

SFP-25BL71-40C

25Gb/s SFP28 Tx1270nm/Rx1310nm BIDI 40km Transceiver

Features

- Up to 25.78Gbps Data Links
- Up to 40km transmission on SMF
- Tx1270nm/Rx1310nm DFB Laser and APD receiver
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP28 footprint
- Specifications compliant with SFF 8472
- Compliant with SFF-8402 with LC connector
- Single 3.3V power supply
- Power dissipation < 1.5 W
- Case operating temperature
 - Commercial: 0° C to +70° C
 - Industrial: -40° C to +85° C

Applications

- 25GBASE-ER
- ECPRI and CPRI
- Compliant with SFF-8472 & 8431
- RoHS Compliant.

Absolute Maximum Ratings

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T _s	-40	-	85	°C	
Relative Humidity	R _H	5	-	95	%	
Power Supply Voltage	V _{CC}	-0.3	-	4	V	
Signal Input Voltage	V _{SI}	V _{CC} -0.3	-	V _{CC} +0.3	V	
Rx Damage Threshold	PR _{dmg}	-3			dBm	

Recommended Operating Environment

Table 2 - Recommended Operating Environment

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	T _{case}	0	-	70	°C	SFP-25BL71-40CC
		-40		85	°C	SFP-25BL71-40CI
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V	
Power Supply Current	I _{CC}	-		420	mA	Commercial
		-		450	mA	Industrial
Data Rate	BR		25.78		Gbps	TX Rate/RX Rate
Transmission Distance	TD			40	km	
Coupled fiber	Single mode fiber					9/125um SMF

Optical and Electrical Characteristics

SFP-25BL71-40C: (DFB and APD, 40km Reach)

Table 3 - Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Average Launched Power	P_o	0		6	dBm	
Average Launched Power(Laser Off)	P_{off}	-	-	-30	dBm	
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength Range	λ_c	1260		1280	nm	1270Tx/1310Rx
Spectrum Bandwidth(-20dB)	$\Delta\lambda$	-		1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	1
Output Eye Mask		{0.31,0.4,0.45,0.34,0.38,0.4}				
Receiver						
Center Wavelength Range	λ_c	1300		1320	nm	1270Tx/1310Rx
Input Saturation Power (Overload)		-6			dBm	
Receiver Sensitivity (Average power)	P_{sen}	-	-	- 17.5	dBm	2
Los Of Signal Assert	P_A	-35	-	-	dBm	
Los Of Signal De-assert	P_D	-	-	- 19	dBm	
LOS -Hysteresis	P_{Hys}	0.5		6	dB	

Note:

1: Measured with a PRBS 231- 1 test pattern, @25.78Gb/s.

2: Measured with Light source 1270nm/1310nm ER=3.5dB; BER =<5X10-5 @PRBS=231- 1 NRZ. Temp=25 °C

Electrical Interface Characteristics

Table 3- Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Input differential impedance	R _{in}		100		Ω	1
Single ended data input swing	V _{in,pp}	180		700	mV	
Transmitter Fault Output-High	V _{FaultH}	2	-	V _{cc} +0.3	V	
Transmitter Fault Output-Low	V _{FaultL}	0	-	0.8	V	
Transmitter Disable Voltage- High	V _{DisH}	2	-	V _{cc} +0.3	V	
Transmitter Disable Voltage- low	V _{DisL}	0	-	0.8	V	
Receiver						
Differential data output swing	V _{out,pp}	300		850	mV	2
LOS Output Voltage-High	V _{LOSH}	2	-	V _{cc} +0.3	V	
LOS Output Voltage-Low	V _{LOSL}	0	-	0.8	V	

Notes:

- 1.Connected directly to TX data input pins. AC coupled thereafter.
2. Into 100 ohms differential termination.

Pin Assignment

Pin Diagram

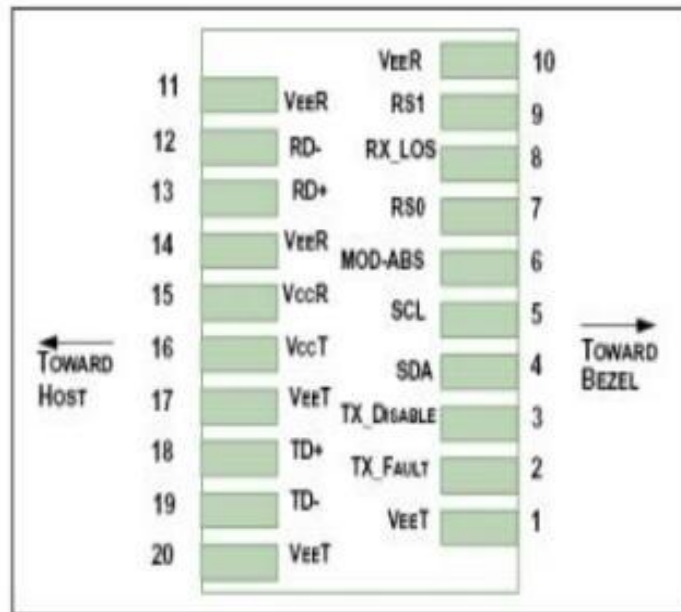


Diagram of Host Board Connector Block Pin Numbers and Name

Pin Descriptions

Table 6- Pin Descriptions

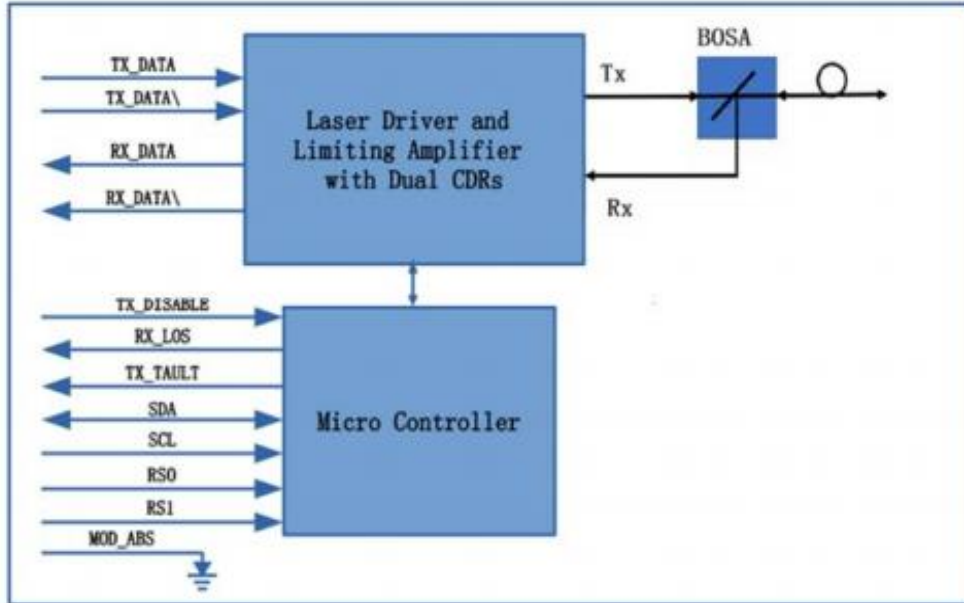
Pin	Symbol	Name/Description	NOTE
1	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T _{FAULT}	Transmitter Fault.	2
3	T _{DIS}	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0, internal pull down	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	Rate Select 1, internal pull down	5
10	V _{EE R}	Receiver Ground (Common with Transmitter Ground)	1

11	V _{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V _{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V _{CCR}	Receiver Power Supply	
16	V _{CCT}	Transmitter Power Supply	
17	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1

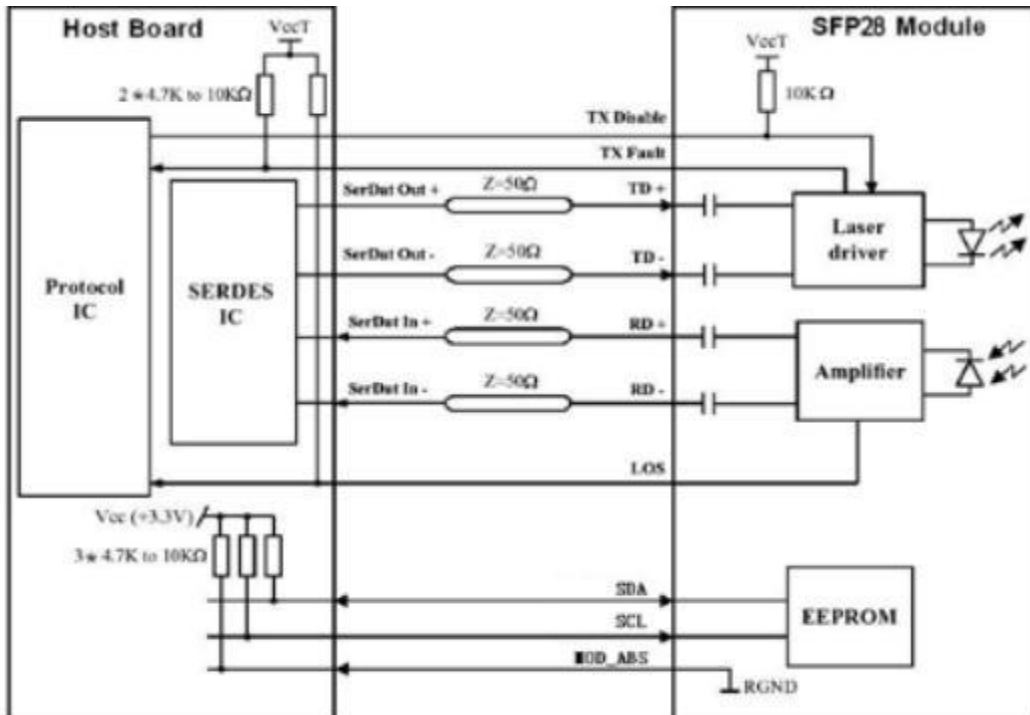
Notes:

1. Circuit ground is internally isolated from chassis ground.
2. TFAULT is an open collector/drain output, which should be pulled up with a 4.7k - 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on TDIS>2.0V or open, enabled on TDIS<0.8V.
4. Should be pulled up with 4.7k Ω - 10k Ω host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. Rate select can also be set through the 2-wire bus in accordance with SFF-8472. Rx Rate Select is set at Bit 3, Byte 110, Address A2h. Tx Rate Select is set at Bit 3, Byte 118, Address A2h.
6. LOS is open collector output. It should be pulled up with 4.7k Ω - 10k Ω on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

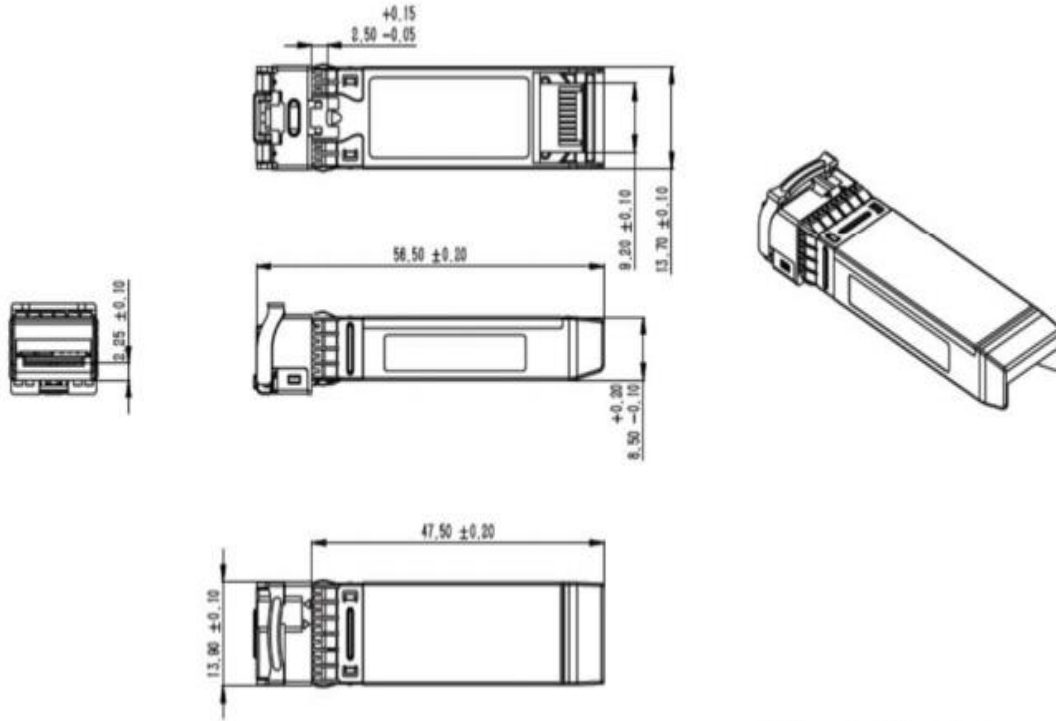
Block Diagram of Transceiver



Recommended Interface Circuit



Mechanical Dimensions



Ordering information

Table 7- Ordering information

Part Number	Product Description
SFP-25BL71-40C	1270T/1310R, 25.78Gbps, LC, 40km, 0° C~+70° C, with DDM
SFP-25BL71-40CI	1270T/1310R, 25.78Gbps, LC, 40km, -40° C~+85° C, with DDM

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