

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

1. DESCRIPTION

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

They are compliant with SFF-8431,SFF-8432, 10GFC Rev 4.0, and 10GBASE-ER/EW. The transmitter converts serial CML electrical data into serial optical data compliant with the IEEE 802.3ae standard. The receiver converts serial optical data into serial CML 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 11.1Gbps
- 1270nm/1330nm Laser
- High sensitivity APD photo diode and TIA
- LC duplex connector
- Hot plug gable 20pin connector
- Low power consumption <1W
- Temperature range: Tc 0°C to 70°C / Ti -40°C to 85°C
- Single +3.3V±5% power supply
- Digital Monitoring SFF-8472 Rev 10.2 compliant

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

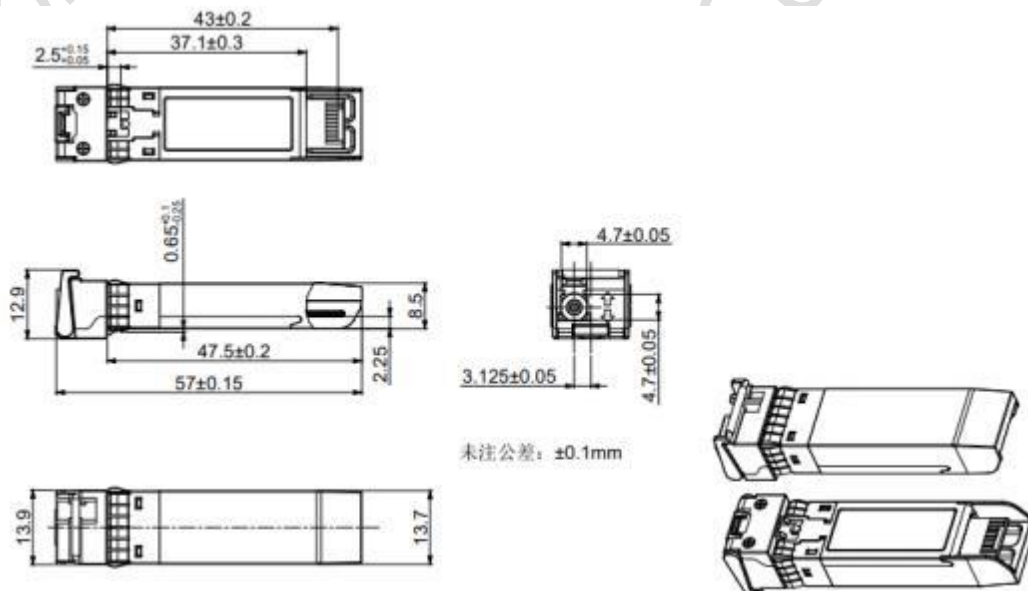
3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME

10G SFP+ Bidi 10km Transceiver

Data Rate	Wavelength (nm)	Optical Power	Sensitivity	Connector	Temp.
10G	1270	-5 ~2 dBm	-14.4 dBm	LC	C
10G	1270	-5 ~2 dBm	-14.4 dBm	LC	I
10G	1330	-5 ~2 dBm	-14.4 dBm	LC	C
10G	1330	-5 ~2 dBm	-14.4 dBm	LC	I

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Unit is millimeter. All dimensions are ±0.1mm unless otherwise specified.

4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- 10GBASE-ER/EW
- 10G Fiber Channel
- SFP+ MSA (SFF-8472)

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

- IEEE802.3ae

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min.	Max.
Storage Temperature Range	Ts	°C	-40	85
Relative Humidity	RH	%	0	95
Maximum Supply Voltage	Vcc3	V	-0.5	3.6

Recommended Operating Conditions

Parameter	Symbol	Min.	Type	Max.	Unit
Operating Case Temperature	TC	0	25	70	°C
Operating Case Temperature	TI	-40	25	85	°C
Bit Rate	BR	-	-	11.3	Gb/s
Bit Error Ratio	BER	-	-	10e-12	
Max. Supported Link Length	LMAX	-	-	10	km
Operating Case Temperature Range	Tc	-40	-	85	°C
Power Supply Voltage	Vcc	3.14	3.3	3.46	V

Note:

1. 10GBASE-ER, 10GBASE-ZW, 1200-SM-LL-L 10GFC.
2. Tested with a 2³¹-1 PRBS.

Transmitter Specification Optical/Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit
Nominal Wavelength	λc	1260	1270	1280	nm
Nominal Wavelength	λc	1320	1330	1340	nm

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

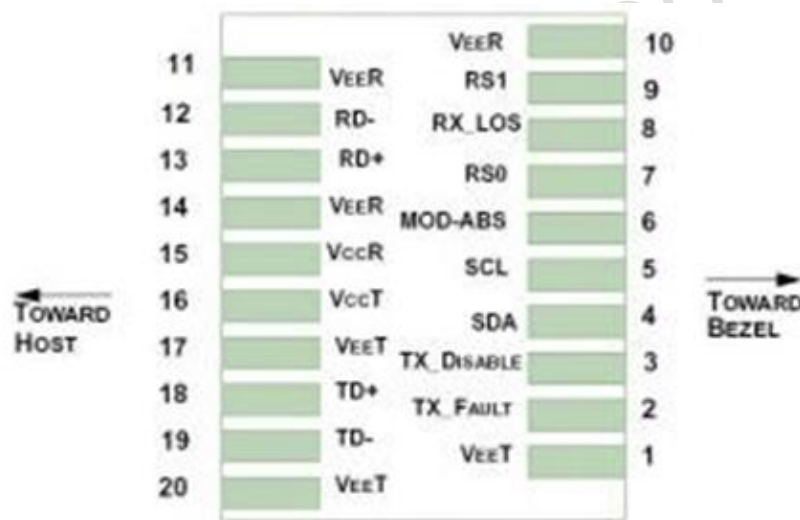
Optical Output Power	Pav	-5	-	2	dBm
Extinction Ratio	ER	3.5	-	-	dB
Average Launch Power of OFF Transmitter	POFF	-	-	-35	dBm
Relative Intensity Noise	RIN	-	-	-128	dB/Hz
Input Differential Impedance	RIN	80	100	120	Ω
Differential Data Input	VIN	180	-	700	mVp-p
Transmit Disable Voltage	VDIS	2	-	VCCHOST	V
Transmit Enable Voltage	VEN	VEE	-	VEE+0.8	V
Transmit Fault Assert Voltage	VFA	2	-	VCCHOST	V
Transmit Fault De-Assert Voltage	VFDA	VEE	-	VEE+0.4	V

Receiver Optical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Center Wavelength	λ_c	1320	1330	1340	nm
Center Wavelength	λ_c	1260	1270	1280	nm
Receiver Sensitivity	RSENSE	-	-	-14.4	dBm
Receiver Overload	-	0.5	-	-	dBm
Optical Return Loss	-	27	-	-	dB
LOS Assert	LOSA	-30	-	-	dBm
LOS De-Assert LOS	LOSD	-	-	-17	dBm
LOS Hysteresis	-	0.5	-	-	dB
Differential Data Output	VOD	300		850	mVp-p
Output Rise Time	tRISE	25			pS
Output Fall Time	tFALL	25			pS
LOS Fault	VLOSFT	2		VCCHOST	V
LOS Normal	VLOSNR	VEE		VEE+0.4	V

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

6. Applications Note:



Pin Definitions

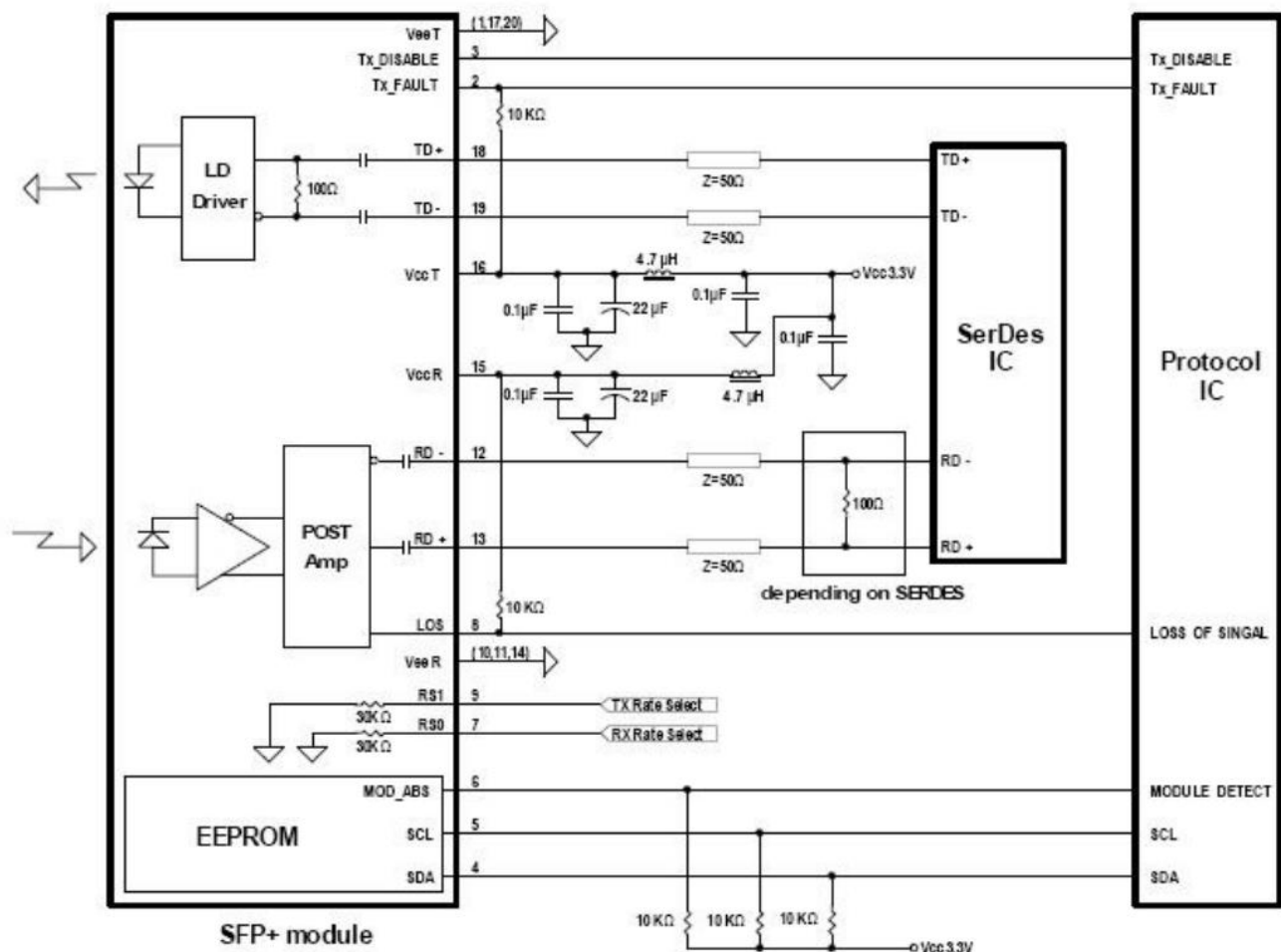
Pin Assignment

Pin	Symbol	Logic
1	VeeT	Transmitter Signal Ground
2	TX Fault	Transmitter Fault Out (OC)
3	TX Disable	Transmitter Disable In (LVTTL)
4	SDA	Module Definition Identifiers
5	SCL	Module Definition Identifiers
6	MOD-ABS	Module Definition Identifiers
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)
8	LOS	Loss of Signal Out (OC)
9	RS1	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)
10	VeeR	Receiver Signal Ground
11	VeeR	Receiver Signal Ground
12	RD-	Receiver Negative DATA Out (CML)
13	RD+	Receiver Positive DATA Out (CML)
14	VeeR	Receiver Signal Ground

TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

15	VccR	Receiver Power Supply
16	VccT	Transmitter Power Supply
17	VeeT	Transmitter Signal Ground
18	TD+	Transmitter Positive DATA In (CML)
19	TD-	Transmitter Negative DATA In (CML)
20	VeeT	Transmitter Signal Ground

Typical Application Circuit



TITLE 10G SFP+ Bidi 10km 1270nm/1330nm Transceiver	DOC No. RFD-20230609006-009	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2023.6.27	CLASSIFICATION : CONFIDENTIAL

7. Modification History

Rev.	Comments	Date	Originator	Approval
01	Initial	2023.06.27	Albert Lin	Mike Sun

JPC Confidential

JPC Confidential

JPC Confidential

JPC Confidential