

25GBASE-BX SFP28 1270nmTX/1330nmRX 10km DOM Transceiver

25G-SFP28-BXD-LL



Application

- 25GE LR
- eCPRI & CPRI

Features

- Hot-pluggable SFP28 footprint
- UP to 25.78Gb/s bi-directional data links
- Simplex LC connector
- Up to 10km on 9/125m SMF
- 1271nm DFB laser transmitter for -2733
- 1331nm DFB laser transmitter for -3327
- Single 3.3V Power Supply
- Operating temperature: Commercial: 0~ 70° C
- RoHS compliant
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers

Description

Longline's SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 10 km link length. They are compliant SFF-8472, and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

Product Specifications

I. General Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transmitter						
Center Wavelength	λ_t	1265	1271	1277	nm	
		1325	1331	1337	nm	
spectral width(-20dB)	$\Delta\lambda$			1	nm	
Average Optical Power	P_{avg}	-5.0		+2.0	dBm	1
Laser Off Power	P_{off}			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				-12	dB	
Receiver						
Center Wavelength	λ_r	1325	1331	1337	nm	
		1265	1271	1277	nm	
Receiver Sensitivity	S_{en}			-9	dBm	2
Los Assert	LOS_A	-30			dBm	
Los Dessert	LOS_D			-16	dBm	
Los Hysteresis	LOS_H	0.5			dB	
Overload		2			dBm	

Notes:

1. Average power figures are informative only, per IEEE802.3cc.

2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER = 5×10^{-5} .

II. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Maximum Supply Voltage	V _{CC}	0		3.6	V	
Storage Temperature	T _S	-40		85	° C	
Case Operating Temperature	T _A	0		70	° C	Commercial
Relative Humidity	RH	0		85	%	1

Notes:

1. Non-condensing.

III. Electrical Characteristics (VCC = 3.14 to 3.46 Volts)

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Supply Voltage	V _{CC}	3.14		3.46	V	
Supply Current	I _{CC}			300	mA	Commercial
				360	mA	Extended
				360	mA	Industrial
Power Consumption	P			1	W	Commercial
				1.2	W	Extended
				1.2	W	Industrial
Data Rate	R	24.3		26.5	Gb/s	
Fiber Length	L			10	KM	

Transmitter (Tx)

Input Differential Impedance	R _{in}		100		Ω	1
Differential Data Input Swing	V _{in,pp}	180		450	mV	2
Transmit Disable Voltage	V _D	2		V _{CC}	V	3
Transmit Enable Voltage	V _{EN}	V _{EE}		V _{EE} + 0.8	V	

Receiver (Rx)

Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	V _o	180		450	mV	
LOS asserted	V _{LOS fault}	2		V _{CCHOST}	V	4
LOS de-asserted	V _{LOS norm}	V _{ee}		V _{ee} +0.8	V	4

Notes:

- 1.Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
- 2.Per SFF-8431 Rev 3.0
- 3.Into 100 ohms differential termination.
- 4.LOS is an open collector output. Should be pulled up with 4.7kΩ – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

IV. Optical Characteristics (VCC = 3.14 to 3.46 V)

Parameter	Symbol	Min	Typ.	Max	Unit	Note
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Transmitter (Tx)

Center Wavelength	λ_t	1265	1271	1277	nm	
		1325	1331	1337	nm	
Average Launch Power	P _{AVE}	-2		4	dBm	1
Spectral Width(-20dB)	$\Delta\lambda$			1	nm	
Laser Off Power	P _{off}			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				-12	dB	

Receiver (Rx)

Center Wavelength	λ_r	1325	1331	1337	nm	
		1265	1271	1277	nm	
Receiver Sensitivity	Sen			-13	dBm	2
Overload		2			dBm	
LOS De-Assert	LOS _A			-14	dBm	

LOS Assert	LOS _A	-30	-23		dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Average Power figures are informative only, per IEEE802.3cc.

2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER = 5×10^{-5} .

V. Digital Diagnostic Specifications

Parameter	Symbol	Units	Min	Max	Accuracy	Note
Transceiver Temperature	T		0	+70	± 5 °C	Commercial
Transceiver Supply Voltage	DD _{Voltage}	V	3.15	3.15	± 3%	
Transmitter Bias Current	DD _{Bias}	mA	0	35	± 10%	
Transmitter Output Power	DD _{Tx-Power}	dBm	-5	+5	± 3dB	
Receiver Average Optical Input Power	DD _{Rx-Power}	dBm	-16	-3	± 3dB	

VI. Timing Characteristics

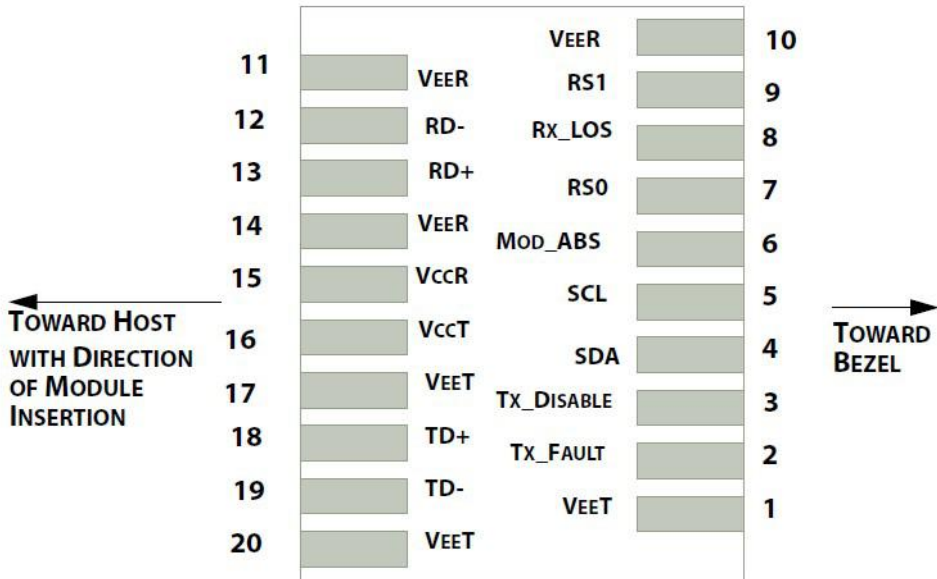
Parameter	Symbol	Min	Typ.	Max	Unit
TX_Disable Assert Time	t _{off}			100	us
TX_Disable Negate Time	t _{on}			2	ms
Time to Initialize 2-wire interface	t _{2w_start_up}			300	ms
Time to Initialize	t _{start_up}			300	ms
Time to Initialize cooled module and time to power up a cooled module to Power level II	t _{start_up_cooled}			90	s
Time to Power Up to Level II	t _{power_level2}			300	ms
Time to Power Down from Level II	t _{power_down}			300	ms
Tx_Fault assert	Tx_Fault_on			1	ms
Tx_Fault assert for cooled module	Tx_Fault_on_cooled			50	ms
TX_FAULT Reset	t _{reset}	10			us
Rx_LOS assert delay	t _{los_on}			100	us
Rx_LOS negate delay	t _{los_off}			100	us

VII. Pin Description

Pin	Name	Function	Notes
1	V _{EET}	Module transmitter ground	1
2	Fault	Module transmitter Fault	2
3	Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2 wire serial interface data input/output (SDA)	4
5	SCL	2 wire serial interface clock input (SCL)	4
6	MOD_ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate select0: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	
10	V _{EER}	Module receiver ground	1
11	V _{EER}	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	V _{EER}	Module receiver ground	1
15	V _{CCR}	Module receiver 3.3V supply	
16	V _{CCT}	Module transmitter 3.3V supply	
17	V _{EET}	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	V _{EET}	Module transmitter ground	1

Notes:

1. The module ground pins 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.
3. This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
4. 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.



VIII. Mechanical Specifications

