

TITLE 10G SFP+ DWDM 80km 191.35 ~ 196.1THz Transceiver	DOC No. RFD-20230710006-001	
	REVISION : 01	AUTHORIZED BY : Andy Yang
	DATE : 2023.07.13	CLASSIFICATION : CONFIDENTIAL

1. DESCRIPTION

10G SFP+ DWDM 80km is a tunable transceiver module designed for 80 km optical communication applications, and it is compliant to SFP+ MSA standard. This module can convert a 10 Gbps electrical data to 10 Gbps optical signals. Similarly, it can convert a 10 Gbps optical input signal to 10 Gbps serial electrical data. It has been designed to meet the harshest external operating conditions including temperature, humidity and EMI interference. The module offers very high functionality and feature integration, accessible via a two-wire serial interface.

2. PRODUCT FEATURES

- SFP+ MSA compliant
- 96 channels (191.35–196.1 THz)
- 50 GHz channel spacing
- Maximum power consumption 2.5 W
- LC duplex connector
- Supports 9.830 Gbps, 10.1376 Gbps, 10.3125 Gbps, 11.32 Gbps without CDR
- APD receiver
- Up to 80 km transmission on single mode fiber
- Operating case temperature: –20 to +85°C, cold start at –40°C
- Single 3.3 V power supply
- RoHS 2.0 compliant

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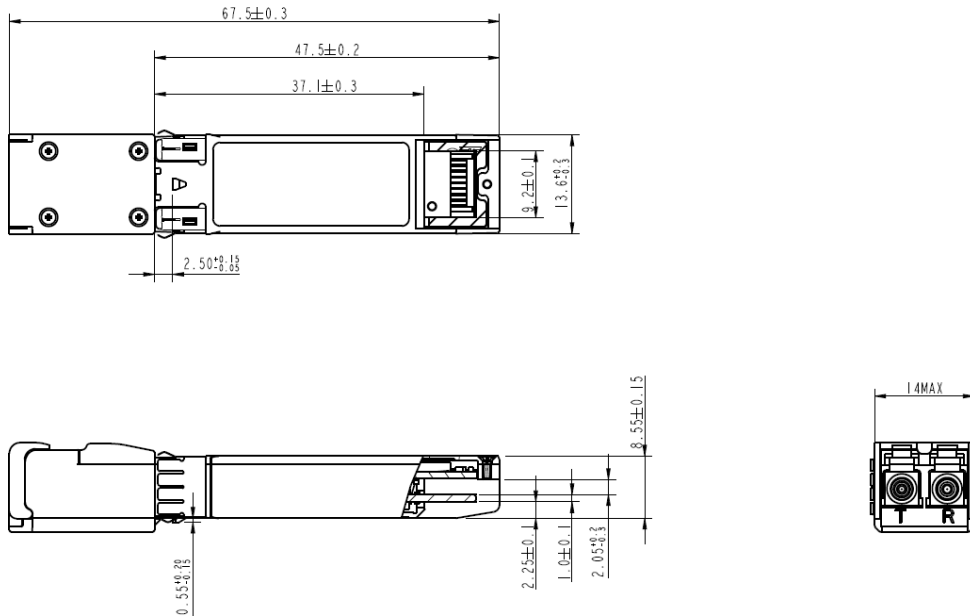
3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)

SFP+ 10G DWDM 80km Transceiver

Part Number	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Temp.
P58000BACZ80AA	10G	191.35~196.1	80 km	SMF	0~4	-24	LC	C

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- 10G CPRI/eCPRI
- 10G Ethernet Switches and Routers

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5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC3	3.1	3.6	V
Relative Humidity (Non-condensing)	RH	5	85	%
Damage Threshold, each Lane	Thd	0	-	dBm

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature(C-temp)	TC	-20		85	°C
Power Supply Voltage	VCC3	3.135	3.3	3.465	V
Transmission Distance				80	Km
Data Rate Accuracy	-	-100	-	100	ppm
Data Rate	-	9.8304	-	11.32	Gbps

Transmitter Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Output average power	-	0	-	4	dBm	-
Data rate	-	9.8304	-	11.32	Gbps	-
Data rate accuracy	-	-100	-	100	ppm	-
Wavelength range	-	191.35	-	196.1	THz	-

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Wavelength accuracy	-	-12.5	-	12.5	GHz	-
Channel spacing	-	-	50	-	GHz	-
Extinction ratio (ER)	-	8.7	-	-	dB	-
TDP	-	-	-	3	dB	-
Side-Mode Suppressionratio (SMSR)	-	-	-	-	-	-
Rin ₁₂ OMA	-	-	-	-130	dB/Hz	-
Optical return losstolerance	-	-	-	-	-	-
Transmitter reflectance	-	-	-	-26	dB	-
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.40, 0.45, 0.25, 0.28, 0.40}				
Differential voltage pk-pk	Vpp	180		900	mV	
Tx differential inputimpence	ZIN		100		Ω	
Transmitter disablevoltage	VD	2.0		Vcc+0.3	V	
Transmitter enablevoltage	VEN	0		0.8	V	

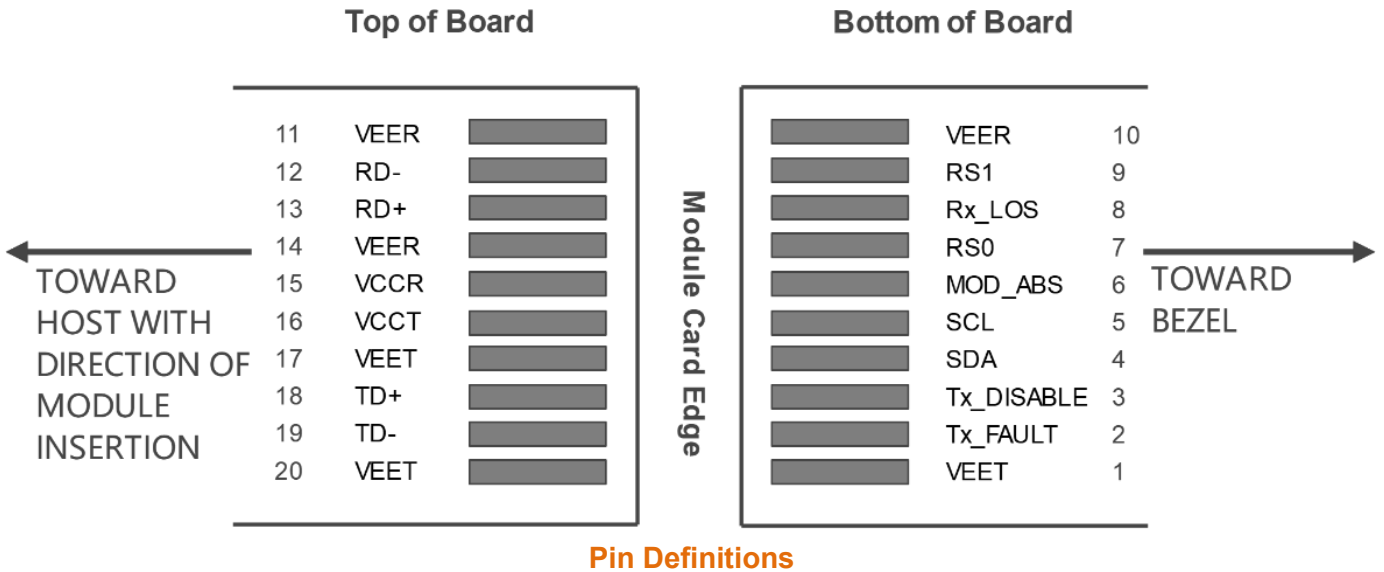
Receiver Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate	-	9.8304	-	11.32	Gbps	-
Wavelength Range	-	191.35	-	196.1	THz	-
Saturation power	-	-2	-	-	dBm	-
Receiver sensitivity	-	-	-	-24	dBm	-
Receiver reflectance	-	-	-	-26	dB	-
LOS assert	-	-37	-	-	dBm	-
LOS deassert	-	-	-	-26	dBm	-

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LOS hysteresis	-	0.5	-	-	dB	-
Differential voltage pk-pk	Vpp	450	600	900	mV	-
Rx differential Output Impedance	Zout	-	100	-	Ω	-
LOS assert voltage	VLOSA	2.4	-	Vcc	V	-
LOS de-assert voltage	VLOSD	Vee	-	Vee+0.4	V	-

6. Pin-out Definition:



Pin Assignment

Pin	Symbol	Name/Description	Note
1	VEET	Transmitter ground	1
2	TX_FAULT	Transmitter fault indication	

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PRODUCT SPECIFICATION

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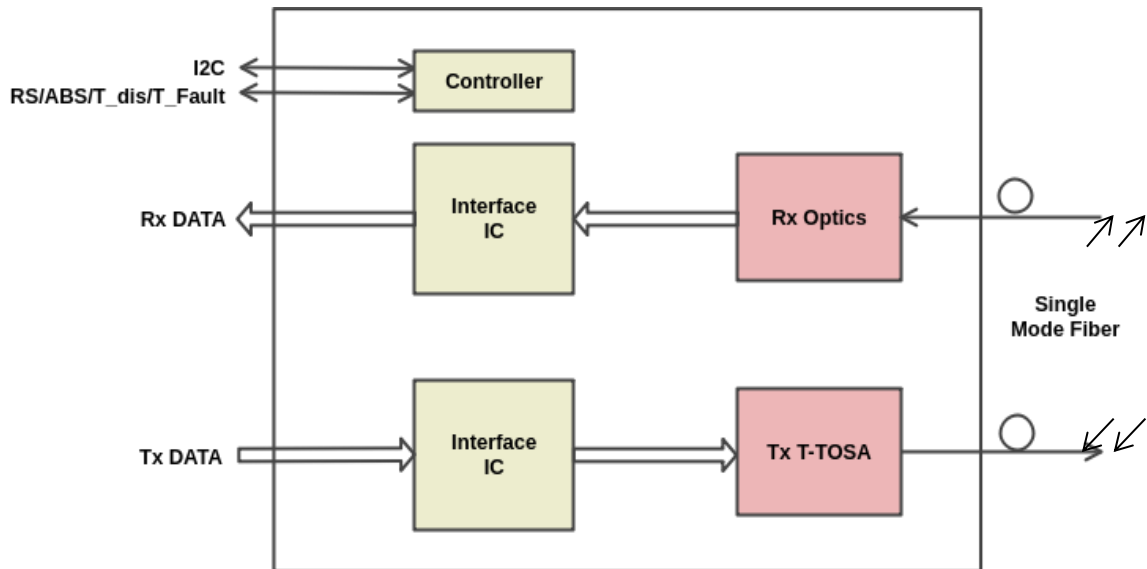
3	TX_DISABLE	Disables the transmitter or laser output	2
4	SDA	Data line for an I2C series interface	2
5	SCL	Clock line for an I2C series interface	2
6	MOD_ABS	Indicates the module online state (this pin is connected to the veet or veer pin)	
7	RS0	Selects a rate for the module (this pin is connected to the 33kilohm resistor)	
8	RX_LOS	Indicates a loss of received signals	2
9	RS1	Selects a rate for the module (this pin is connected to the 33kilohm resistor)	
10	VEER	Receiver ground	1
11	VEER	Receiver ground	1
12	RD-	Inverse received data output	
13	RD+	Received data output	
14	VEER	Receiver ground	1
15	VCCR	3.3 V receiver power	1
16	VCCT	3.3 V transmitter power	1
17	VEET	Transmitter ground	1
18	TD+	Transmit data input	
19	TD-	Inverse transmit data input	
20	VEET	Transmitter ground	1

Notes:

1. The ground of the module (operating module ground) and that of the module shell are separate from each other.
2. 4.7–10 kilohm resistor is used on the module to pull the output up to 3.15–3.45 V.

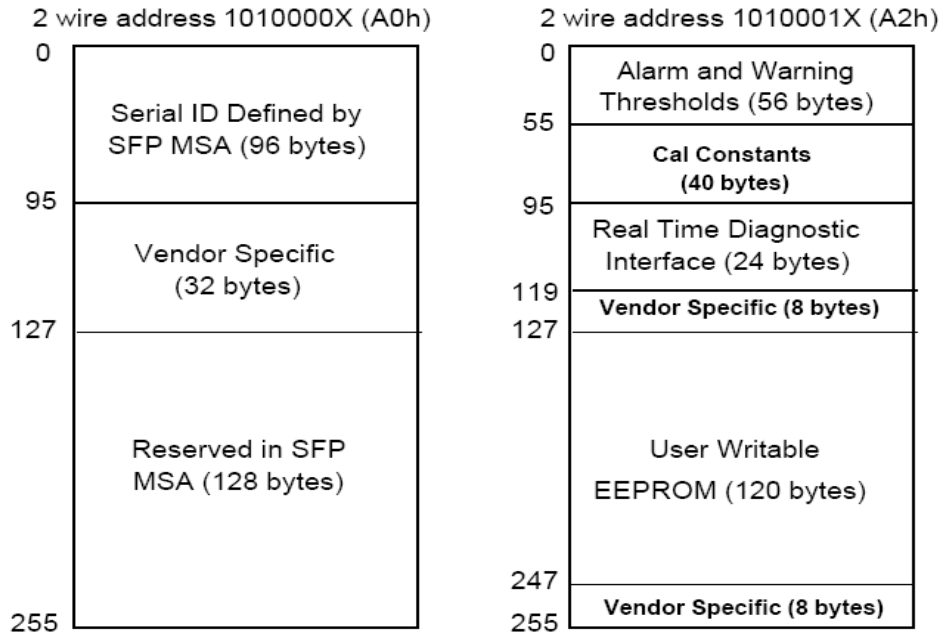
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Recommended Interface Circuit



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7. Digital Diagnostic Memory Map



8. Modification History

Rev.	Comments	Date	Originator	Approval
01	Initial	2023.07.13	Andy Yang	Mike Sun