

## **SFP-BL12T5-40DC**

25.78Gbps SFP28 BIDI Transceiver, Single Mode, 40km Reach  
1310nm TX / 1270nm RX

### **Product Features**

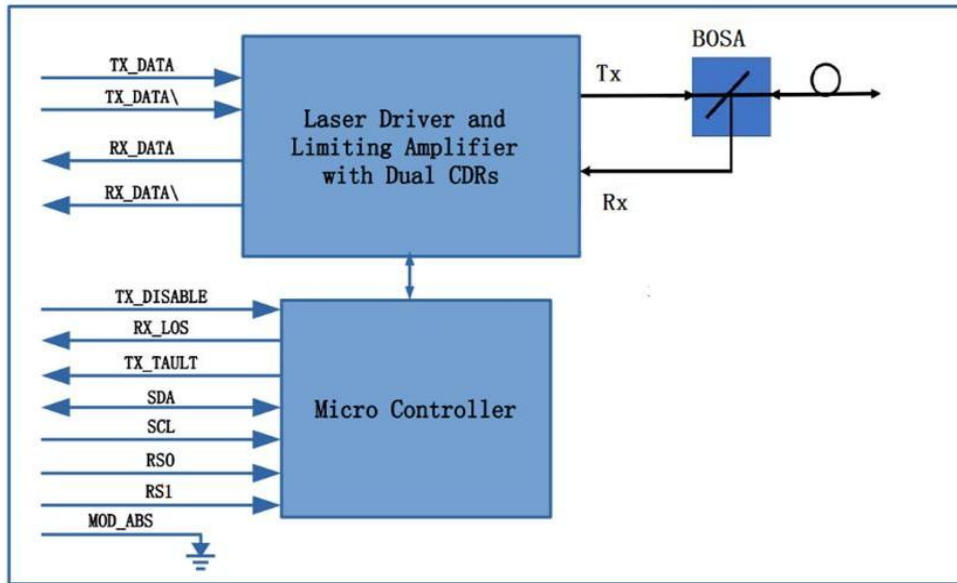
- Up to 25.78Gbps Data Links
- Up to 40km transmission on SMF
- 1310nm/1270nm DFB Laser and APD receiver
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP28 footprint
- Compliant with SFP+ MSA and SFF-8472 with duplex LC receptacle
- Single 3.3V power supply
- Power dissipation < 1.5 W
- Operating case temperature:0 to +70°C

### **Applications**

- 25GBASE-ER
- eCPRI and CPRI

### **Standard**

- Compliant with SFF-8472 &8431
- RoHS Compliant.



Transceiver functional diagram

## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T <sub>s</sub>	-40	85	°C
Relative Humidity	R <sub>H</sub>	5	95	%
Power Supply Voltage	V <sub>CC</sub>	-0.3	4	V
Signal Input Voltage	V <sub>SI</sub>	V <sub>CC</sub> -0.3	V <sub>CC</sub> +0.3	V
Rx Damage Threshold	PR <sub>dmg</sub>	-3		dBm

## Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Case Operating Temperature	T <sub>case</sub>	0		70	°C
Power Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.47	V
Power Supply Current	I <sub>CC</sub>			420	mA
Data Rate	BR		25.78		Gbps
Transmission Distance	TD			40	km
Coupled fiber	Single mode fiber				

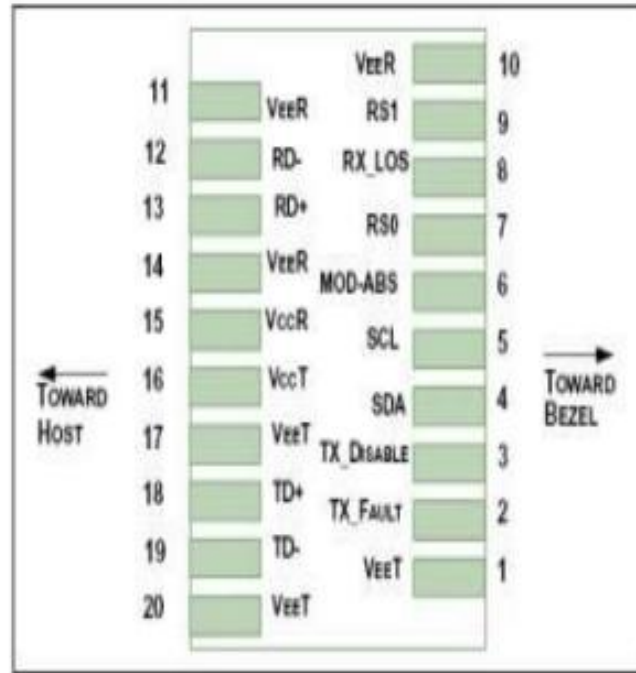
## Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	1300	1310	1320	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Average Output Power	$P_{out}$	0		6	dBm	
Average Launched Power(Laser Off)	$P_{off}$			-30	dBm	
Extinction Ratio	ER	3.5			dB	1
Input differential impedance	$R_{in}$		100		$\Omega$	2
Single ended data input swing	$V_{in,pp}$	180		700	mV	
TX Disable	Disable		2.0		$V_{cc}+0.3$	V
	Enable		0		0.8	V
TX Fault	Fault		2.0		$V_{cc}+0.3$	V
	Normal		0		0.8	V
Output Eye Mask		{0.31,0.4,0.45,0.34,0.38,0.4}				
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	1260	1270	1280	nm	
Receiver Sensitivity				-17.5	dBm	3
Input Saturation Power (Overload)		-6			dBm	
Los Of Signal Assert	PA	-35			dBm	
Los Of Signal De-assert	PD			-19	dBm	
LOS -Hysteresis	$P_{Hys}$	0.5	2	6	dB	
Differential data output swing	$V_{out,pp}$	300		850	mV	4
LOS	High		2.0		$V_{cc}+0.3$	V
	Low				0.8	V

### Notes:

1. Measured with a PRBS  $2^{31}-1$  test pattern, @25.78Gb/s.
2. Connected directly to TX data input pins. AC coupled thereafter.
3. ER=3.5dB; BER = $<5 \times 10^{-5}$  @PRBS= $2^{31}-1$  NRZ.
4. Into 100 ohms differential termination.

## Pin Descriptions



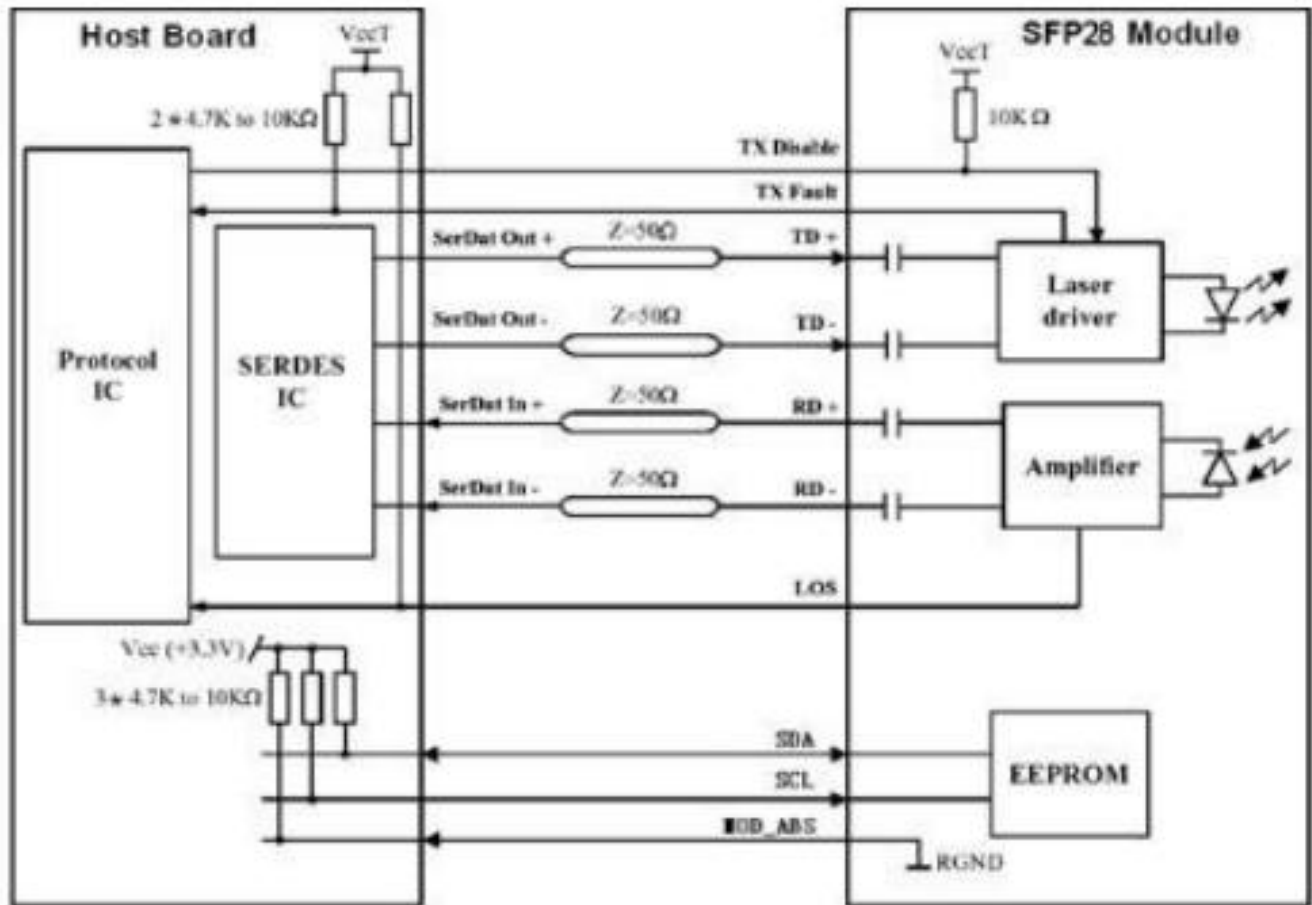
Pin	Symbol	Name/Description	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	2
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. 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	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	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	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	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	VEET	Transmitter Ground (Common with Receiver Ground)	1

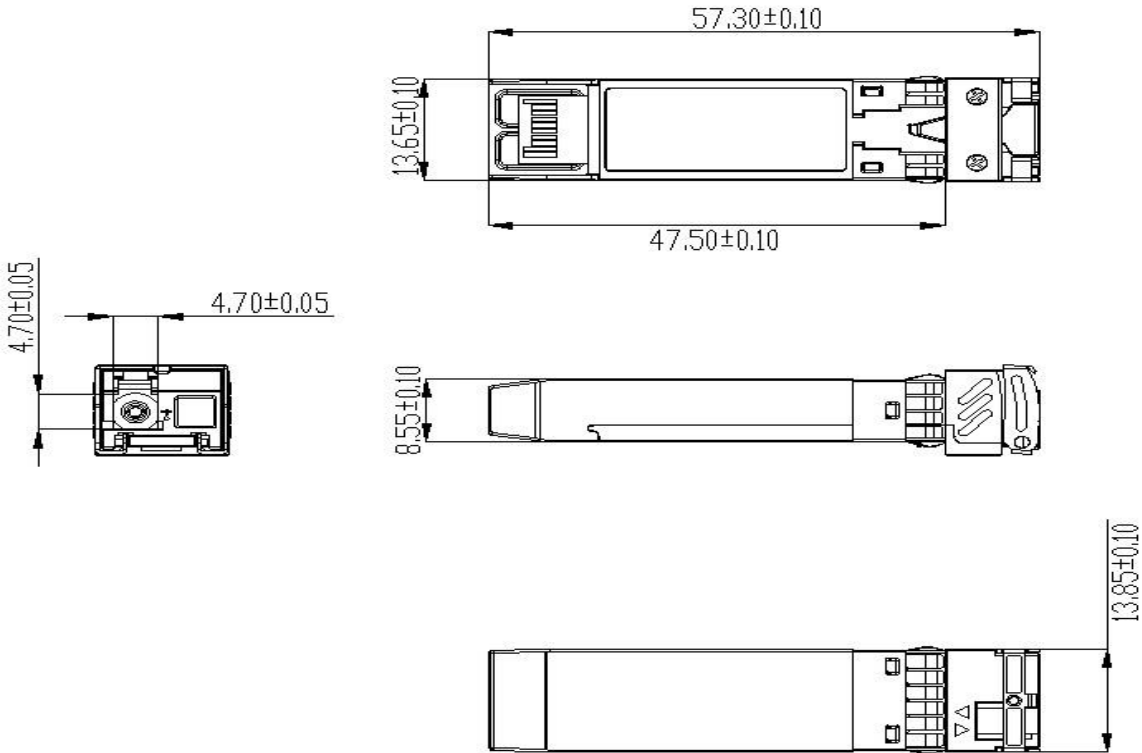
**Notes:**

1. Circuit ground is internally isolated from chassis ground.
2.  $T_{FAULT}$  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  $V_{cc} + 0.3V$ . 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  $T_{DIS} > 2.0V$  or open, enabled on  $T_{DIS} < 0.8V$ .
4. Should be pulled up with 4.7k $\Omega$ - 10k $\Omega$  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 $\Omega$  – 10k $\Omega$  on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

### Recommended Interface Circuit



## Mechanical Dimensions



## Ordering information

Part Number	Product Description
SFP-BL12T5-40DC	1310T/1270R, 25.78Gbps, LC, 40km, 0°C~+70°C, with DDM

## For More Information

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