

TITLE 10G SFP+ ZR 80km 1550nm Transceiver	DOC No. DTRX-2211013	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2022/11/18	CLASSIFICATION : Optical Transceiver

1. SCOPE

The laser based 10Gigabit SFP+ Transceiver is designed to transmit and receive serial optical data over single mode optical fiber with 80Km.

They are compliant with SFF-8431, SFF-8432, 10GFC Rev 4.0, and 10GBASE-ZR/ZW. The transmitter converts serial EML electrical data into serial optical data compliant with the IEEE 802.3ae standard. The receiver converts serial optical data into serial EML electrical data. digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

2. PRODUCT FEATURES

- Compliant to SFP+ MSA
- Fully RoHS Compliant
- All metal housing for superior EMI performance
- Operating data rate up to 10Gbps
- High sensitivity APD photodiode and TIA
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption <2W
- -40°C to 85°C operating wide temperature range
- Single +3.3V±5% power supply
- Digital Monitoring SFF-8472 Rev 10.2 compliant

PRODUCT SPECIFICATION

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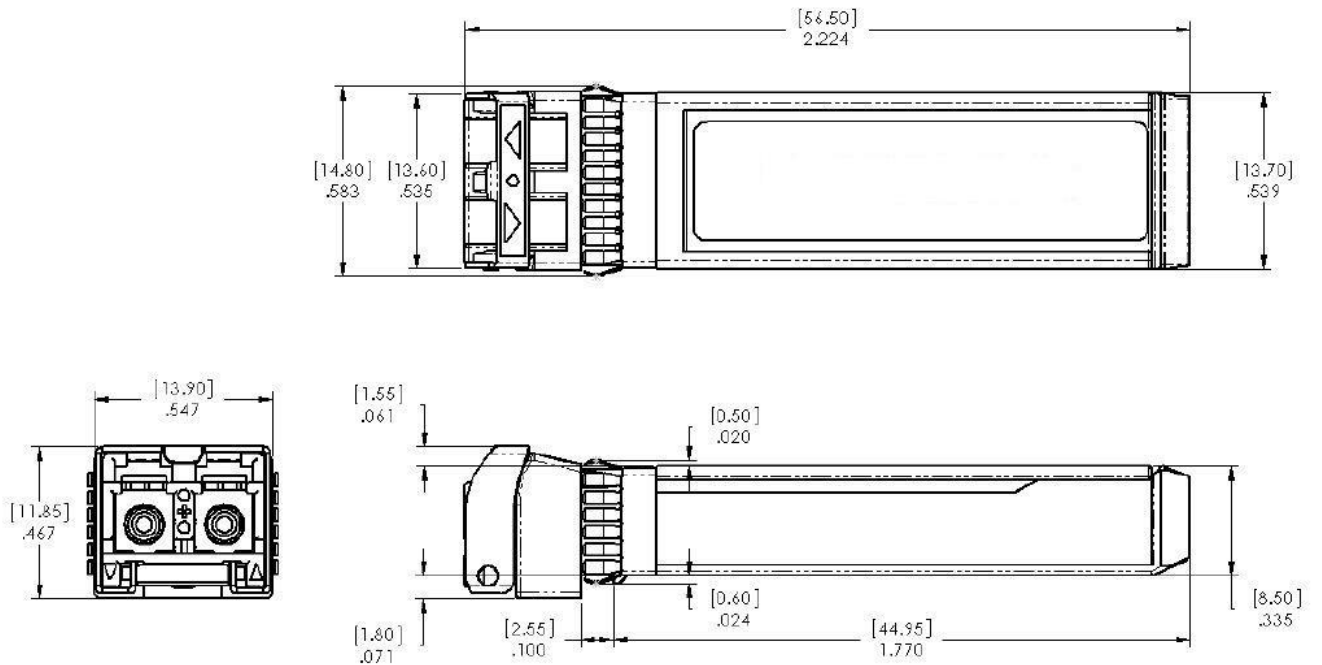
3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)

10G SFP+ ZR 80km 1550nm Transceiver

Part Number	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Tem.
P58000BGIV80-1	10G	1550	80 km	SMF	0 ~ 4	-24	LC	I

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Units: mm

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4. APPLICATIONS

- 10GBASE-ZR/ZW
- 10G Fiber Channel
- SFP+ MSA (SFF-8472)
- IEEE802.3ae

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature Range	TS	-40	-	85	°C
Relative Humidity	RH	0	-	95	%
Maximum Supply Voltage	Vcc3	-0.5	-	4.0	V

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Typical	Max.	Unit
Bit Rate	BR			11.3	Gb/s
Bit Error Ratio	BER			10e-12	
Max. Supported Link Length	LMAX		80		km
Operating Case Temperature Range	Tc	-40		85	°C
Power Supply Voltage	Vcc	3.14	3.3	3.46	V
Bit Rate	BR			11.3	Gb/s
Bit Error Ratio	BER			10 ⁻¹²	
Max Supported Link Length	L			80	Km

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Transmitter Operating Characteristic-Optical, Electrical						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Nominal Wavelength	λ	1530	1550	1560	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Output Power	P_{AV}	0		4	dBm	
Extinction Ratio	ER	9			dB	
Average Launch Power of OFF Transmitter	POFF			-30	dBm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Input Differential Impedance	R_{IN}	80	100	120	Ω	
Differential Data Input	V_{IN}	150		1200	mVp-p	
Transmit Disable Voltage	V_{DIS}	2		V_{CCHOST}	V	
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	
Transmit Fault Assert Voltage	V_{FA}	2		V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	V_{FDA}	V_{EE}		$V_{EE}+0.4$	V	

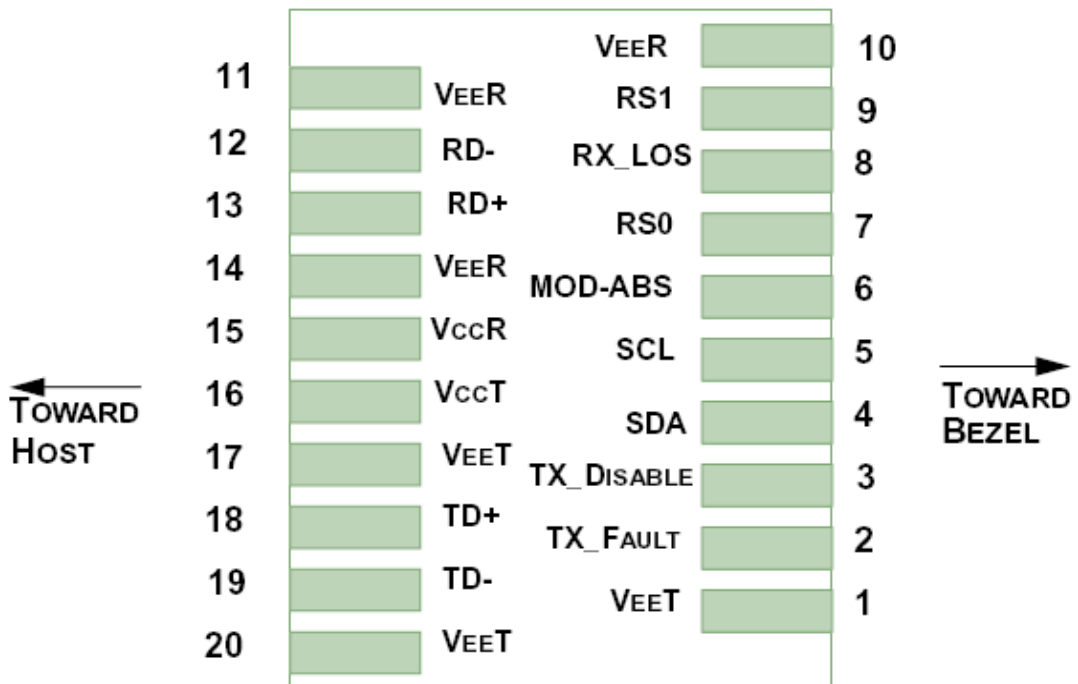
Receiver Operating Characteristic-Optical, Electrical						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λ_C	1260		1620	nm	
Receiver Sensitivity@10.3Gb/s	RSENSE			-25	dBm	
Receiver Sensitivity at 1600ps/nm @ 10.3Gb/s	RSENSE			-21		
Receiver Overload		-9			dBm	
Optical Return Loss		27		-	dB	
LOS Assert	LOSA	-37			dBm	
LOS De-Assert LOS	LOSD			-27	dBm	
LOS Hysteresis		0.5			dB	

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Differential Data Output	V_{OD}	350		700	mVp-p	
Output Rise Time	t_{RISE}	25			pS	
Output Fall Time	t_{FALL}	25			pS	
LOS Fault	V_{LOSFT}	2		V_{CCHOST}	V	
LOS Normal	V_{LOSNR}	V_{EE}		$V_{EE}+0.4$	V	

6. Pin-out Definition

7.



Pin Definitions

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Pin Assignment

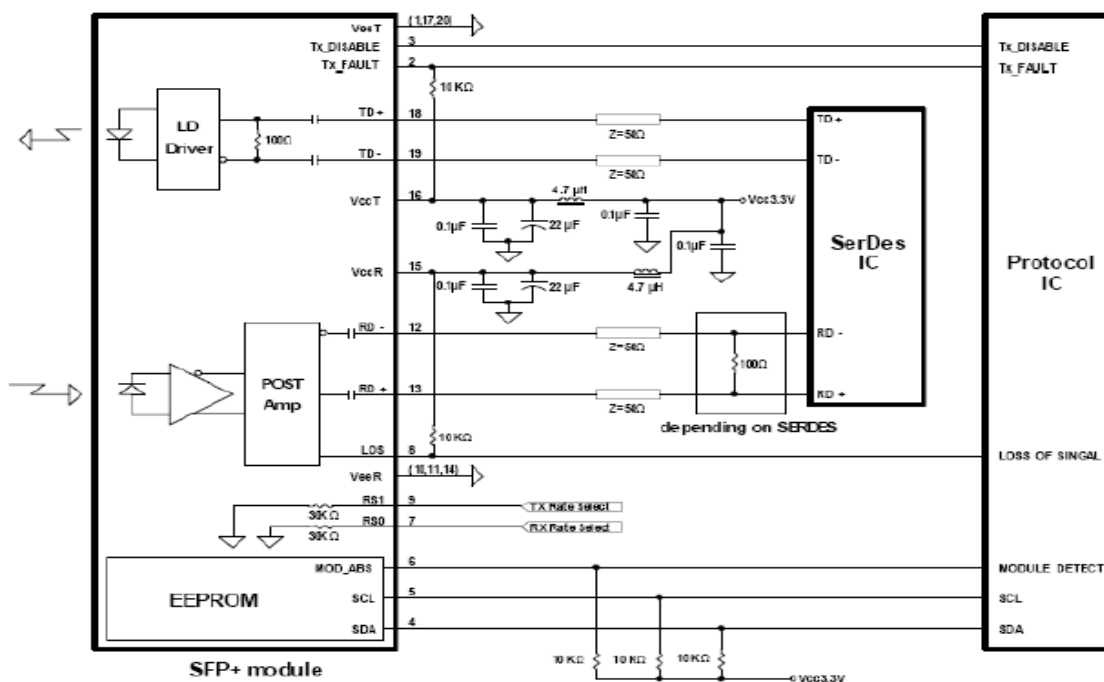
Pin	Symbol	Name/Description
1	VeeT	These pins should be connected to signal ground on the host board.
2	TX Fault	Logic "1" Output = Laser Fault (Laser off before t_fault) Logic "0" Output = Normal Operation This pin is open collector compatible and should be pulled up to Host Vcc with a 10kΩ resistor.
3	TX Disable	Logic "1" Input (or no connection) = Laser off Logic "0" Input = Laser on This pin is internally pulled up to VccT with a 10 kΩ resistor.
4	SDA	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
6	Mod_ABS	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
7	RS0	These pins have an internal 30kΩ pull-down to ground. A signal on either of these pins will not affect module performance.
8	LOS	Sufficient optical signal for potential BER < 1x10 ⁻¹² = Logic "0" Insufficient optical signal for potential BER < 1x10 ⁻¹² = Logic "1" This pin is open collector compatible and should be pulled up to Host Vcc with a 10kΩ resistor.
9	RS1	These pins have an internal 30kΩ pull-down to ground. A signal on either of these pins will not affect module performance.
10	VeeR	These pins should be connected to signal ground on the host board.
11	VeeR	These pins should be connected to signal ground on the host board.
12	RD-	Light on = Logic "0" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
13	RD+	Light on = Logic "1" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
14	VeeR	These pins should be connected to signal ground on the host board.

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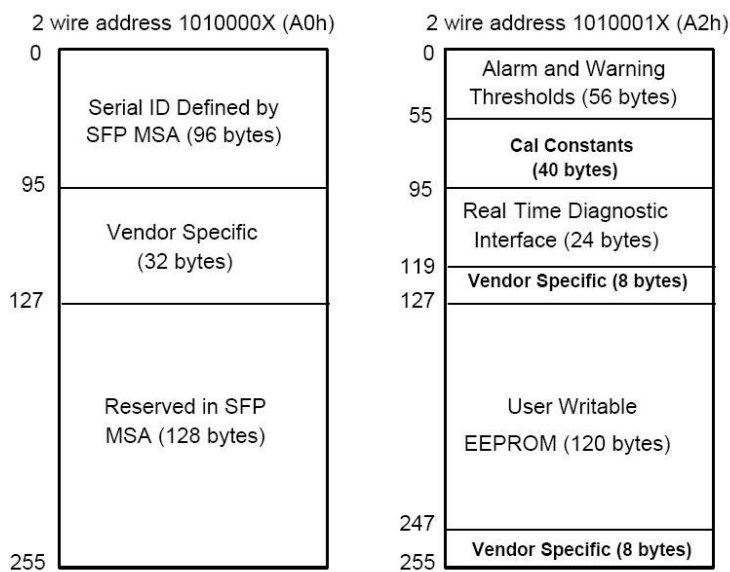
15	VccR	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3.recommended power supply filter
16	VccT	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3.recommended power supply filter
17	VeeT	These pins should be connected to signal ground on the host board.
18	TD+	Logic "1" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
19	TD-	Logic "0" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
20	VeeT	These pins should be connected to signal ground on the host board.

Recommended Interface Circuit



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8. Digital Diagnostic Memory Map



for channel 1 and channel 2.

9. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2022/11/18	Albert Lin	Mike Sun