TSSLS-NCNEH7C Optical Transceiver

25G SFP28 ER 1310nm 40km Single-mode Transceiver, With Diagnostic Monitoring

Features

- Class 1 laser safety certified
- Data rate up to 25.78Gbps
- High sensitivity APD photodiode and TIA
- LC duplex connector
- Low power consumption < 2W
- Distance up to 40km
- Hot Pluggable
- Specifications compliant with SFF 8472
- 0 to 70°C operating wide temperature range
- Single +3.3V±5% power supply
- RoHS compliant (lead free)

Applications

- 25GE LR/LR
- 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	V
Storage Temperature	Tc	-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	Tc	-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	Rin		100		Ω	1
Single-ended Data Input Swing	Vin	90		450	mVp-p	
Transmit Disable Voltage	VD	2.0	-	V_{CCHOST}	V	
Transmit Enable Voltage	Ven	Vee		Vee+0.8	V	2
Transmit Fault Assert Voltage	Vfa	2.0	-	V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	Vfda	Vee		Vee+0.4	V	
Receiver						
Data Rate	BR	-	25.78	-	Gbps	
Output differential impedance	Rout		100		Ω	1
Single-ended Data Input Swing	Vod	200		450	mV	
LOS Fault	Vlosft	2.0	-	V_{CCHOST}	V	
LOS Normal	Vlosnr	Vee		Vee+0.4	V	

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

Transmitter Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1295	1310	1325	nm
Average Optical Power[1]	Po	-1	-	+7	dBm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Optical Spectral Width	Δλ	1			nm
Average Launch Power of OFF Transmitter	Poff	-	-	-30	dBm
Extinction Ratio	ER	3.5	-	-	dB
Eye Mask		Compliant with IEEE 802.3			

Receiver Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1260		1360	nm
Receiver sensitivity[2]	Rsen1	-	-	-19	dBm
Receiver Overload	Pmax	-5			dBm
Optical Return Loss	Rrx	-	-	-26	dB
LOS Asserted	Lsa	-35	-	-	dBm
LOS De-Asserted	Lda	-	-	-24	dBm
LOS Hysteresis	Lh	0.5	-	5	dB

Notes:

[1] Output power is coupled into a 9/125μm SMF.

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

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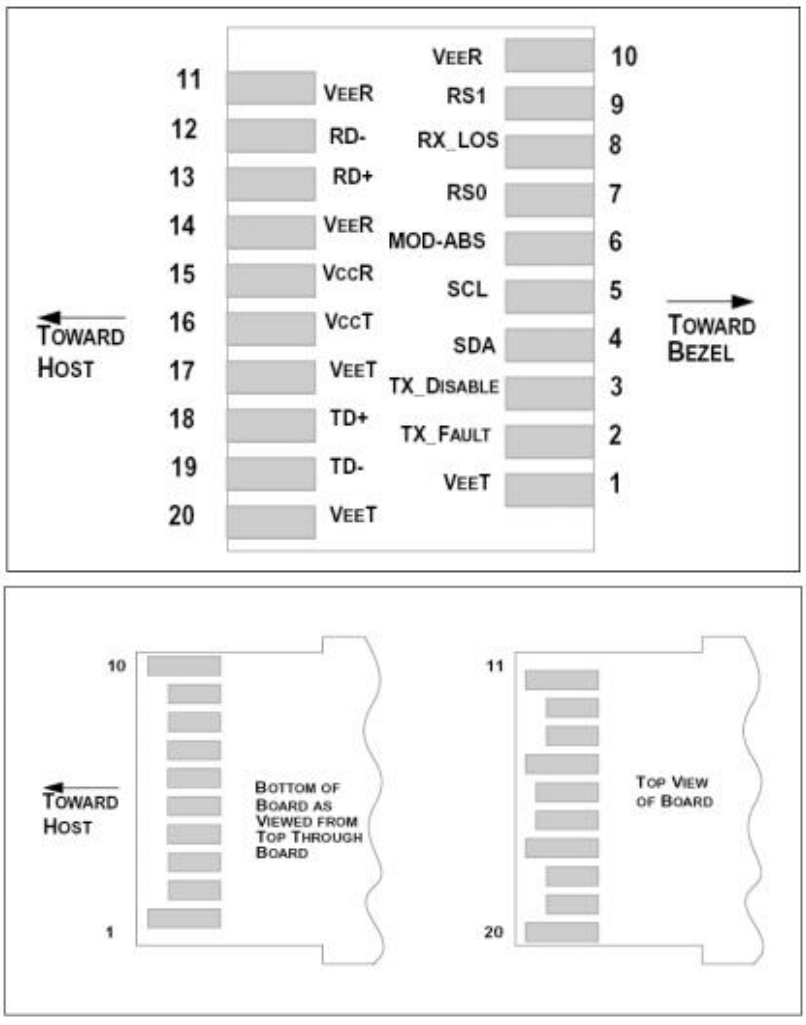
Sfp28 Transceiver Electrical Pad Layout



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.

Ordering Information

Part Number	Product Description
TSSLS-NCNEH7C	25Gbps SFP28 1310nm 40km Transceiver, 0°C ~ +70°C

Important Notice

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