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Part No.:	**10G SFP+ BIDI 10KM AB**	
Description:	10G SFP+ Transceiver, BIDI TX1270nm/RX1330nm 10km 10G SFP+ Transceiver, BIDI TX1330nm/RX1270nm 10km	
Release Date	**Rev.**	**Revision Change Description**
2017/06/07	**A0**	New Release
2020/12/28	**A1**	Template Update

Features

- Supports up to 11.3Gbps bit rates
- Hot-pluggable SFP+ footprint
- 1270nm DFB laser and PIN receiver for
- 1330nm DFB laser and PIN receiver for
- Up to 10km for SMF transmission
- Compliant with single LC receptacle
- Compatible with RoHS
- Single +3.3V power supply
- Power dissipation<1.0W
- 2-wire interface with integrated Digital Diagnostic monitoring
- EEPROM with Serial ID Functionality
- Operating case temperature:
- Standard: 0 to+70°C
- Industrial: -40 to +85°C

Application

- 10GBASE-BX at 10.3125 Gb/s
- 10GBASE-BX at 9.953 Gb/s

Standard

- Compliant with SFF-8472
- Compliant with SFP+ MSA
- Compliant to SFF-8431

Specification

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.3	4	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	95	%
Signal Input Voltage		Vcc-0.3	Vcc+0.3	V

Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	0		+70	°C
	Industrial		-40		+85	°C
Power Supply Voltage		Vcc	3.135	3.30	3.465	V
Power Supply Current		Icc		270	350	mA
Data Rate				10.3	11.3	Gbps
Fiber Length 9/125μm core SMF			-	10	-	km

Optical and Electrical Characteristics

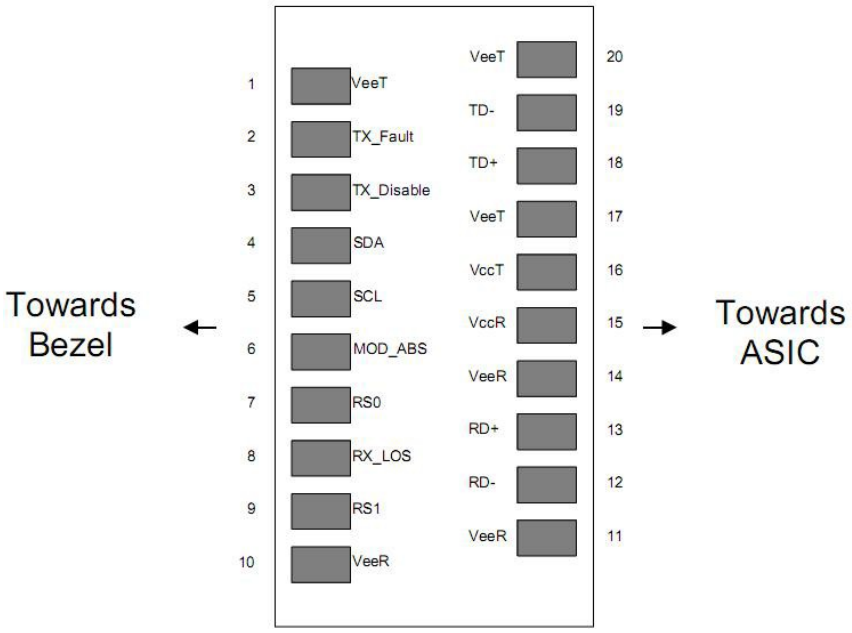
Parameter		Symbol	Min	Typical	Max	Unit	Notes
Transmitter							
Centre Wavelength		λc	1260	1270	1280	nm	
			1320	1330	1340	nm	
Spectral Width（-20dB）		Δλ			1	nm	
Optical Modulation Amplitude		OMA	-3			dBm	
Side-Mode Suppression Ratio		SMSR	30	-		dB	
Average Output Power		P_{out}	-6		0.5	dBm	1
Extinction Ratio		ER	3.5			dB	
Data Input Swing Differential		V_{IN}	180		700	mV	2
Input Differential Impedance		Z_{IN}	85	100	115	Ω	
TX Disable	Disable		2.4		Vcc	V	
	Enable		-0.3		0.8	V	
TX Fault	Fault		2.0		Vcc+0.3	V	
	Normal		-0.3		0.8	V	

Output Eye Diagram	Complies with IEEE802.3z eye masks when filtered					
Receiver						
Centre Wavelength	λc	1320	1330	1340	nm	
		1260	1270	1280	nm	
Receiver Sensitivity				-14.4	dBm	3
Receiver Overload		0.5			dBm	3
LOS De-Assert	LOS_D			-17	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis		0.5		5	dB	
Data Output Swing Differential	V_{out}	300		850	mV	4
Differential line Output Impedance	ROUT	80	100	120	Ohm	
Receiver LOS Pull up Resistor	RLOS	4.7		10	KOhm	
Data Output Rise/Fall time	tr/tf			38	ps	
LOS	Fault	2		VccHost	V	
	Norm	-0.3		+0.4	V	

Notes:

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a $PRBS2^{31}$-1 test pattern @10312Mbps, BER ≤1×10^{-12}.
4. Internally AC-coupled.

Pin Descriptions



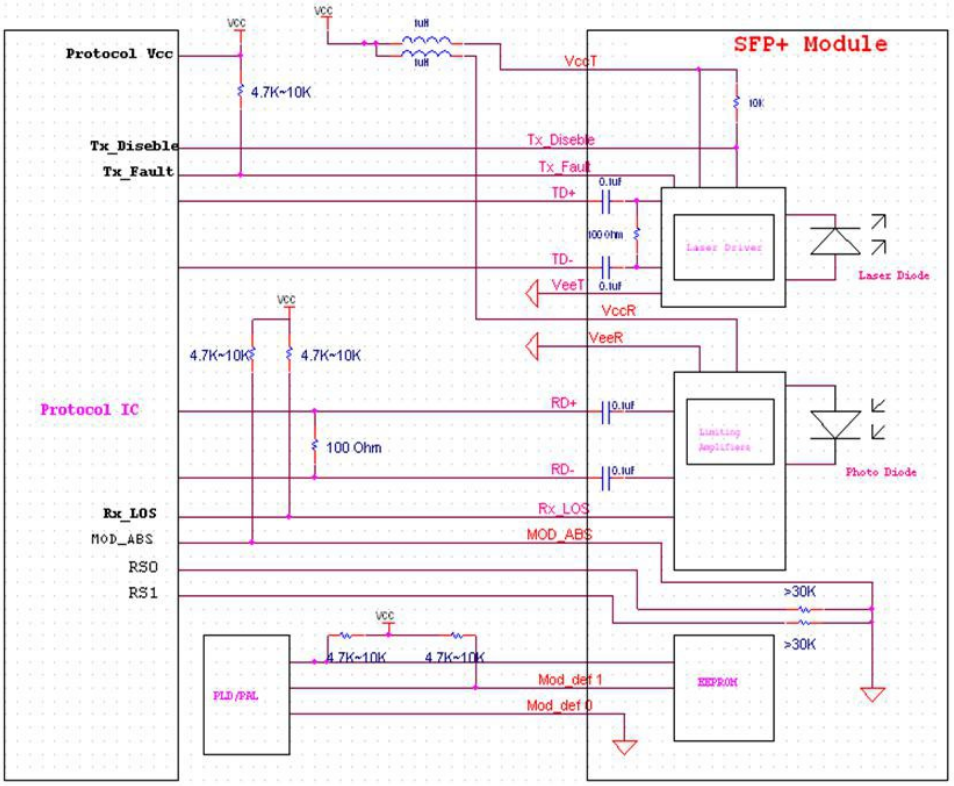
Pin	Signal Name	Description	Plug Seq.	Notes
1	V_{EET}	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	SDA	SDA Serial Data Signal	3	
5	SCL	SCL Serial Clock Signal	3	
6	MOD_ABS	Module Absent. Grounded within the module	3	
7	RS0	Not Connected	3	
8	LOS	Loss of Signal	3	Note 3
9	RS1	Not Connected	3	
10	V_{EER}	Receiver ground	1	
11	V_{EER}	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 4
13	RD+	Received Data Out	3	Note 4
14	V_{EER}	Receiver ground	1	
15	V_{CCR}	Receiver Power Supply	2	
16	V_{CCT}	Transmitter Power Supply	2	
17	V_{EET}	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 5
19	TD-	Inv. Transmit Data In	3	Note 5
20	V_{EET}	Transmitter Ground	1	

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

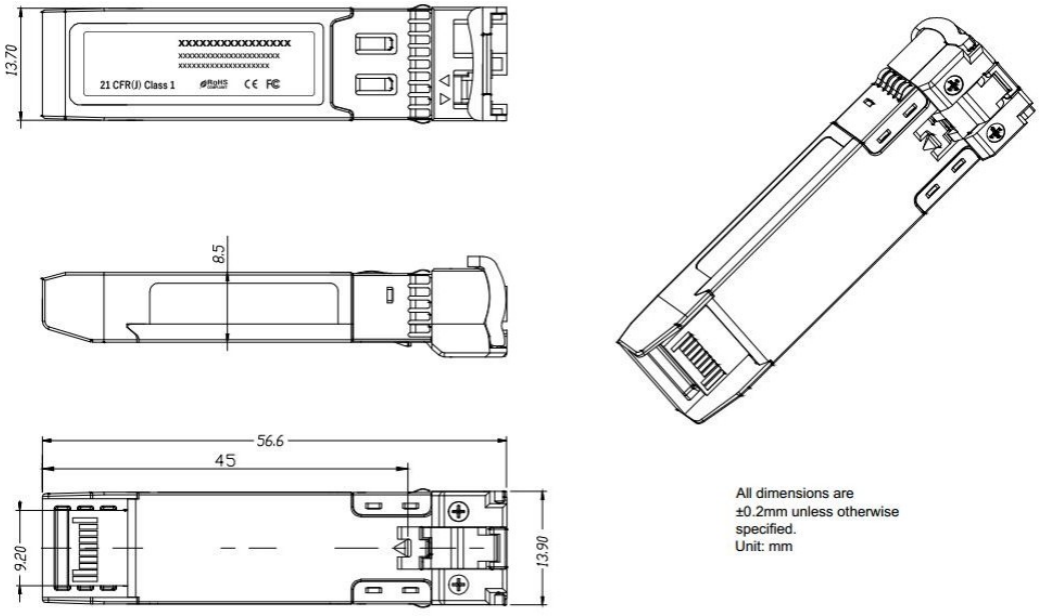
1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
2) Laser output disabled on TDIS >2.0V or open, enabled on TDIS<0.8V.
3) LOS is open collector output Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
4) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.
5) TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

Recommended Interface Circuit



Package Outline

Dimensions are in millimeters. All dimensions are ±0.2mm unless otherwise specified. (Unit: mm)



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product