

TITLE 10G SFP+ ER 1310nm 40km Transceiver	DOC RFD-20251125100-001	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2025.11.25	CLASSIFICATION : Optical Transceiver

1. DESCRIPTION

10G SFP+ ER transceiver Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of four sections: the LD driver, the limiting amplifier, the DFB laser and the PIN photo-detector. The module data link up to 40KM in 9/125um single mode fiber. The optical output can be disabled by a TTL logic high-level input of Tx Disable. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner.

2. PRODUCT FEATURES

- Up to 11.1Gbps Data Links
- Up to 40km transmission on SMF
- DFB Laser and PIN receiver
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP+ footprint
- Specifications compliant with SFF 8472
- Compliant with SFP+ MSA with LC connector
- Single 3.3V power supply
- Power dissipation < 1.2 W
- Operating temperature range: Commercial: 0°C to +70°C

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3. PRODUCT DESCRIPTION

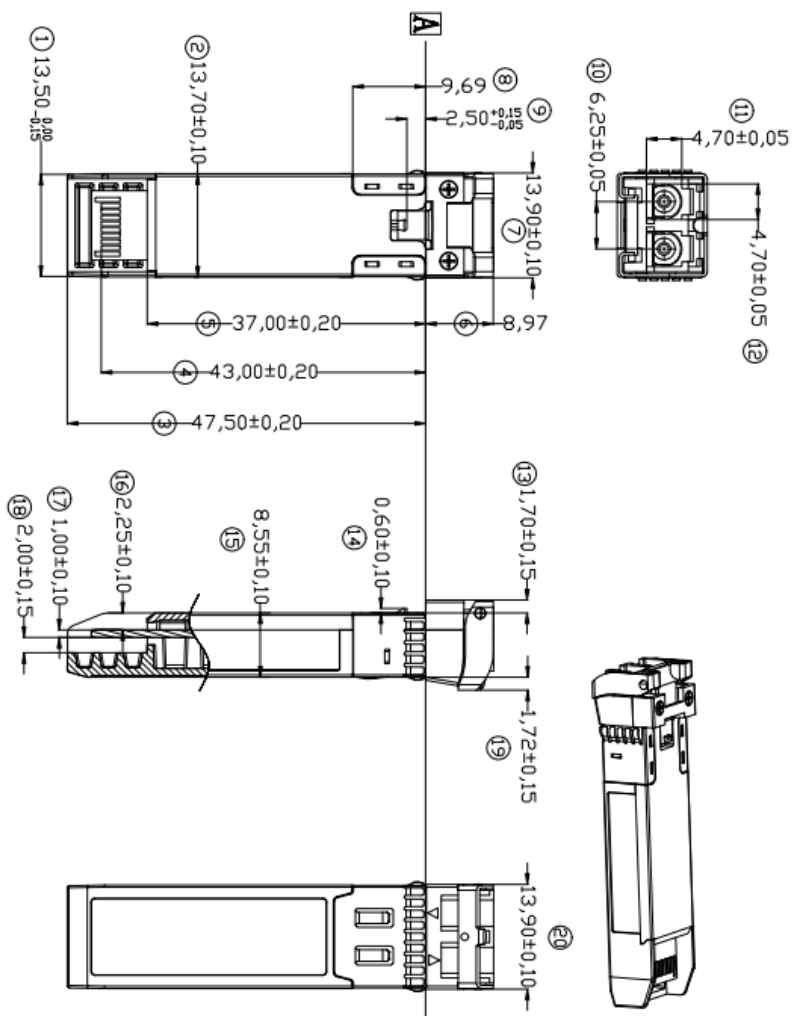
3.1 PRODUCT NAME

10G SFP+ ER 40km 1310nm Transceiver

Data Rate	Wavelength (nm)	Optical Power	Sensitivity	Connector	Temp.
P58**0BRCV40-1	1310nm	-3 ~ 3 dBm	-17 dBm	LC	C
P58**0BRIV40-1	1310nm	-3 ~ 3 dBm	-17 dBm	LC	I

Note-1 : ** Indicates the customer code.

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



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Unit is millimeter. All dimensions are $\pm 0.1\text{mm}$ unless otherwise specified.

4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- Switch to Switch Interface
- 10GBASE-LR/LW & 10G Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings				
Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_s	$^{\circ}\text{C}$	85	$^{\circ}\text{C}$
Relative Humidity	R_H	%	95	%
Power Supply Voltage	V_{CC}	V	4	V
Signal Input Voltage	V_{SI}	V	$V_{CC}+0.3$	V

Recommended Operating Conditions					
Parameter	Symbol	Min.	Type	Max.	Unit
Power Supply Voltage	V_{CC}	3.14	3.3	3.47	V
Power Supply Current	I_{CC}	-		450	mA
Data Rate	BR		10.3125		Gbps
Transmission Distance	TD		40		km
Coupled fiber	Single mode fiber				

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Transmitter Specification Optical/Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit
Average Launched Power	P_o	-3		3	dBm
Average Launched Power (Laser Off)	P_{off}	-	-	-30	dBm
Center Wavelength Range	λ_c	1260	1310	1360	nm
Spectrum Bandwidth(-20dB)	$\Delta\lambda$	-	-	1	nm
Side-Mode Suppression Ratio	SMSR	30	-	-	dB
Transmitter and Dispersion Penalty	TDP			3.2	dB
Extinction Ratio	ER	3.5		-	dB
Output Eye Mask	Compliant with IEEE 802.3ae				
Differential line input Impedance	R_{IN}	85	100	115	Ohm
Differential Data Input Voltage	V_{DT}	100	-	1000	mVp-p
Transmitter Fault Output-High	V_{FaultH}	2	-	$V_{cc}+0.3$	V
Transmitter Fault Output-Low	V_{FaultL}	0	-	0.8	V
Transmitter Disable Voltage- High	V_{DisH}	2	-	$V_{cc}+0.3$	V
Transmitter Disable Voltage- low	V_{DisL}	0	-	0.8	V

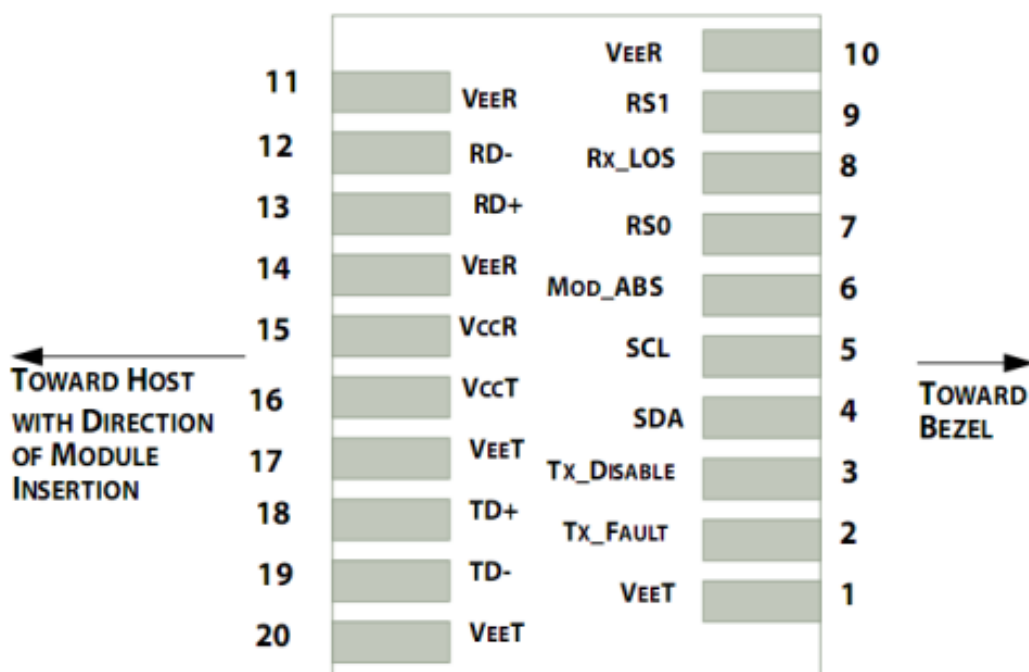
Receiver Optical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input Optical Wavelength	λ_{IN}	1270	-	1610	nm
Receiver Sensitivity	P_{sen}	-	-	-17	dBm
Input Saturation Power (Overload)	P_{SAT}	2.5	-	-	dBm
Los Of Signal Assert	P_A	-30	-	-	dBm
Los Of Signal De-assert	P_D	-	-	-19	dBm

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LOS -Hysteresis	P _{Hys}	0.5	2	6	dB
Differential line Output Impedance	R _{OUT}	80	100	120	Ohm
Differential Data Output Voltage	V _{DR}	300	-	850	mVp-p
Data Output Rise/Fall time	tr/tf		-	38	ps
LOS Output Voltage-High	V _{LOSH}	2	-	V _{cc} +0.3	V
LOS Output Voltage-Low	V _{LOSL}	0	-	0.8	V

6. Applications Note:



Pin Definitions

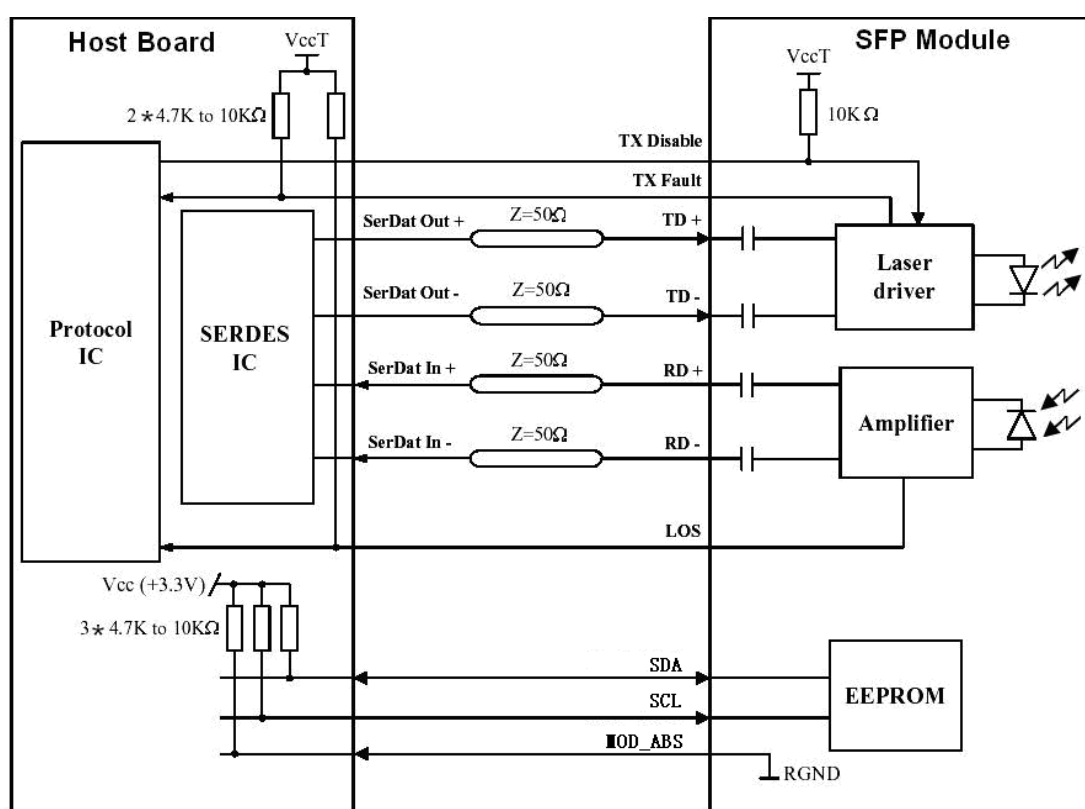
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Pin Assignment

Pin	Symbol	Logic
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)
2	T_{FAULT}	Transmitter Fault.
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.
4	SDA	2-wire Serial Interface Data Line
5	SCL	2-wire Serial Interface Clock Line
6	MOD_ABS	Module Absent. Grounded within the module
7	RS0	Rate Select 0
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.
9	RS1	No connection required
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver Non-inverted DATA out. AC Coupled
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)
15	V_{CCR}	Receiver Power Supply
16	V_{CCT}	Transmitter Power Supply
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.
19	TD-	Transmitter Inverted DATA in. AC Coupled.
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)

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Typical Application Circuit



7. Modification History

Rev.	Comments	Date	Originator	Approval
01	Initial	2025/11/25	Albert Lin	Mike Sun

JPC Connectivity