX_disable time to start reset	T_reset	10			us	
Receiver LOS Assert Time (on to off)	T_D,RX_LOS			80	us	
Receiver LOS Assert Time (off to on)	T_A,RX_LOS			80	us	
Serial I2C Clock Rate	I2C_Clock			100	kHz	

Pin Descriptions

Pin	Symbol	Name/Descriptions	Engagement order (insertion)	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	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I/O.	3	3
5	MOD-DEF1	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I.	3	3
6	MOD-DEF0	Module Absent, Connect to VeeT or VeeR in Module.	3	3
7	Rate Select	Not connected	3	
8	LOS	Loss of Signal.	3	4
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	Receiver Power- +3.3V±5%	2	6
16	VccT	Transmitter Power- - +3.3 V±5%	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:

1. TX Fault is open collector/drain output which should be pulled externally with a 4.7K-10K resistor on the host board to supply < VccT +0.3V or VccR + 0.3V. When high, this 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 input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7K-10K resistor.

Low (0-0.8V):	Transmitter on
Between (0.8V and 2V):	Undefined
High (2.0-VccT):	Transmitter Disabled
Open:	Transmitter Disabled

3. Mod-Def 0,1,2. These are he module definition pins. They should be pulled up with a 4.7K-10K resistor on the host board to supply less than VccT+0.3V or VccR+0.3V.
   Mod-Def 0 is grounded by the module to indicate that the module is present.
   Mod-Def 1 is clock line of two wire serial interface for optional serial ID.

Mod-Def 2 is data line of two wire serial interface for optional serial ID.

4. LOS (Loss of Signal) is an open collector/drain output which should be pulled up externally with a 4.7K - 10K resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates the received optical power is below the worst-case 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 100 differential lines which should be terminated with 100 differential at the user SERDES. The AC coupling is done inside the module and thus not required on the host board.
6. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V±5% at the SFP connector pin. The in-rush current will typically be no 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 100 differential termination inside the module.The AC coupling is done inside the module and is thus not required on host board.

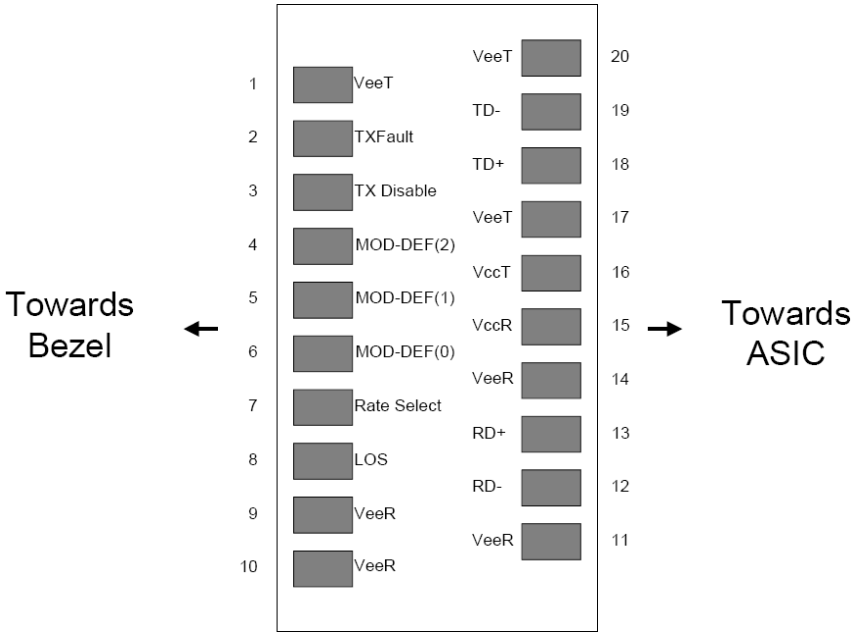
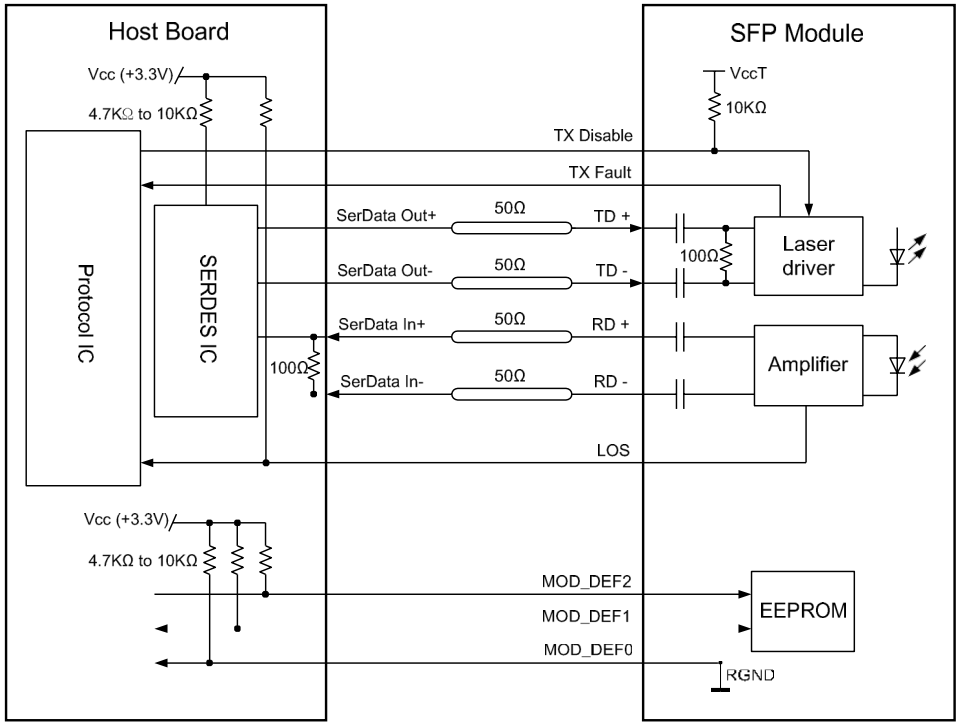
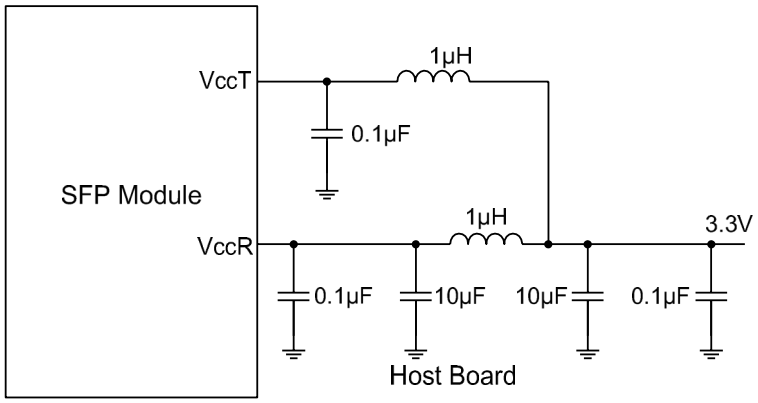


Diagram of Host Board Connector Block Pin Numbers and Names

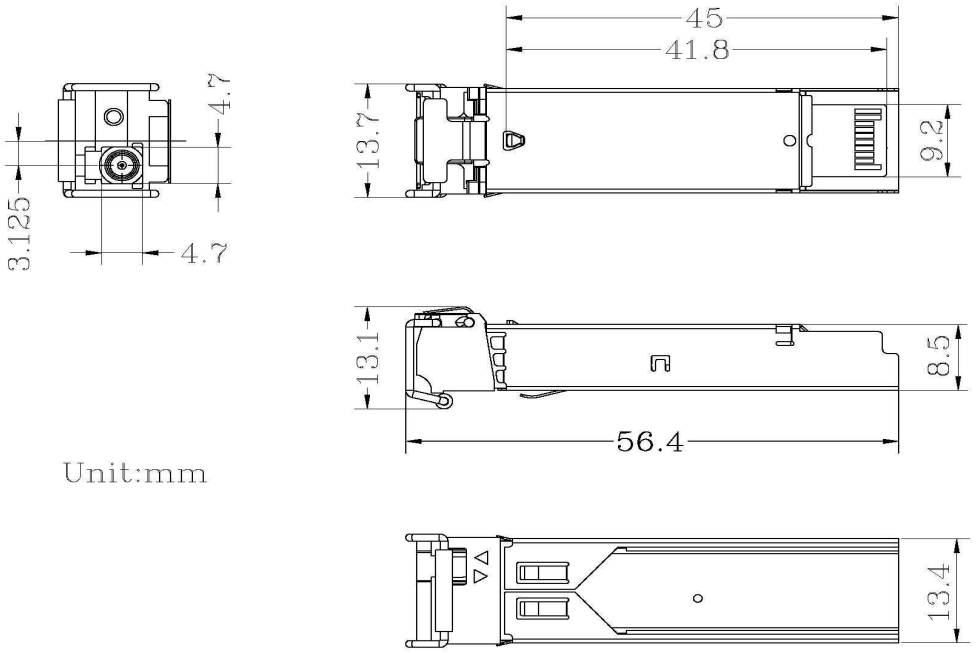
Recommended Application Interface Circuit



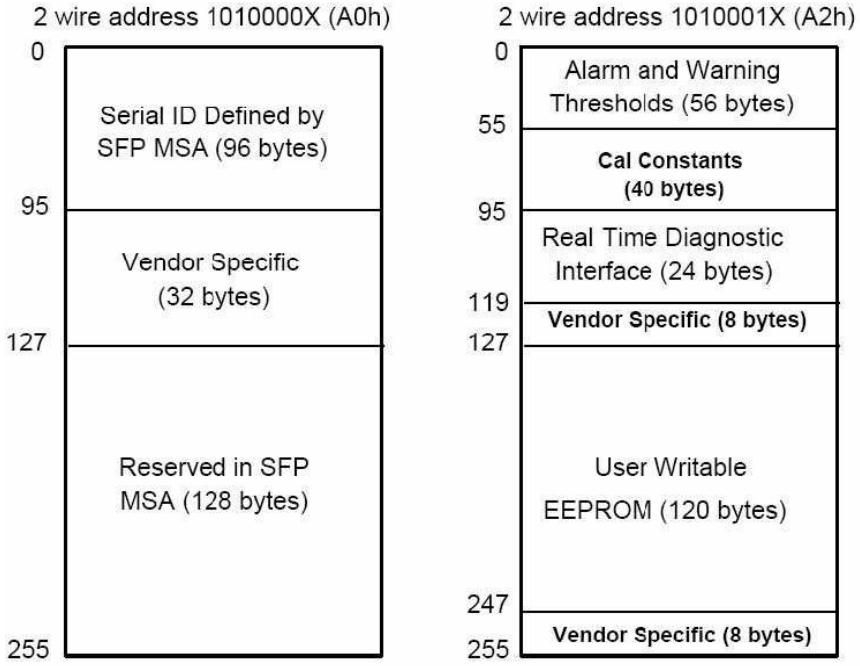
Required Host Board Components



Mechanical Specifications



Digital Diagnostic Memory Map



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 in 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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