

FT-EMC-SFP-1G-LC-SX-A

Small Form-Factor Pluggable (SFP) Optical Transceiver

SFP Optical Transceivers are hot-swappable, interchangeable, compact connectors that are a cost effective solution for facilitating a reliable, wired, high-speed connection between two devices via copper or fiber optic cables. SFPs will provide you the flexibility to expand or upgrade any existing environment whether you are transmitting signals at slower speeds and shorter distances over copper or you need faster transfer rates, longer distances, and need to protect signals from EMI/RFI noise using fiber optic cable. FiberTronix SFPs are MSA compliant which make them compatible with most manufacturers. FiberTronix SFPs are a solution for any network design.



Key Features

- Hot-Swappable SFP Footprint LC Optical Transceiver
- Small Form-Factor Pluggable (SFP) MSA compatible
- Compliant with IEEE 802.3z 1000BASE-LX
- Class 1 Laser International Safety Standard
- Operating Data Rate up to 1.25Gbps
- A type: Tx1550nm DFB /Rx1310nm
- Up to 12.42 miles (20km) on 9/125µm SMF
- Single 3.3V Power Supply
- Single LC connector
- Metal enclosure for lower EMI
- 32 to 158°F (0 to 70°C) Operation Temperature
- Compliant with MSA SFP Specification
- Compliant with SFF-8472
- RoHS Compliant

Applications

- Gigabit Ethernet Switches and Routers
- Fiber Optic Channel Switch Infrastructure
- XDSL Applications
- Metro Edge Switching

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Type	Max.	Units
Storage Temperature	T _s	-40 (-40)	-40 (-40)	185 (85)	°F (°C)
Relative Humidity	RH	0		85	%
Power Supply Voltage	V _{CC}	-0.5		+4	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	V _{CC}	3.14	3.30	3.47	V
Operating Temperature	T _{OP}	32 (0)	-	158 (70)	°F (°C)
Data Rate	-	-	1250	-	Mbps
Power Supply Current	I _{CC}	-	250	300	mA

Transmitter Specifications (32°F (0°C) < T_{OP} < 158°F (< 70°C), 3.1V < V_{CC} < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Optical Transmit Power	P _O	-8	-	-1	dBm
Optical Center Wavelength	λ _C	1260	1310	1360	nm
		1530	1550	1570	
Output Spectrum Width	Δλ	-	-	4	nm(RMS)
Extinction Ratio	E _R	9	-	-	dB
Output Eye	Compliance with IEEE802.3z				
Optical Rise Time	t _r	-	-	0.26	ns
Optical Fall Time	t _f	-	-	0.26	ns
Electrical					
Differential Input Voltage	V _{IH} -V _{IL}	0.3	-	2.2	V
TX Disable Input Voltage – Low	T _{DIS, L}	0	-	0.8	V
TX Disable Input Voltage – High	T _{DIS, H}	2.0	-	V _{CC}	V
TX Disable Assert Time	T _{ASSERT}	-	-	10	μs
TX Disable Deassert Time	T _{DEASSERT}	-	-	1	ms
TX Fault Output Voltage -- Low	T _{FaultL}	0	-	0.8	V
TX Fault Output Voltage -- High	T _{FaultH}	2.0	-	V _{CC}	V

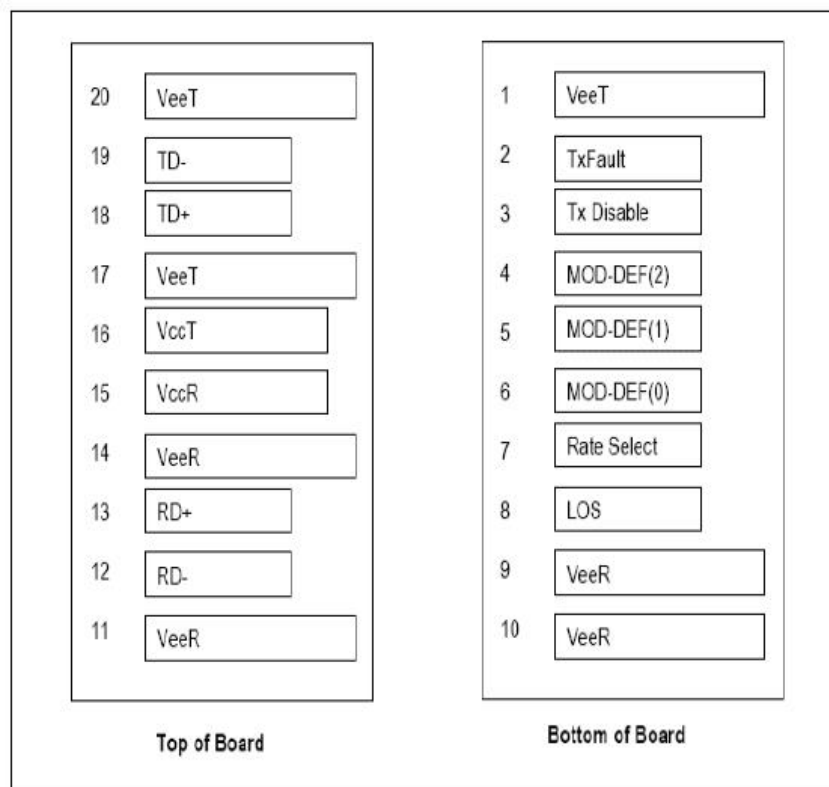
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Receiver Specifications (32°F (0°C) < Top < 158°F (< 70°C), 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Maximum Input Power (Sensitivity)	Sen	-	-	-24	dBm
Optical Center Wavelength	λ_C	1530	1550	1570	nm
		1290	1310	1330	
Signal Detect -- Deasserted	P_d	-35	-	-	dBm
Signal Detect -- Hysteresis	P_{hys}	1	-	4	dB
Electrical					
Differential Output Voltage	$V_{OH} - V_{OL}$	0.4	-	2	V
Signal Detect Output Voltage-- Low	V_{SIL}	-	-	0.8	V
Signal Detect Output Voltage-- High	V_{SIH}	2.0	-	-	V

Pins Assignment



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Function Definition				
Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	
3	TX Disable	Transmitter Disable	3	1
4	MOD-DEF2	Module Definition 2	3	2
5	MOD-DEF1	Module Definition 1	3	3
6	MOD-DEF0	Module Definition 0	3	3
7	Rate Select	Not Connected	3	3
8	LOS	Loss of Signal	3	
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	4
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Received Data Out	3	
13	RD+	Received Data Out	3	
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	6
19	TD-	Inv Transmit Data In	3	6
20	VeeT	Transmitter Ground	1	

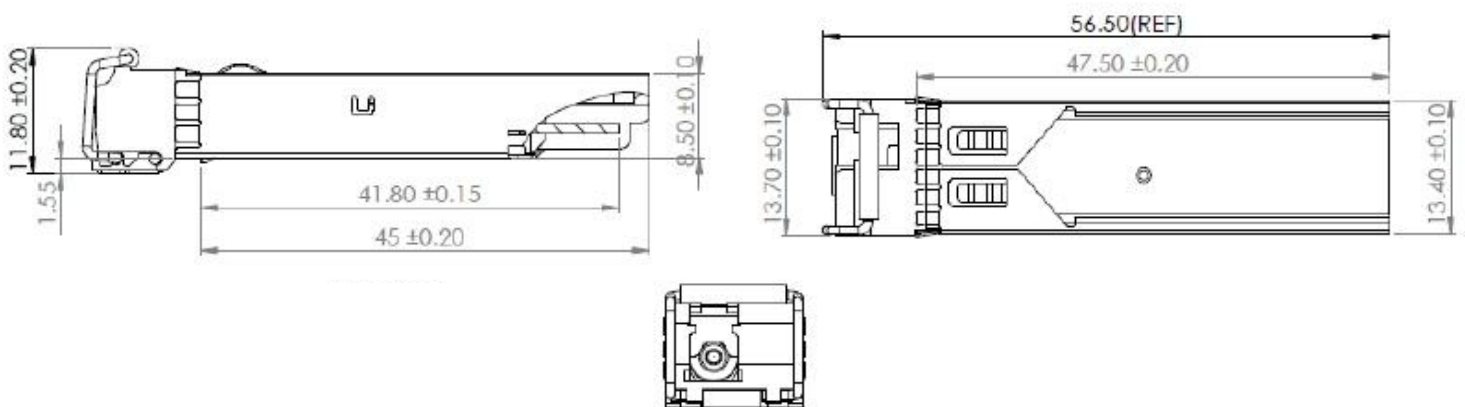
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Notes

1. TX Fault is an open collector output, which should be pulled up with a $4.7K\sim 10K\Omega$ resistor on the host board to a voltage between 2.0V and $V_{cc}+0.3V$. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. 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 $4.7K\sim 10K\Omega$ resistor. Its states are:
Low ($0\sim 0.8V$): Transmitter on
($>0.8V, <2.0V$): Undefined
High ($2.0\sim 3.465V$): Transmitter Disabled
Open: Transmitter Disabled.
3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a $4.7K\sim 10K\Omega$ resistor on the host board. The pull-up voltage shall be V_{ccT} or V_{ccR} .
MOD-DEF 0 is grounded by the module to indicate that the module is present.
MOD-DEF 1 is the clock line of two wire serial interface for serial ID.
MOD-DEF 2 is the data line of two wire serial interface for serial ID.
4. LOS is an open collector output, which should be pulled up with a $4.7K\sim 10K\Omega$ resistor on the host board to a voltage between 2.0V and $V_{cc}+0.3V$. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.
5. These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
6. $TD\pm$: These are the differential transmitter inputs. They are AC coupled differential lines with 100Ω differential termination inside the module.
The AC coupling is done inside the module and is thus not required on the host board.

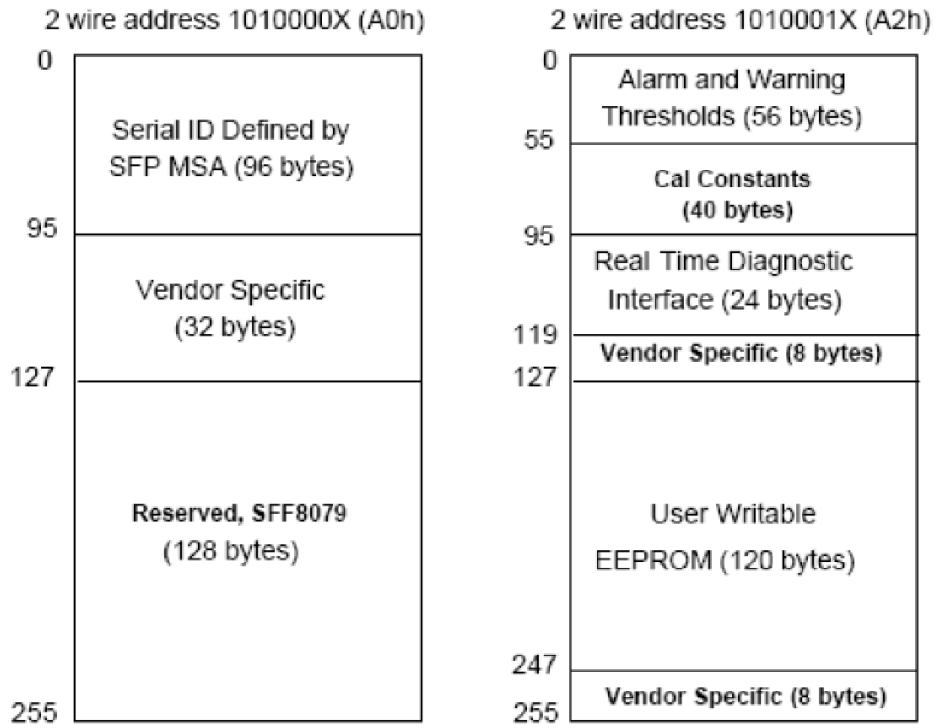
Outline Specification



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EEPROM Information



Recommended Circuit

