

## LS-BL332725-20E

### 25.78Gbps SFP28 LC BIDI 20km Transceiver

#### Product Feature

- UP to 25.78Gb/s bi-directional data links
- Hot-Pluggable SFP28 footprint
- 1270nm DFB Laser and 1330nm PIN receiver for LS-BL273325-20C
- 1330nm DFB Laser and 1270nm PIN receiver for LS-BL332725-20C
- BIDI LC connector
- DFB laser transmitter
- Up to 10km on 9/125m SMF
- Power Supply :+3.3V
- RoHS compliant
- 2-wire interface for management specifications compliant with SFF8472 digital diagnostic monitoring interface for optical transceivers
- Case operating temperature:  
Commercial: 0°C to +70°C  
Expanded: -20°C to +85°C  
Industrial: -40°C to +85°C

#### Applications

- 25G Ethernet
- Data center

#### Standard

- Compliant to SFP28 MSA
- Compliant with IEEE 802.3cc
- Compliant with SFF-8432, SFF-8472
- RoHS complaint



## Product Description

The SFP28 BIDI optical Transceiver integrates receiver and transmitter path on one module. In the transmit side, one of serial data streams are recovered, retimed, and passed to laser driver. In the receive side, the optical data streams is recovered by a PIN and trans-impedance amplifier, retimed. This module features a hot-pluggable electrical interface, low power consumption.

The product is designed with form factor, optical/electrical connection and digital diagnostic interface according to the SFP28 and compliant to IEEE 802.3cc.

## Product Selection

Part Number	Operating Case temperature	DDMI
LS-BL273325-20C	Commercial(0~70°C)	Yes
LS-BL273325-20E	Expanded(-20~85°C)	Yes
LS-BL273325-20I	Industrial(-40~85°C)	Yes

## Pin Assignment

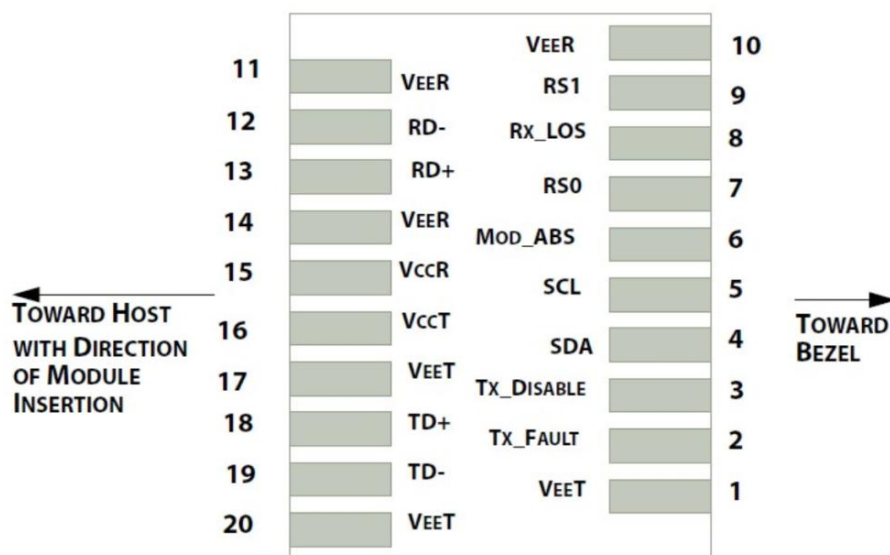


Diagram of Host Board Connector Block Pin Numbers and Names

## Pin Descriptions

Pin	Symbol	Name/Description	NOTE
1	VEET	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	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	VeeT	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.

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-50		+95	°C	
Relative Humidity	RH	0		95	%	
Power Supply Voltage	Vcc	0		+3.6	V	

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	T <sub>A</sub>	0		70	°C	Commercial
		-20		85	°C	Expanded
		-40		85	°C	Industrial
Power Supply Voltage	Vcc	3.15	3.3	3.46	V	
Power Supply Current	Icc			450	mA	
Power Consumption	P			1.5	W	
Data Rate	BR	24.3	25.78	26.5	Gbps	
9/125um G.652 SMF	Lmax			20	km	

### Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
<b>Transmitter</b>						
Tx Disable Input-High	VDISH	2		Vcc+0.3	V	
Tx Disable Input-Low	VDISL	0		Vee+0.8	V	
Tx Fault Input-High	VTxFH	2		Vcc+0.3	V	
Tx Fault Input-Low	VTxFL	0		Vee+0.8	V	
<b>Receiver</b>						
LOSS -High	V <sub>LOSH</sub>	2		Vcc+0.3	V	
LOSS -Low	V <sub>LOSL</sub>	0		Vee+0.8	V	

**Optical Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
<b>Transmitter</b>						
Average Output Power	POUT	0		6	dBm	1
Transmit OMA per Lane	TxOMA	-2		7	dBm	
Extinction Ratio	ER	3.5			dB	
Center Wavelength	$\lambda_c$	1260	1270	1280	nm	LS-BL273325-20C
		1320	1330	1340	nm	LS-BL332725-20C
Spectral Width (RMS)@25Gb/s	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Spectrum Bandwidth(-20dB)	$\sigma$			1	nm	
Transmitter OFF Output Power	Poff			-45	dBm	
Transmitter and Dispersion Penalty	TDP			3.2	dB	
Transmitter Eye mask definition {X1,X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}				1,2
<b>Receiver</b>						
Receiver Sensitivity	SENS			-14	dBm	3
Receiver Overload	RMAX	2			dBm	
Input Optical Wavelength	$\lambda_C$	1320	1330	1340	nm	LS-BL273325-20C
		1260	1270	1280	nm	LS-BL332725-20C
Receiver Reflectance				-26	dB	
LOS De-assert	LOSD			-15	dBm	
LOS Assert	LOSA	-30			dBm	3
LOS Hysteresis	LOSH	0.5			dB	

Note:

- 1.Average power figures are informative only, per IEEE802.3cc.
- 2.Transmitter hit Ratio 5E-5 hits/sample.
- 3.OMA receiver sensitivity is informative. Shall be measured with conformance test signal for . BER =5E<sup>-5</sup> .

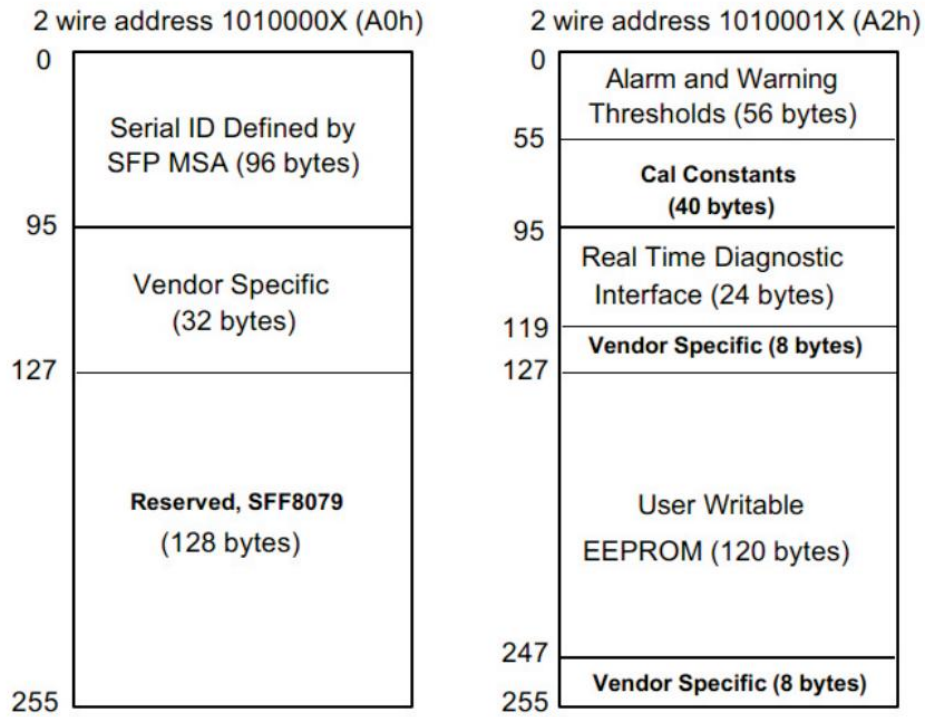
## Digital Diagnostic Monitoring Interface

Five transceiver parameter values are monitored. The following table defines the monitored parameter's accuracy.

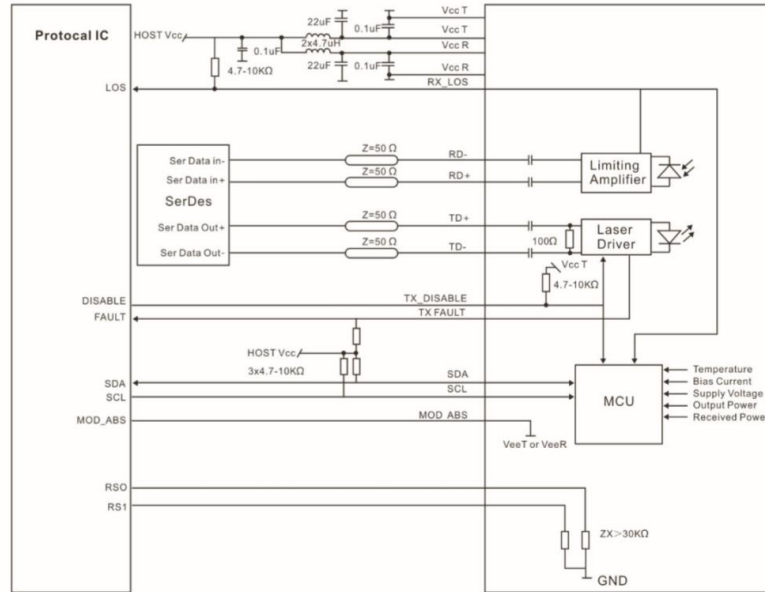
Parameter	Range	Accuracy	Calibration
Temperature	0 to +70°C (C)	±3°C	Internal
	-20 to +85°C (E)		
	-40 to +85°C (I)		
Voltage	3.13 to 3.47V	±5%	Internal
Bias Current	0 to 100mA	±10%	Internal
TX Power	-1 to +7dBm	±3dBm	Internal
RX Power	-15 to +3dBm	±3dBm	Internal

## EEPROM Information

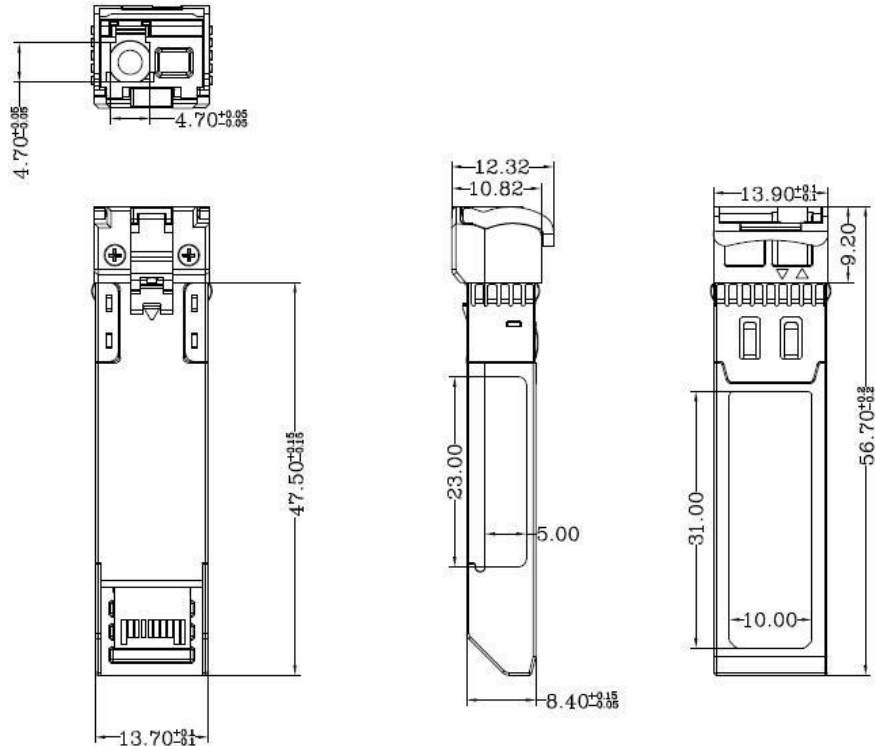
EEPROM memory map specific data field description is as below:



## Recommend Circuit Schematic



## Mechanical Specifications



**Ordering information**

Part. No	Specifications						
	Pack	Rate(Gb/s)	Tx(nm)	Rx	Temp(°C)	Reach(km)	Others
LS-BL273325-20I	SFP28	25.78	1270nm DML	PIN	-40~+85	20	RoHS
LS-BL332725-20I	SFP28	25.78	1330nm DML	PIN	-40~+85	20	RoHS
LS-BL273325-20E	SFP28	25.78	1270nm DML	PIN	-20~+85	20	RoHS
LS-BL332725-20E	SFP28	25.78	1330nm DML	PIN	-20~+85	20	RoHS
LS-BL273325-20C	SFP28	25.78	1270nm DML	PIN	0~70	20	RoHS
LS-BL332725-20C	SFP28	25.78	1330nm DML	PIN	0~70	20	RoHS