

SFP-25GB-BX20-D-C

MSA and TAA 25GBase-BX SFP28 Transceiver (SMF, 1330nmTx/1270nmRx, 20km, LC)

Features:

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 25GBase Ethernet
- Access and Enterprise

Product Description

This MSA Compliant SFP-25GB-BX20-D compatible SFP28 transceiver provides 25GBase-BX throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1330nmTx/1270nmRx via an LC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. — made or designated country end products."



Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Absolute Maximum Ratings

Parameter	Symbol	Min.	Тур.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.3		4.0	V
Storage Temperature	TS	-40		85	°C
Operating Case Temperature	Тс	0	25	70	°C
Relative Humidity	RH	5		95	%
Receiver Power	R _{MAX}			-3	dBm
Data Rate	DR		24.33		Gbps
			25.78		

Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter		Symbol	Min.	Тур.	Max.	Unit	Notes
Power Supply	Voltage	Vcc	3.135	3.30	3.465	V	
Module Supp	ly Current	Icc			450	mA	
Power Dissipa	ation	P _D			1500	mW	
Transmitter							
Differential D	ata Input Swing	Vin,p-p	180		700	mVp-p	
Input Differe	ntial Impedance	Zin		100		Ω	
TX_FAULT	Transmitter Fault	VOH	2.0		VCCHOST	V	
	Normal Operation	VOL	0		0.8	V	
TX_DISABLE	Transmitter Disable	VIH	2.0		VCCHOST		
	Transmitter Enable	VIL	0		0.8		
Receiver							
Output Differ	ential Impedance	Zo		100		Ω	
Differential Data Output Swing		Vout,p-p	300		850	mVp-p	1
Data Output	Rise Time, Fall Time	tr, tf			15	ps	2
RX_LOS	Loss of signal (LOS)	VOH	2.0		VCCHOST	V	3
	Normal Operation	VOL	0		0.8	V	3

Notes:

- 1. Internally AC coupled but requires an external 100Ω differential load termination.
- 2. 20-80%.
- 3. LOS is an open collector output. Should be pulled up with $4.7k\Omega$ on the host board.

Optical Characteristics

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Transmitter							
Launch Optical Power	Po	0		+5	dBm	1	
Center Wavelength Range	λς	1320	1330	1340	nm		
Extinction Ratio	EX	3.5			dB	2	
Spectral Width (-20dB)	Δλ			1	nm		
Transmitter and Dispersion Penalty	TDP			4.5	dB		
Side Mode Suppression Ratio	SMSR	30			dB		
Optical Rise/Fall Time @25.78Gb/s	t _r /t _f	15			ps	3	
Optical Return Loss Tolerance	ORLT			12	dB		
Pout @TX-Disable Asserted	P _{off}			-30	dBm	1	
Receiver							
Center Wavelength	λc	1260	1270	1280	nm		
Receiver OMA Sensitivity	RxSENS1			-12	dBm	4	
Receiver OMA Sensitivity	RxSENS2			-8	dBm	5	
Receiver Overload (Pavg)	P _{OL}	-3			dBm		
Optical Return Loss	ORL	26			dB		
LOS De-Assert	LOS _D			-19	dBm		
LOS Assert	LOS _A	-35			dBm		
LOS Hysteresis		0.5			dB		

Notes:

- 1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
- 2. 20dB spectral width.
- 3. Unfiltered, 20-80%.
- 4. Measured with PRBS 2³¹-1 at 5×10⁻⁵ BER.
- 5. Measured with PRBS 2^{31} -1 at 1×10^{-12} BER.

General Specifications

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Data Rate	BR		25.78		Gb/s	
Bit Error Rate	BER			5×10 ⁻⁵		1
Supported Link Length on 9/125um SMF, 25.78Gb/s	L		20		km	2

Notes:

- 1. Tested with a PRBS 2^{31} -1 test pattern for 25.78Gb/s operation.
- 2. Distances are based on FC-PI-6 Rev. 3.1 and IEEE 802.3 standards, with FEC.

Pin Descriptions

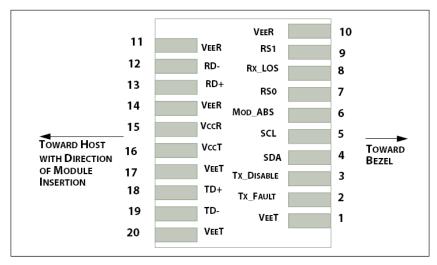
Pin	Symbol	Name/Descriptions	Notes
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault (LVTTL-O) - High indicates a fault condition	2
3	TX_Disable	Transmitter Disable (LVTTL-I) – High or open disables the transmitter	3
4	SDA	Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2)	4
5	SCL	Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1)	4
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module	5
7	RS0	NA	6
8	RX_LOS	Receiver Loss of Signal (LVTTL-O)	2
9	RS1	NA	6
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O)	
13	RD+	Received Data out (CML-O)	
14	VeeR	Receiver Ground	
15	VccR	Receiver Power - +3.3V	
16	VccT	Transmitter Power - +3.3 V	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Data In (CML-I)	
19	TD-	Inverse Transmitter Data In (CML-I)	
20	VeeT	Transmitter Ground	1

Notes:

- 1. The module signal grounds are isolated from the module case.
- 2. This is an open collector/drain output that on the host board requires a $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccHost.

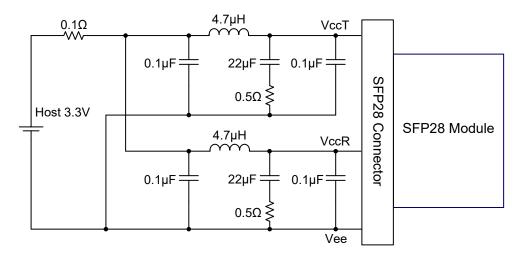
- 3. This input is internally biased high with a $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccT.
- 4. Two-Wire Serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
- 5. This is a ground return that on the host board requires a $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccHost.
- 6. Rate select can also be set through the 2-wire bus in accordance with SFF-8472 v. 12.1, Rx Rate Select is set at Bit 3, Byte 110, Address A2h. Tx Rate Select is set at Bit 3, Byte 118, Address A2h.

Note: writing a "1" selects maximum bandwidth operation. Rate select is the logic OR of the input state of Rate Select Pin and 2-wire bus.

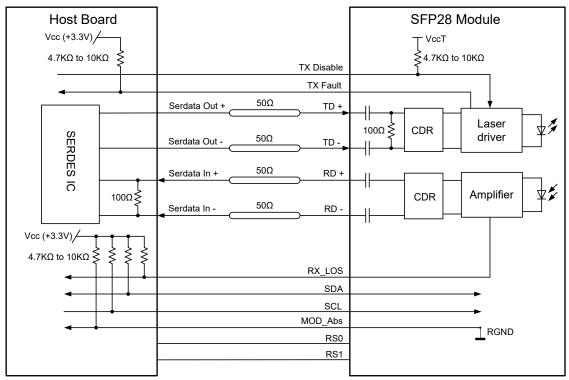


Pin-out of connector Block on Host board

Recommended Host Board Power Supply Filter Network

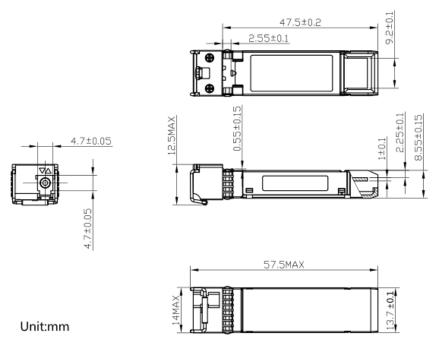


Recommended Application Interface Block Diagram



Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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