SFP-GEXX-BXX0S

1.25Gbps BIDI SFP Transceiver, Single Mode, SC Connector

80km/ 120km Reach

Product Features

- Up to 1.25Gbps data rate
- Simplex SC receptacle optical interface compliant
- Single +3.3V power supply
- Digital Diagnostic Monitoring function implemented
- External calibration
- Hot-pluggable
- Receiver Loss of Signal Output

- Transmitter disable input
- Compliant with SFF-8472
- Compliant with IEEE802.3z Gigabit Ethernet
- International Class 1 laser safety certified
- Operating temperature range: 0°C ~+70°C
- RoHS Compliance

Applications

- Gigabit Ethernet
- Gigabit Fiber Channel
- Router/Server Interface
- Switch to Switch Interface
- Switched Backplane Applications

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typical	Max
Storage Temperature	T_{STG}	°C	-40		+85
Operating Case Temperature	T_{OP}	°C	0		+70
Power Supply Voltage	Vcc	V	3.1	3.30	3.5
Data Rate		Gbps		1.25	

Transmitter Specifications

Parameter	Symbol	Units	Min	Typical	Max	Notes
Average Output Optical Power	P_0	dBm	0		+5	80km
			0		+5	120km
Transmitter Off Optical Power	P_{OFF}	dBm			-45	
Output Center Wavelength	λ	nm	1470	1490	1510	
			1530	1550	1570	
Side Mode Suppression Ratio	SMSR	dB	30			
Extinction Ratio	ER	dB	9			
Optical Rise Time	-	ps			260	
Optical Fall Time	-	ps			260	
Jitter P-P	T_J	UI			0.1	Note 1
Optical Eye Diagram	Compliant with IEEE Std 802.3					

Note 1: Measured at 1.25Gbps PRBS2^{23}-1.

Electrical Characteristics

Parameter	Symbol	Units	Min	Typical	Max	Notes
Total Supply Current	I_{CC}	mA	-	-	300	
Transmitter						
Single Ended Data Input Swing	V_{PP}	mV	200	-	1200	
Differential Input Impedance	Z_{IN}	ohm	80	100	120	
Tx_Fault Output Voltage- High	V_{OH}	V	2.0	-	Vcc	
Tx_Fault Output Voltage- Low	V_{OL}	V	0	-	0.8	
Tx_Dis Input Voltage- High	V_{IH}	V	2.0	-	Vcc	
Tx_Dis Input Voltage- Low	V_{IL}	V	0	-	0.8	

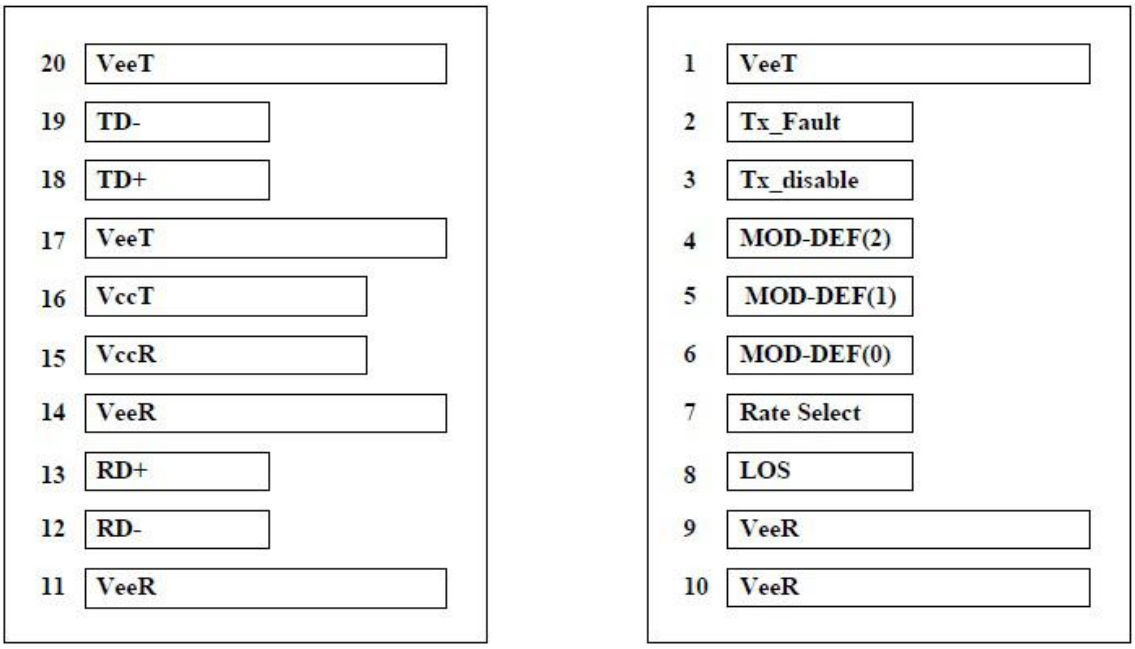
Receiver						
Single Ended Data Output Swing	V_{PP}	mV	300	-	600	
LOS Output Voltage- High	V_{LOSH}	V	2	-	-	
LOS Output Voltage- Low	V_{LOSL}	V	-	-	0.8	

Receiver Specifications

Parameter	Symbol	Units	Min	Typical	Max	Notes
Sensitivity	Sen	dBm			-26	80km, Note 1
					-32	120km, Note 1
Saturation Input Optical Power	Sat	dBm	-3			80km
			-9			120km
LOS Assert Level	LOSA	dBm	-40			80km
			-45			120km
LOS Deassert Level	LOSD	dBm			-27	80km
					-33	120km
LOS Hysteresis	HYS	dB	0.5		6	

Note 1: Measured with PRBS2^{23}-1 pattern, @1.25Gbps, ER=9dB, BER=1x10^{-12}.

Pin Definitions



Pin#	Name	Function
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication, Logic 1 indicates Transmitter Fault.
3	TX Disable	Transmitter Disable, Transmitter disables on high or open.
4	MOD-DEF(2)	Module Definition 2. Data line for two wire Serial ID.
5	MOD-DEF(1)	Module Definition 1. Clock line for two wire Serial ID.
6	MOD-DEF(0)	Module Definition 0. Grounded within the module.
7	Rate Select	Not Connected
8	LOS	Loss of Signal indication. Logic 1 indicates Loss of Signal.
9	VeeR	Receiver Ground

10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverse Received Data Out, AC coupled
13	RD+	Received Data Out, AC coupled
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit Data In, AC coupled
19	TD-	Inverse Transmit Data In, AC coupled
20	VeeT	Transmitter Ground

Digital Diagnostic Functions

SFP transceivers support the 2-wire serial communication protocol as defined in the SFP MSA. The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.

Additionally, SFP transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage. It also defines a sophisticated system of alarm and warning flags, which alerts end-users when particular operating parameters are outside of a factory set normal range.

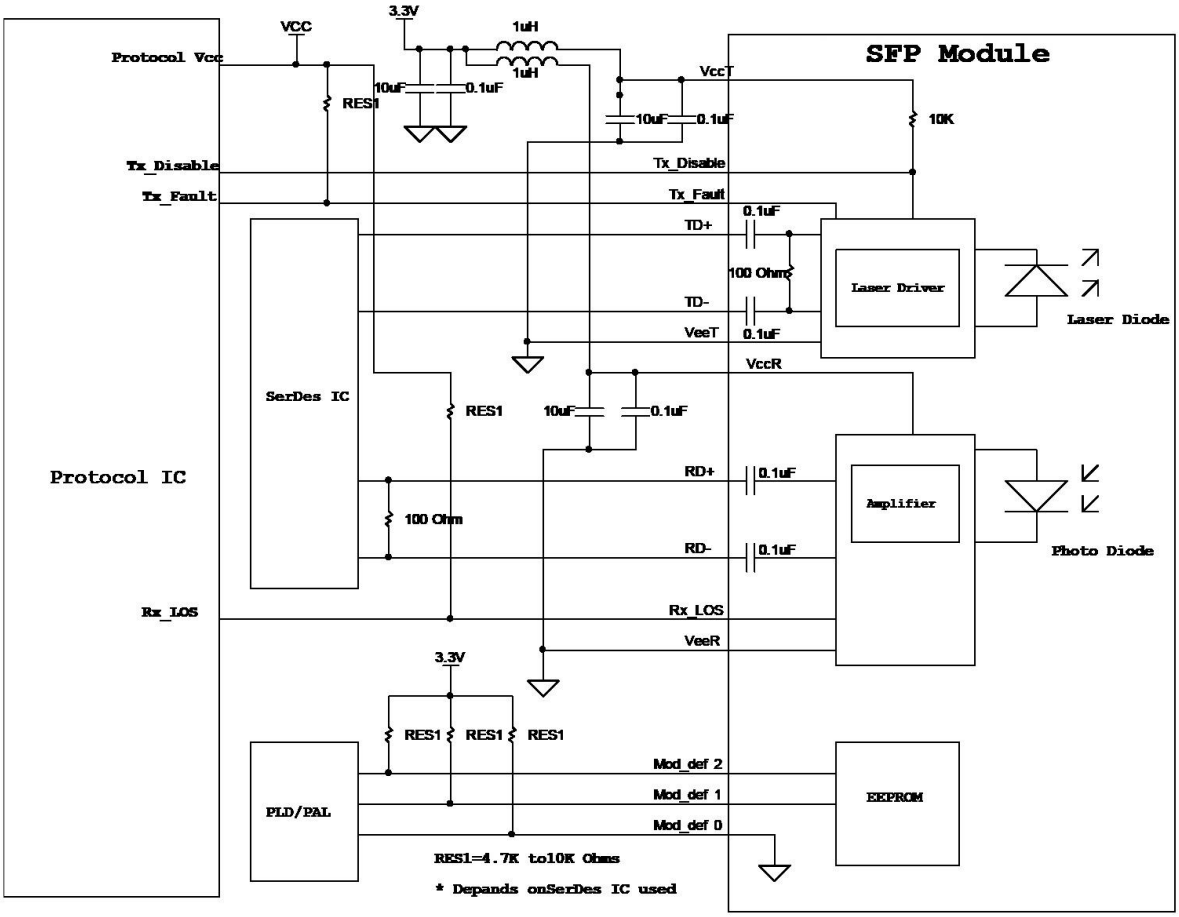
The SFP MSA defines a 256-byte memory map in EEPROM that is accessible over a 2-wire serial interface at the 8 bit address 1010000X (A0h). The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X (A2h).

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through a 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL, Mod Def 1) is generated by the host. The positive edge clocks data into the

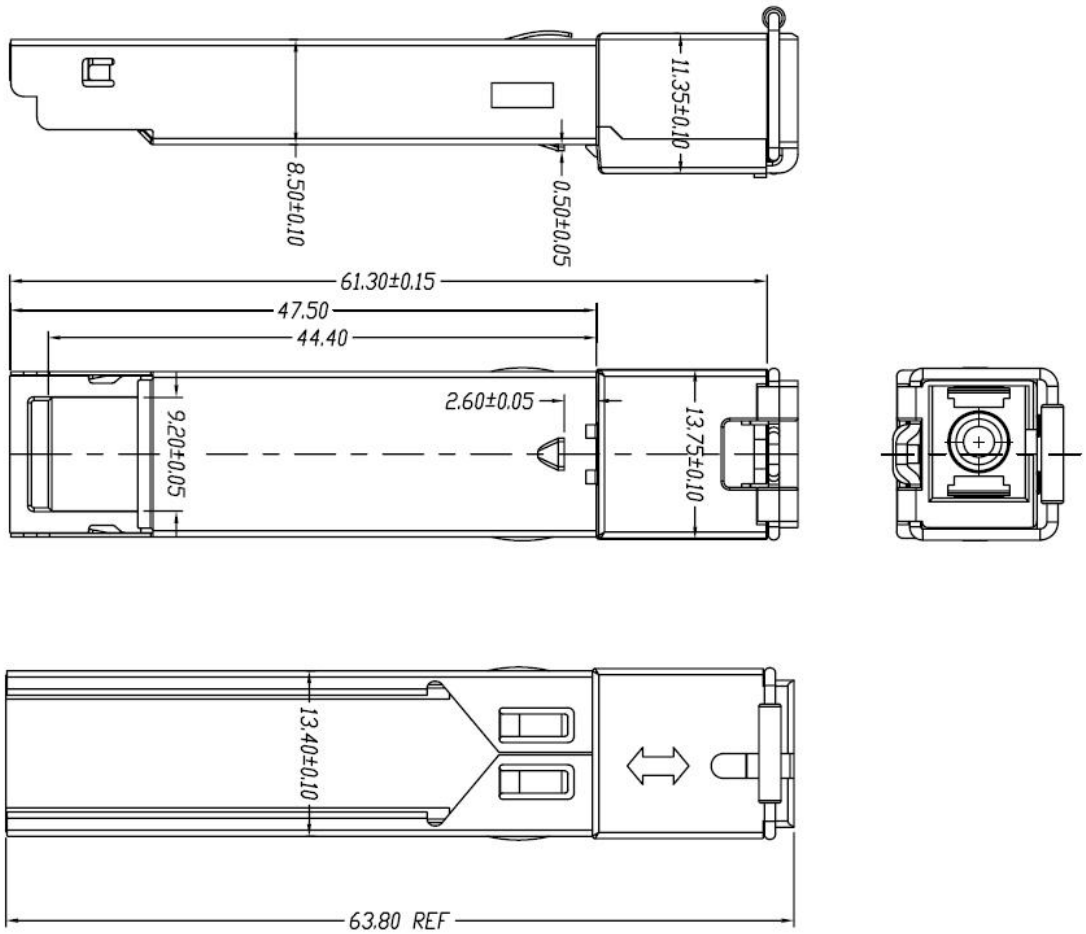
SFP transceiver into those segments of the E2PROM that are not write-protected. The negative edge clocks data from the SFP transceiver. The serial data signal (SDA, Mod Def 2) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

Digital diagnostics for the SFP Transceivers are externally calibrated by default.

Recommended Application Circuit



Mechanical Specifications (Unit: mm)



Ordering Information

Part Number	Data Rate (Gbps)	Wave-length (nm)	TX LD	RX PD	TOP (℃)	Reach (km)	DDM
SFP-GE54-BX80S	1.25	1490	DFB	PIN	0~70	80	Yes
SFP-GE45-BX80S	1.25	1550	DFB	PIN	0~70	80	Yes
SFP-GE54-BX120S	1.25	1490	DFB	APD	0~70	120	Yes
SFP-GE45-BX120S	1.25	1550	DFB	APD	0~70	120	Yes