



**TECHNICAL DATA SHEET
FOR 10GBPS BIDI LC 20KM SFP+
(SFP-10G-BD20)**

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1. Product Features

- Up to 10Gbps data links
- 20km with 9/125μm SMF *1
- WDM TX1270/RX1330nm DFB/PIN laser
- Simplex LC Connector
- Hot-pluggable SFP+ footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS
- Applications



√ 10GBase Ethernet

Part Number	Wave Length Tx/Rx	Distance	Laser	Temperature
SFP-10G-BD20	1270nm/1330nm	20km	DFB/PIN	0~70°C

2. Product Description

The SFP-10G-BD20 is a 10Gbps enhanced small form factor pluggable SFP+ transceiver compatible with 10GBASE Ethernet and 10G Fiber Channel. It is suitable for single-mode fiber (SMF) communications in 10Gbps Ethernet and 10G Fiber Channel by single fiber.

3. Regulatory Compliance

OPT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

4. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	VCC	-0.5	4	V
Operating Case Temperature	TC	0	70	°C

5. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	TC	0		70	°C
Power Supply Voltage	VCC	3.15	3.3	3.45	V
Power Supply Current	ICC			300	mA
Data Rate			10		GBps
Max Link Length on 9/125μm SMF	Lmax			20	km

6. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1260	1270	1280	nm
Spectral Width (RMS)	σ			1	nm
Average Output Power	Pout	-5		5	dBm
Extinction Ratio	ER	3.5			dB
Average Launch Power of Off Transmitter e	Poff			-30	dBm
Receiver					
Centre Wavelength	λ_c	1320	1330	1340	nm
Receiver Sensitivity	PIN			-14	dBm
Receiver Overload	PMAX	3			dBm
LOS De-Assert	LOSD			-19	dBm
LOS Assert	LOSA	-21			dBm
LOS Hysteresis		0.5		4.5	dB

7. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	250		1200	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
Receiver					
Data Output Swing Differential	Vout	250		800	mV
Rx-Los Fault	Vlf	2.0		VccHOST	V
Rx-Los Normal	Vln	0		0+0.8	V
Output rise and fall time	Tr, Tf	30			ps

8. Pin Descriptions

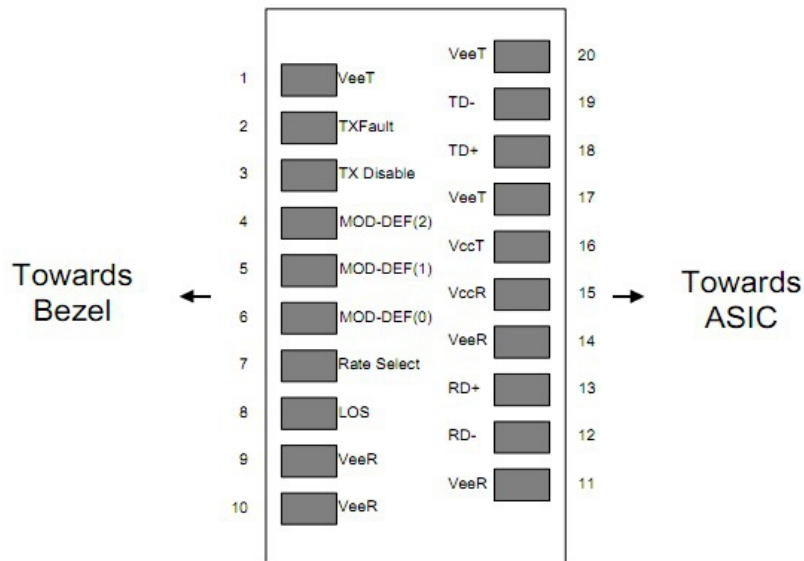


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	7.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	7.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	7.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	7.3
7	RS0	Rate Select0, optionally controls SFP+ module receiver. When high input signaling rate>4.25 GBd and when low input signaling rate<4.25GBd	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	7.4
9	RS1	Rate Select1, optionally controls SFP+ module receiver. When high input signaling rate>4.25 GBd and when low input signaling rate<4.25GBd	
10	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
11	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
12	RD-	Receiver Inverted DATA out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	7.1

Notes:

- Circuit ground is internally isolated from chassis ground.
- Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.

MOD_DEF(0) pulls line low to indicate module is plugged in.

- LOS is open collector output. Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

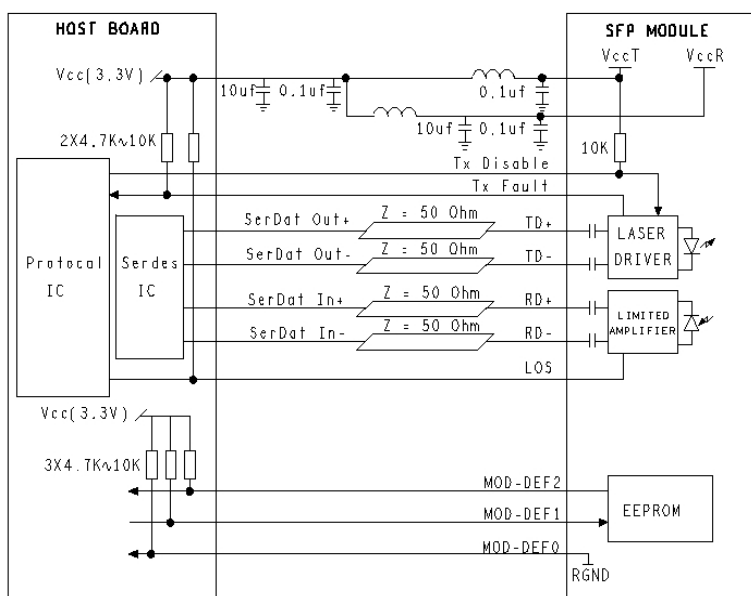
9. Eeprom & Ddm Threshold

2 wire address 1010000X (A0hex)

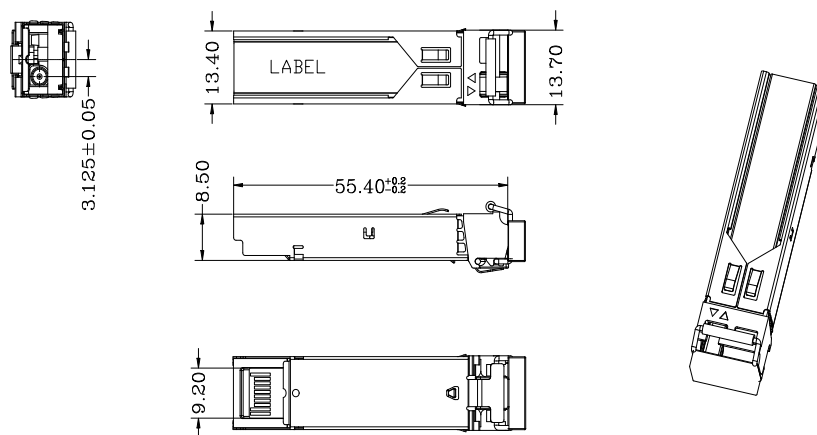
0~95 Serial ID Defined by SFP MSA (96 bytes)
96~127 Vendor Specific (32 bytes)
128~255 Reserved (128 bytes)

	Low Alarm	Low Warn	High Warn	High Alarm
Temp	-5°C	0°C	70°C	75°C
Voltage	3V	3.1V	3.6V	3.7V
Tx Bias	15mA	20mA	75mA	85mA
Tx Power	-8dBm	-7dBm	5dBm	6dBm
Rx Power	-20dBm	-18dBm	0.5dBm	1.5dBm

10. Recommend Circuit



11. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

12. Ordering Information

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
SFP-10G-BD20	10Gbps	yes	1270nm/ 1330nm	SMF	20km	0~70°C	BiDi LC