Features:

- ❖ Hot pluggable
- ❖ 1550nm cooled EML, APD Receiver
- ❖ Up to 80km on 9/125um SMF
- ❖ SFP+ MSA package with duplex LC connector
- ❖ SFI High Speed Electrical Interface
- ❖ Very low EMI and excellent ESD protection
- ❖ +3.3V single power supply
- ❖ Case temperature range:
    Standard:-5℃ to 70℃.
    Industrial:-40°C to 85°C
- ❖ 2-wire interface for management and diagnostic monitor
- ❖ 10Gb/s serial optical interface compliant to 802.3ae 10GBASE-ZR/ZW
- ❖ Power dissipation < 1.5W

Applications:

- ❖ 10G Base-ZR/ZW
- ❖ 10G Fiber Channel
- ❖ 10G Storage system

Part Number Ordering Information

GZSX-C80	SFP+ 10Gbs 80km Tx1550nm LC DDM

Description:

GZSX-C80 is 1550nm cooled EML laser and APD photo-detector receiver based 10Gigabit SFP+ transceiver, which is designed to transmit and receive optical data over single mode optical fiber for link length up to 80km.Digital diagnostics functions are available via a 2-wire serial interface, as specified in the SFF-8472, 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.

Standard:

- ❖ Compliant to SFF-8431 and SFF-8432
- ❖ Compliant with SFF-8472
- ❖ Compliant with IEEE 802.3ae 10GBASE-ZR and 10GBASE-ZW
- ❖ Compliant with IEC 60825-1 Class 1 laser eye safe
- ❖ RoHS Compliant

Absolute Maximum Ratings:

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc3	-0.5		4.0	V	
Storage Temperature	Ts	-40		85	°C	
Operating Relative Humidity	RH			85	%	
Case Operating Temperature	Tcase	-5		70	°C	
Receiver Damage Threshold		6			dBm	

General Specifications:

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Bit Rate	BR		10.3125			1
Bit Error Ratio	BER			10^{-12}		2
Maximum Supported Distances	Lmax		80		km	3

Notes:
1)10GBASE-ZR/ZW
2)Tested with a $2^{31} - 1$ PRBS
3)SMF fiber, 1550nm wavelength

Optical Characteristics:

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Average Optical Power	P_{AVE}	0		5.0		1
Optical Wavelength	λ	1530	1550	1565	nm	
Side-Mode Suppression ratio	SMSR	30			dB	
Optical Extinction Ratio	ER	6.0			dB	
Transmitter and Dispersion Penalty	TDP			3.0	dB	
Average Launch power of OFF transmitter	P_{OFF}			-40	dBm	
Output Eye Mask	Compliant with IEEE 0802.3ae					
Relative Intensity Noise	RIN			-128	dB/Hz	
Receiver						
Receiver Sensitivity	R_{SENS}			-24.0	dBm	2
Input Saturation Power (Overload)	Psat	-9			dBm	
Wavelength Range	λ_{C}	1270		1610	nm	
Receiver Reflectance	R_{rx}			-27	dB	
LOS De-Assert	LOS_{D}			-26	dBm	
LOS Assert	LOS_{A}	-40			dBm	
LOS Hysteresis		0.5		4.0	dB	

Notes:
1)Average power figures are informative only, per IEEE 802.3ae.
2)Measured with conformance test signal for BER = 10^{-12}.@10.3125Gbps, PRBS=2^{31}-1,NRZ

Pin Assignment :

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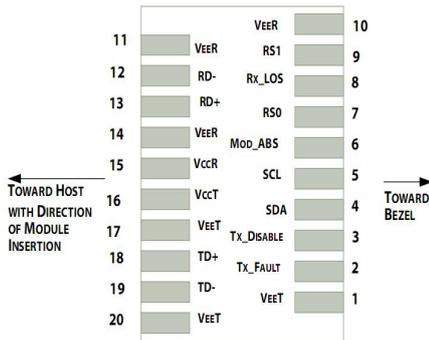
Pin	Symbol	Name/Description	Ref
1	VEET	Transmitter Ground	1
2	Tx_FAULT	Transmitter fault	2
3	Tx_DISABLE	Transmitter Disable. Laser output disabled on high or open	3
4	SDA	2-wire Serial Interface Data Line	2
5	SCL	2-wire Serial Interface Clock Line	2
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	No connection required	
8	RX_LOS	Loss of Signal indication. Logic 0 indicates normal operation	2
9	RS1	No connection required	
10	VEER	Receiver Ground	1
11	VEER	Receiver Ground	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver DATA out. AC Coupled	
14	VEER	Receiver Ground	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground	1
18	TD+	Transmitter DATA in. AC Coupled	
19	TD-	Transmitter Inverted DATA in. AC Coupled	
20	VEET	Transmitter Ground	1

Notes:

1)Module circuit ground is isolated from module chassis ground within the module.

2)Should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.13Vand 3.6V.

3)Tx_ Disable is an input contact with a 4.7 kΩ to 10 kΩ pull-up to VccT inside the module

4)Mod_ ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to
Vcc_ Host with a resistor in the range 4.7 kΩ to10 kΩ. Mod_ABS is asserted "High" when the SFP+ module is physically absent
from a host slot.

Electrical Interface Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc3	3.13		3.47	V	
Supply Current	Icc			450	mA	
Module total power	P			1.5	W	1
Transmitter						
Input differential impedance	R_{in}		100		Ω	1

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Differential data input swing	Vin,pp	300		1200	mV	
Transmit Disable Voltage	V_D	2.0		Vcc3	V	
Transmit Enable Voltage	V_{EN}	GND		GND+ 0.8	V	
Transmit Disable Assert Time				10	us	
Transmit Disable De-assert Time				2	ms	
Receiver						
Differential data output swing	Vout-pp	500	650	800	mV	2
Data output rise and fall time	Tr, Tf	30			ps	3
LOS Fault	Vlos-fault	2		Vcc-host	V	4
LOS Normal	Vlos-nor	GND		GND+0.8	V	4

Notes:
1)Connected directly to TX data input pins.
2)Input 100Ω differential termination.
3)These are unfiltered 20-80% values
4)LOS is an open collector output. Should be pulled-up with 4.7k Ω-10 k Ω on the host board. Normal operation is logic 0, loss of signal is l

Host-Transceivers Interface Block Diagram
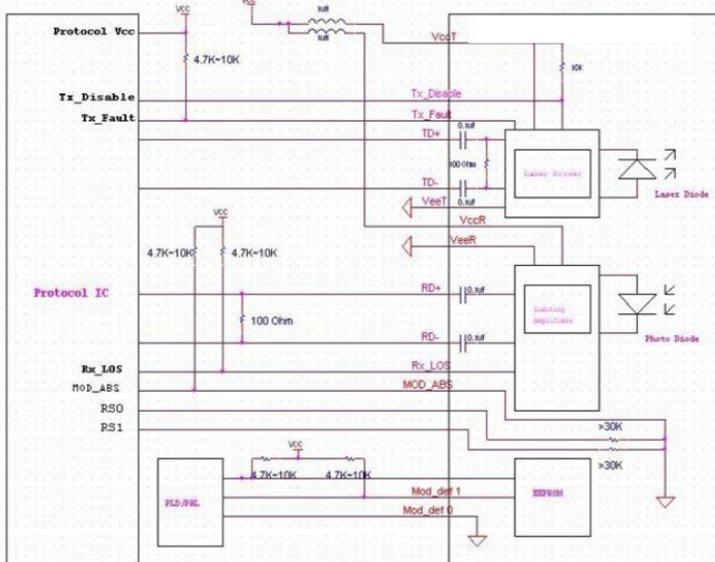
Digital Diagnostic Functions

As defined by the SFP MSA, GZCOM's SFP+ transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:
1.Transceiver temperature
2.Laser bias current
3.Transmitted optical power
4.Received optical power
5.Transceiver supply voltage
It also provides a sophisticated system of alarm and warning flags, which may be used to alert 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), so the originally defined serial ID memory map remains unchanged.

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. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

Mechanical Specifications:

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Comply with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).
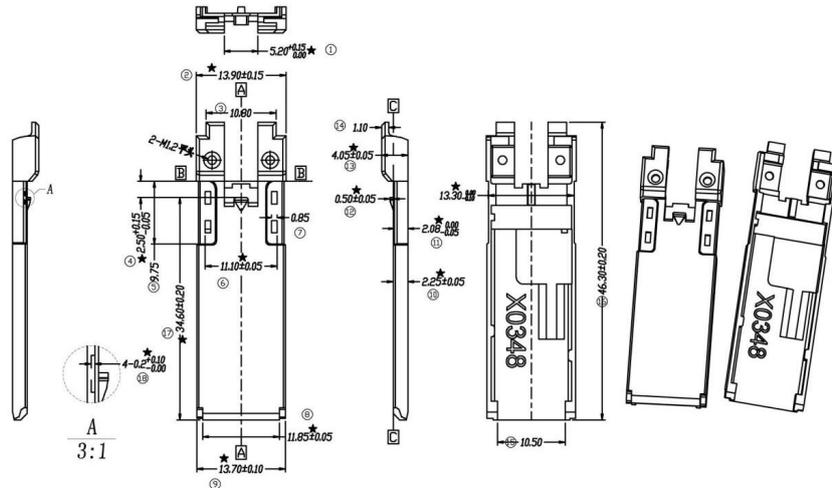
Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge（ESD）	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards