<table>
<tr><td rowspan="4">TITLE

25G SFP+ Bidi 1310/1270 Transceiver 40km</td><td colspan="2">DOC No. DTRX-200502</td></tr>
<tr><td>REVISION：</td><td>AUTHORIZED BY：</td></tr>
<tr><td>01</td><td>Albert Lin</td></tr>
<tr><td>DATE：
2021.06.17</td><td>CLASSIFICATION：
Optics Transceiver</td></tr>
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1. SCOPE

25G Bidi Transceiver is designed for 25GBASE-LR/LW and 24.33G CPRI applications.

The transceiver consists of two sections: The transmitter section incorporates a DFB laser. And the receiver section consists of an APD photodiode integrated with a TIA. All modules satisfy class I laser safety requirements. Digital diagnostics functions are available via a 2-wire serial interface, as specified in 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.

2. PRODUCT FEATURES

- Electrical and Management interface specifications are compliant with SFF-8431/ SFF-8432/ SFF-8472
- SFP+ MSA package with single LC connector
- Up to 25.78Gb/s bi-directional data links
- Single +3.3V power supply
- Class 1 laser safety certified
- Operating temperature Options: - (Industrial) -40 to +85℃ // (Commercial) 0 to +70℃
- Up to 40km on 9/125µm SMF
- RoHS 6/6 Compliant
- Hot-Pluggable SFP+ cable ends

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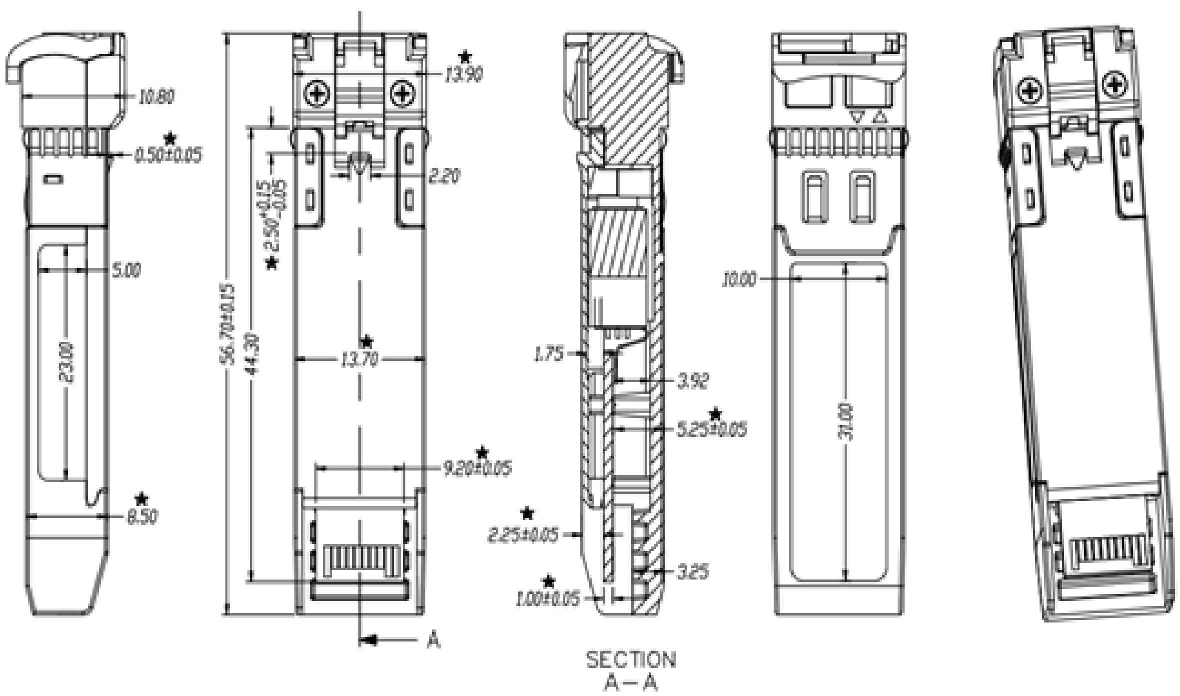
3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)

SFP+ 10G Bidi T1310/R1550 Transceiver

Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Temp.
25G	1270	40 km	SMF	1~5	-18	LC	C
25G	1310	40 km	SMF	1~5	-18	LC	C

3.2 DIMENSIONS,MATERIALS,PLATINGS AND MARKING



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4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- 25GBASE-LR
- Wireless
- 24.33G CPRI

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	℃
Supply Voltage	VCC3	-0.5	4	V
Relative Humidity(Non-condensing)	RH	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature(C-temp)	TC	0	25	70	℃
Operating Case Temperature(E-temp)	TE	-20	25	85	℃
Power Supply Voltage	VCC3	3.1	3.3	3.5	V
	ICC3			600	mA
Transmission Distance			40		Km
Power Dissipation	Po			2	W
Data Rate			24.33	25.78	Gbps

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Transceiver Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Input Differential Impedance	ZIN	-	100	-	Ω	-
Differential Data Input Swing	VIN, P-P	180	-	1000	mVP-P	-
Differential Data Output Swing	VIN, P-P	300	-	850	mVP-P	-
TX_Fault LOS Output Voltage	High	2.0	-	VCCHOST	V	-
	Low	0	-	0.8	V	-
TX_Disable	VIH	2.0	-	VCCHOST	V	-
	VIL	0	-	0.8	V	-

Transmitter Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	λC	1260	1270	1280	dBm	-
Center Wavelength	λC	1300	1310	1320	dBm	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
-20dB Spectral Width	-	-	-	1	nm	
Launch Optical Power	Po	1	-	5	dBm	-
OMA Optical Power	Po	1	-	5	dBm	-
Extinction Ratio	ER	3.5	-	-	dB	-
Pout @TX-Disable Asserted	Poff	-	-	-30	dBm	
Relative Intensity Noise	$RIN12_{OMA}$	-	-	-130	dB/Hz	
Optical Return Loss Tolerance	ORLT	-	-	12	dB	

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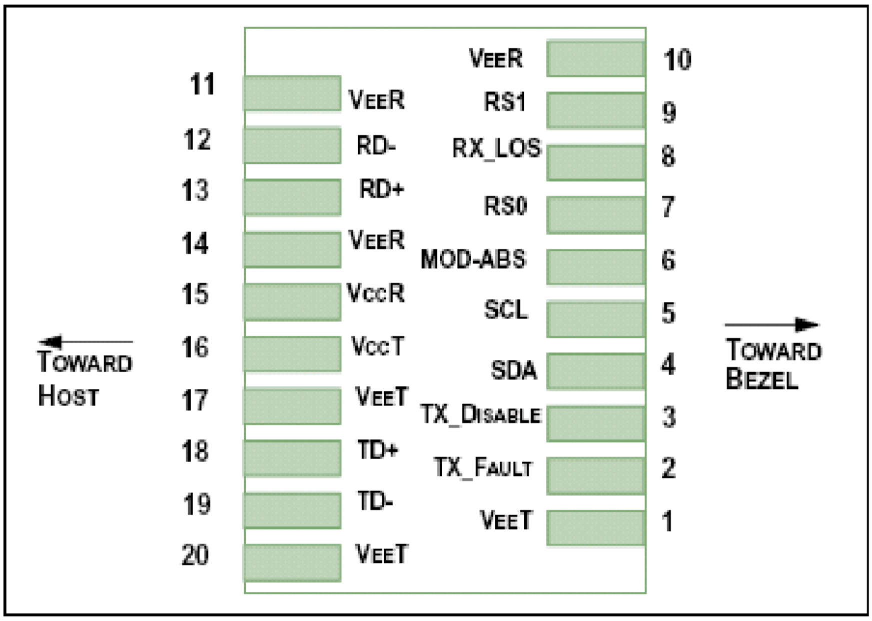
Receiver Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λc	1300	1310	1320	nm	-
Center Wavelength	λc	1260	1270	1280	nm	-
Receiver Sensitivity (Pavg)	S	-	-	-18	dBm	1
LOS De-Assert	LOSD	-	-	-20	dBm	-
LOS Assert	LOSA	-35	-	-	dBm	-
LOS Hysteresis	-	0.5	-	6	dB	-
Receiver Overload(Pavg)	-	-5	-	-	dBm	
Receiver Reflectance	-	-	-	-12	dB	

6. Pin-out Definition:



Pin Definitions

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Pin Assignment

Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Module Transmitter Ground	Note1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	Note2
3	LVTTL-I	TX_Disable	Transmitter Disable; Turns off transmitter laser output	Note3
4	LVTTL-I/O	SDA	Data Line (Same as MOD-DEF2 as defined in the INF-8074i)	Note4
5	LVTTL-I/O	SCL	Clock (Same as MOD-DEF1 as defined in the INF-8074i)	Note4
6		MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	Note5
7	LVTTL-I	RS0	Rate Select 0, optionally controls SFP+ module receiver. When High input data rate GBd and when LOW input data rate 1.25GBd.	Note6
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication (In FC designated as RX_LOS, in SONET designated as LOS, and in Ethernet designated at Signal Detect)	Note2
9	LVTTL-I	RS1	Rate Select 1, optionally controls SFP+ transmitter. When High input data rate 10.3GBd and when LOW input data rate 1.25 GBd.	Note6
10		VeeR	Module Receiver Ground	Note1
11		VeeR	Module Receiver Ground	Note1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Non-Inverted Data Output	
14		VeeR	Module Receiver Ground	Note1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Transmitter 3.3 V Supply	
17		VeeT	Module Transmitter Ground	Note1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	Note1

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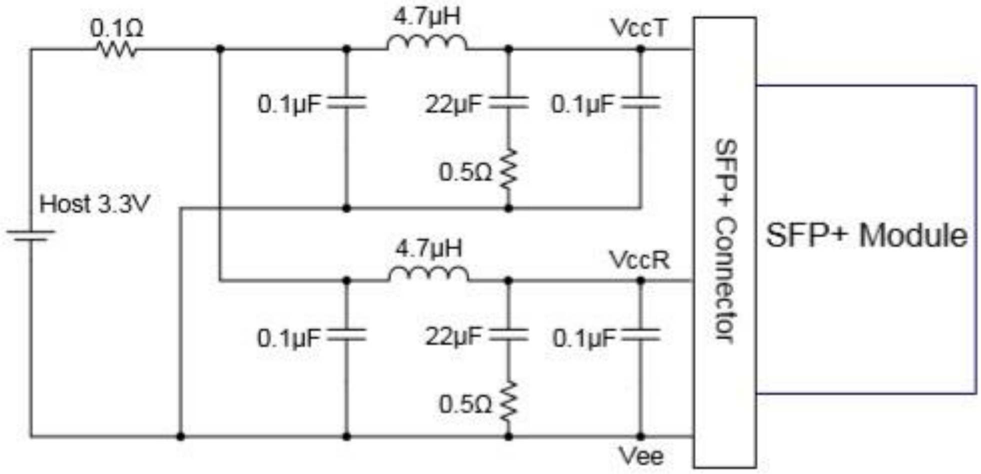
Notes:

1. *The module signal ground pins, VeeR and VeeT, shall be isolated from the module case.*
2. *This pin is an open collector/drain output pin and shall be pulled up with 4.7k-10kohms to Host_Vcc on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module VccT/R + 0.5 V.*
3. *This pin is an open collector/drain input pin and shall be pulled up with 4.7k-10kohms to VccT in the module.*
4. *See sff-8431 4.2 2-wire Electrical Specifications .*
5. *This pin shall be pulled up with 4.7k-10kohms to Host_Vcc on the host board.*
6. *If implementing SFF-8079 pin 7 and 9 are used for AS0 and AS1 respectively.*

Block Power Supply Filter Network



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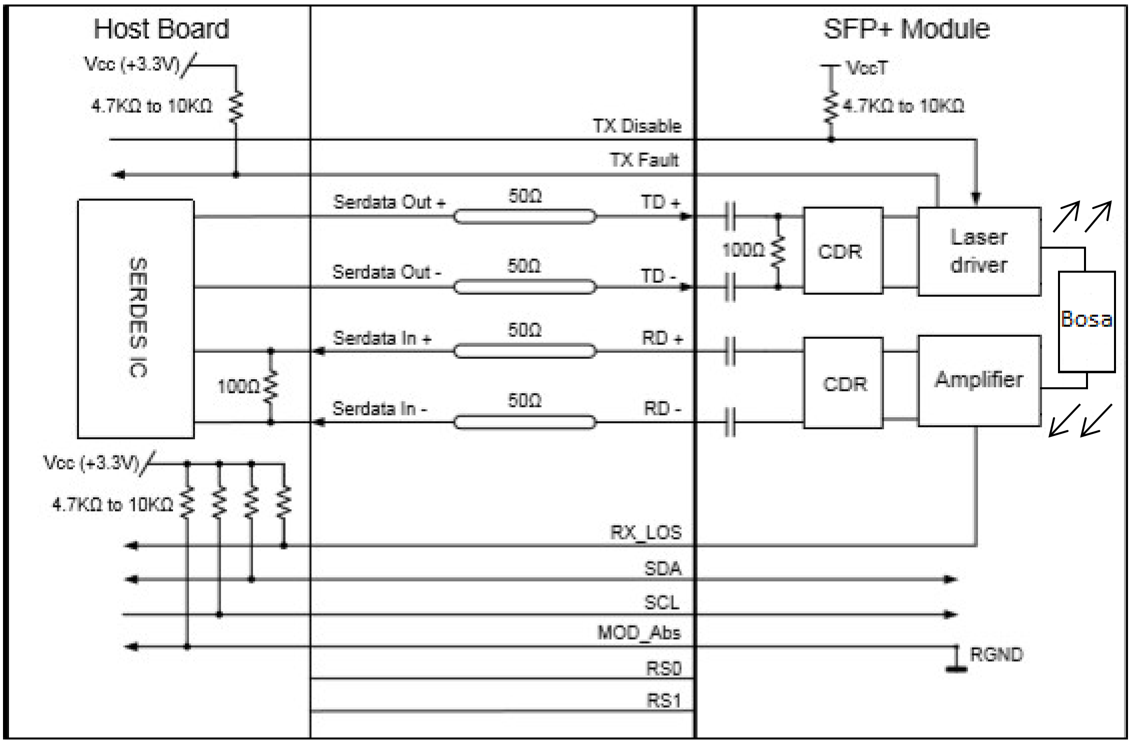
Recommended Interface Circuit



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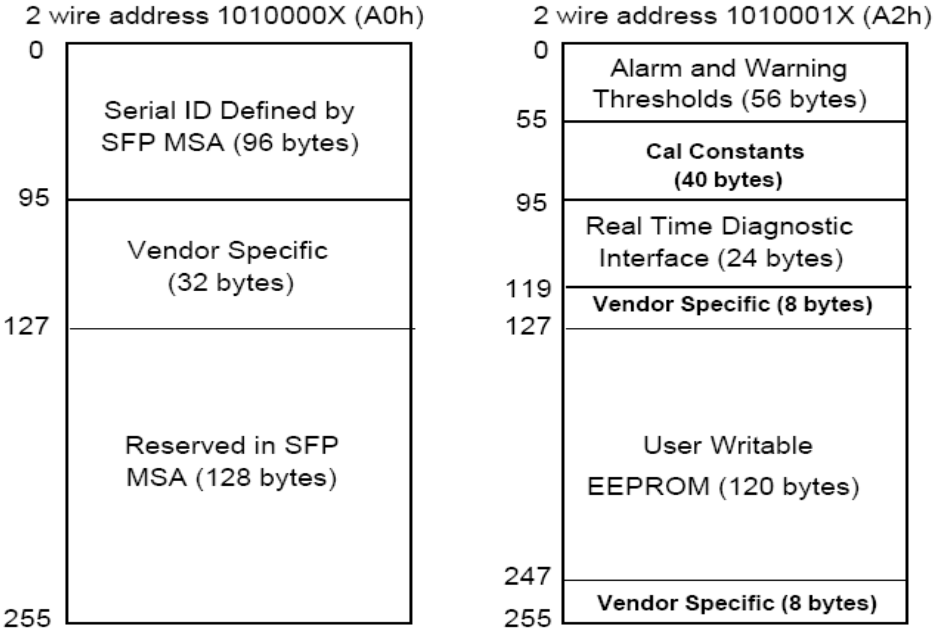
7. Digital Diagnostic Memory Map



9. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2021.06.17	Albert Lin	Mike Sun