TSSLS-CCBEH7T Optical Transceiver

25G SFP28 BIDI Single-mode Transceiver, With Diagnostic Monitoring
Duplex SFP28 40km Transceiver

Features

- Class 1 laser safety certified
- Operating data rate up to 25.78Gbps
- High sensitivity APD photodiode and TIA
- LC single connector
- Hot pluggable 20pin connector
- Low power consumption <2W
- -40°C to 85°C operating wide temperature range
- Single +3.3V±5% power supply
- Digital Monitoring SFF-8472 compliant
- Fully RoHS Compliant

Applications

- 25GE LR/ER
- CPRI Option 10/e CPRI

Product Description

The SFP28 Transceiver is designed for use in Ethernet/eCPRI/ CPRI links up to 25.78 Gb/s data rate and up to 40 km link length.

They are compliant with SFF8472, SFF-8431, SFF-8432. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

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Absolute Maximum Ratings

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+4.0	V
Storage Temperature	Ts	-40	+85	°C
Relative Humidity	RH	0	95	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	VCC	3.14	3.3	3.46	V
Operating Case Temperature	T_c	-40	-	85	°C

Notes:
1. Supply current is shared between VCCTX and VCCRX.
2. In-rush is defined as current level above steady state current requirements.

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit	Ref.
Transmitter						
Data Rate	BR		25.78	-	Gbps	
Input differential impedance	R_{IN}	90	100	110	Ω	1
Differential Data Input	V_{IN}	450	600	750	mV_{p-p}	
Transmit Disable Voltage	V_{DIS}	2.0	-	V_{CCHOST}	V	
Transmit Enable Voltage	V_{EN}	V_{EE}		V_{EE}+0.8	V	2
Transmit Fault Assert Voltage	V_{fa}	2.0	-	V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	V_{FDA}	V_{EE}		V_{EE}+0.4	V	
Receiver						
Data Rate	BR	-	25.78	-	Gbps	
Output differential impedance	Rout	90	100	110	Ω	1
Differential Data Output	V_{OD}	450	600	750	mV_{p-p}	
LOS Fault	V_{LOSFT}	2.0	-	V_{CCHOST}	V	
LOS Normal	V_{LOSNR}	V_{EE}		V_{EE}+0.4	V	

Notes:
[1] AC coupled.
[2] Or open circuit.

Transmitter Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1300	1310	1320	nm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Average Optical Power	P_o	0	-	6	dBm
Extinction Ratio	ER	3.5			dB
Average Launch Power of OFF Transmitter	P_{OFF}	-	-	-30	dBm
Relative Intensity Noise	R_{IN}			-128	dB/Hz

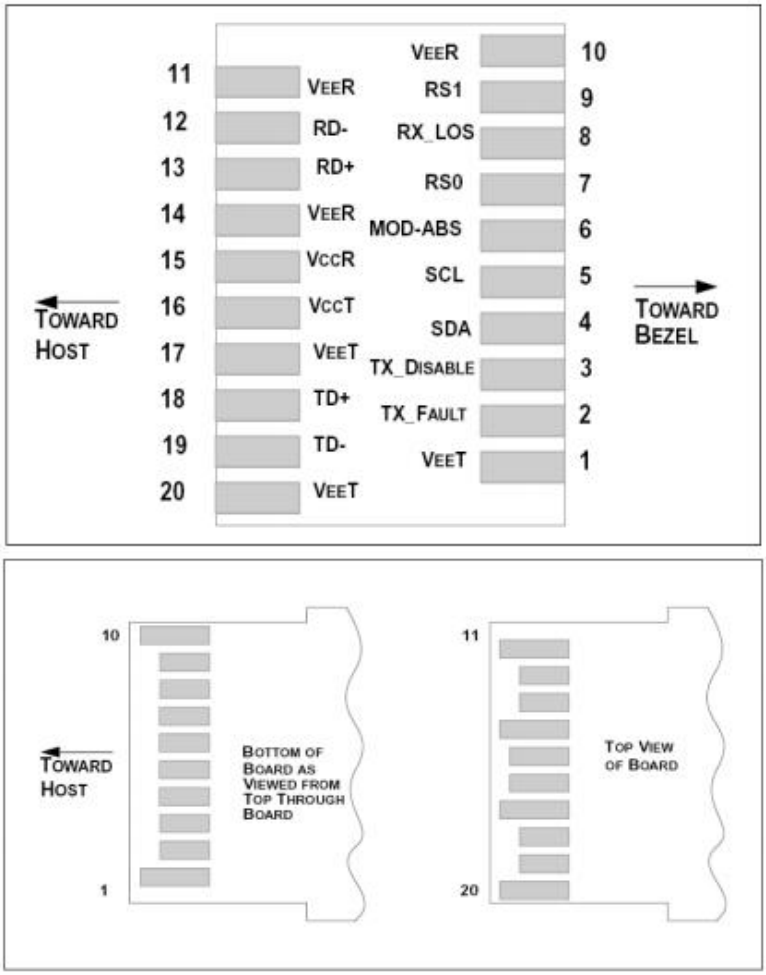
Receiver Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1260	1270	1280	nm
Receiver sensitivity (OMA)[1]	R_{SEN}	-	-	-18	dBm
Receiver Overload(OMA)	P_{MAX}	-5			dBm
Optical Return Loss	R_{RL}	-	-	-26	dB
LOS Asserted	L_{SA}	-35	-	-	dBm
LOS De-Asserted	L_{DA}	-	-	-24	dBm
LOS Hysteresis	L_H	0.5	-	-	dB

Notes:

[1] Measured at 25.78125Gb/s,ER>3.5dB , PRBS 231- 1 and BER better than or equal to 5E-5

Sfp28 Transceiver Electrical Pad Layout



Pin Definition

Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled

13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

[1] Module circuit ground is isolated from module chassis ground within the module.

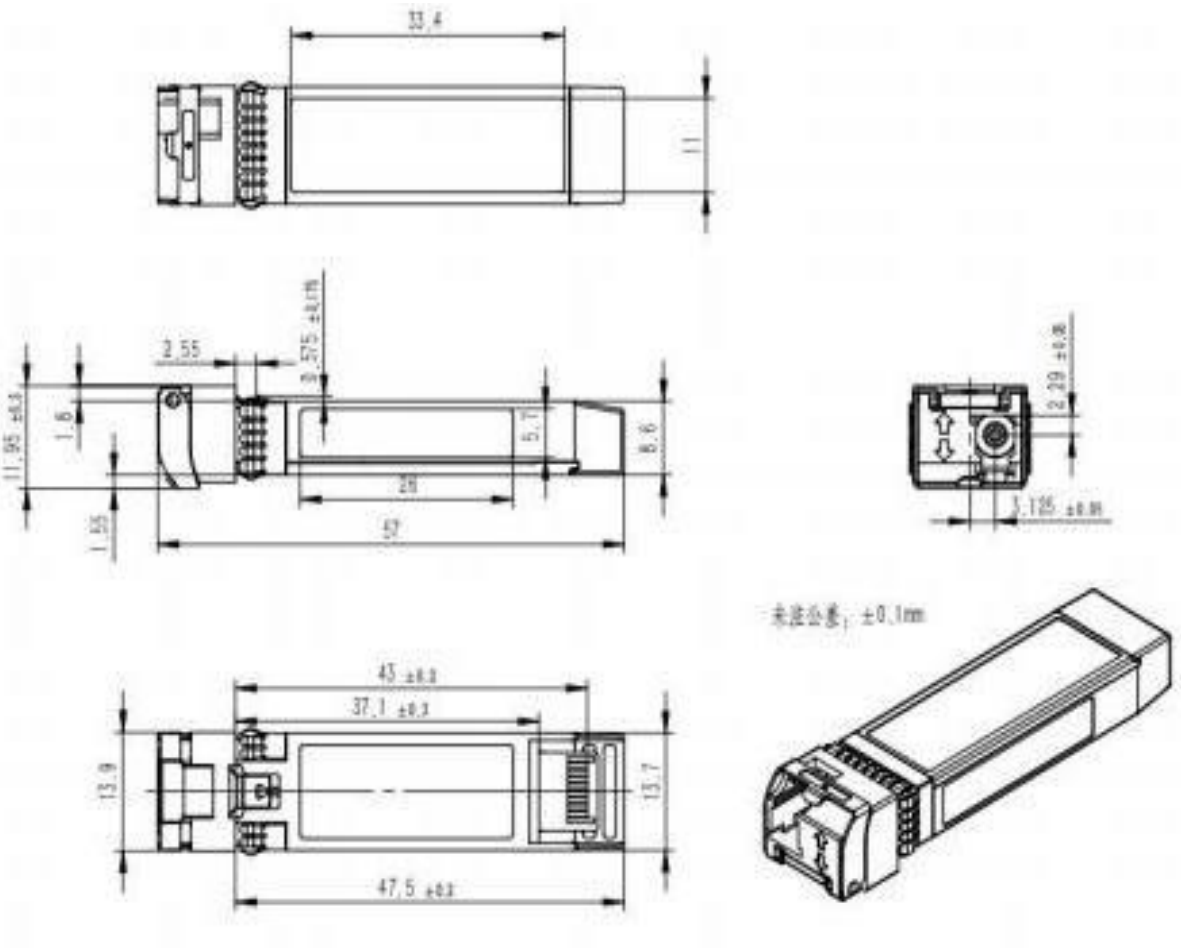
[2] Should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

[3] Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VCCT inside the module.

[4] Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to VCC_Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Mechanical



Ordering Information

Part Number	Product Description
TSSLS-CCBEH7T	25Gbps SFP28 40km Transceiver, -40°C ~ +85°C, 1310nm-Tx APD, 1270nm-Rx PIN.

Important Notice

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