

TSSPC-XX25G-L1 Optical Transceiver

CWDM SFP28 Single-Mode CWDM Transceiver, With Diagnostic Monitoring
Duplex SFP28 Transceiver

Features

- Data Rate up to 25.78 Gb/s
- Suitable for use in 1270nm-1370nm CWDM systems (20nm channel)
- 12dB Power Budget
- Duplex LC connector
- Single 3.3V Power Supply and Power Dissipation < 1.5W
- Case operation temperature range:
Standard temperature: 0°C to 70°C
Extended temperature: -20°C to 85°C
- 2-wire interface with integrated Digital Diagnostic monitoring
- RoHS6 compliant (lead free)



Applications

- CPRI Option 10
- 25GBE
- 10GbE Optical Link

Description

The CWDM SFP28 LR is a portfolio of optical transceiver modules designed for data center Storage Area Network (SAN) 25G Fiber Channel links with FEC.

Absolute maximum ratings

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	0	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	0	85	%

Recommended operating conditions

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	VCC	3.15	3.30	3.45	V
Supply current	Icc	-	-	435	mA
Operating Case Temperature(standard)	Tca	0	-	70	°C
Operating Case Temperature(industrial)	Tca	-20	-	85	°C

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Power Consumption	-	-	-	1500	mW
Transmitter					
Input differential impedance ¹	Rin	-	100	-	Ω
Differential Input Voltage swing	Vin	300	-	1100	mV
Transmit Disable Voltage	VD	VCC-1.3	-	VCC	V
Transmit Enable Voltage ²	VEN	Vee	-	Vee+0.8	V
Receiver					
Output differential impedance ¹	Rout	-	100	-	Ω
Differential Output Swing ³	Vout	500	-	800	mV
Loss of Signal –Asserted ⁴	-	2.0	-	VCC+0.3	V
Loss of Signal –Negated ⁴	-	Vee	-	Vee+0.8	V

Notes:

[1] Connected directly to TX data input pins. AC coupled thereafter.

[2] Or open circuit.

[3] Into 100 ohms differential termination.

[4] Loss Of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Transmitter Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Average Optical Power[1]	Po	-7	-	0	dBm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Optical Wavelength[2]	λ	λ-6.5	λ	λ+6.5	nm
RMS Spectrum Width	Δλ	-	-	1	nm
Extinction Ratio	ER	3	-	-	dB
Transmitter and Dispersion Penalty	TDP	-	-	2.7	dB
Average Launch Power of OFF Transmitter	Poff	-	-	-30	dBm

Information and specifications are subject to change without notice.
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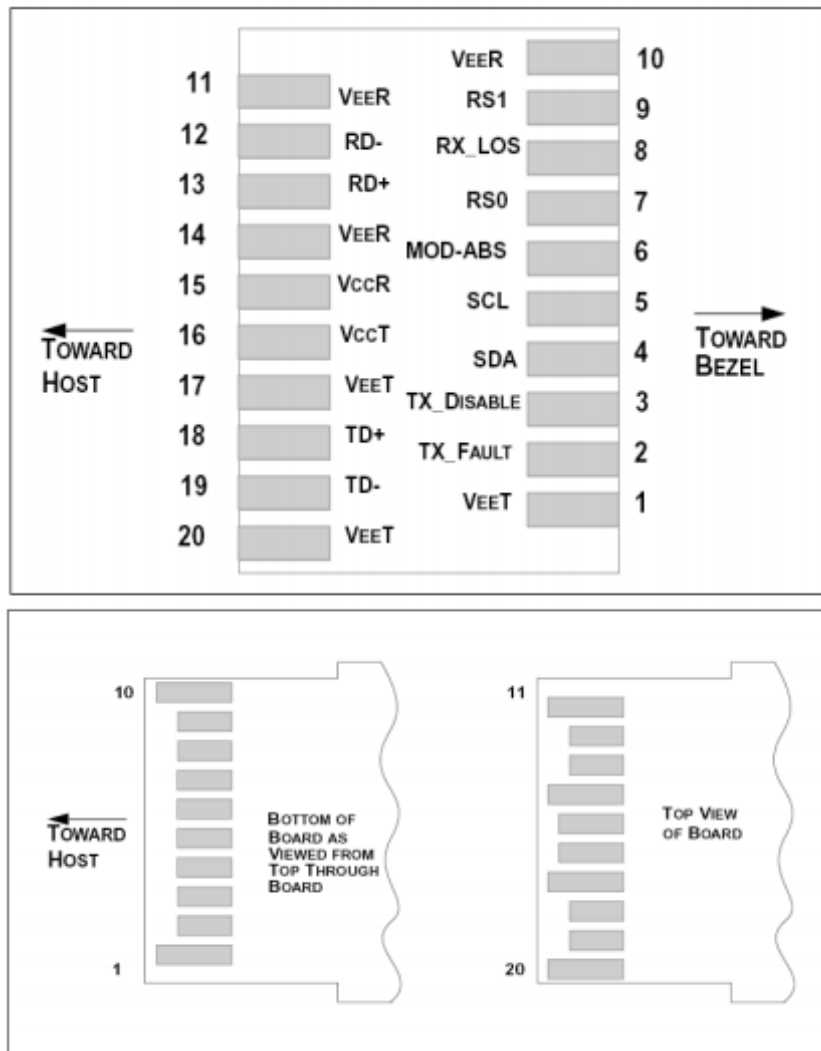
Receiver Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Input Operating Wavelength	λ	1260	-	1620	nm
Receiver sensitivity(OMA)[3]	Rsen	-	-	-19	dBm
Receiver Overload	Pmax	-2	-	-	dBm
Reflectance	-	-	-	-26	dB
LOS Asserted	Lsa	-25	-	-	dBm
LOS De-Asserted	Lda	-	-	-15	dBm
LOS Hysteresis	Lh	0.5	-	-	dB

Notes:

- [1] Output power is coupled into a 9/125 μ m SMF.
- [2] ITU-T G.694.2 CWDM wavelength from 1270nm to 1370nm, each step 20nm.
- [3] Measured with data rate at 25.78Gb/s, BER less than 5E-5 with PRBS 2³¹⁻¹.

Electrical Pad Layout



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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 3.15V and 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 to 10 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
TSSPC-XX25G-L1C	25Gbps SFP28 CWDM 12dB 0°C ~ +70°C
TSSPC-XX25G-L1E	25Gbps SFP28 CWDM 12dB -20°C ~ +85°C

CWDM Wavelength

Band	XX	Wavelength (λ : nm)		
		Min.	Typ.	Max.
O-band Original	27	1264.5	1271	1277.5
	29	1284.5	1291	1297.5
	31	1304.5	1311	1317.5
	33	1324.5	1331	1337.5
	35 [1]	1344.5	1351	1357.5
E-band Extended	37 [1]	1364.5	1371	1377.5

Notes:

[1] Only Standard temp. is available.

Important Notice

1. SFP28 MSA
2. Directive 2011/65/EU of the European Parliament and of the Council, “on the restriction of the use of certain hazardous substances in electrical and electronic equipment,” July 1, 2011.

Important Notice

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