

TSSPB-2325G-LR & TSSPB-3225G-LR Series

Tx: 1270nm/Rx: 1330nm BIDI SFP+ 10km Transceiver for 25GbE

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Features

- Compliant with MSA SFP+ Specification SFF-8402
- Compliant with SFP+ MSA with LC connector
- 2-wire interface with integrated Digital Diagnostic monitoring
- Data Rate up to 25.78 Gb/s
- 1270nm DFB laser and PIN receiver for TSSPB-2325G-LR
1330nm DFB laser and PIN receiver for TSSPB-3225G-LR
- Metal enclosure, for lower EMI
- Distance up to 10km transmission on SMF
- Single 3.3V Power Supply and Power Dissipation < 1.2W
- Case operation temperature range:
Standard temperature: 0°C to 70°C
Extended temperature: -40°C to 85°C
- RoHS6 compliant (lead free)



Applications

- 25G Ethernet
- CPRI 10

Description

T&S 25G BIDI SFP28 transceivers are designed for bi-directional 25G serial optical data communications by using 1270nm/1330nm or 1270nm/1310nm wavelengths. The modules are suitable for 25G Ethernet and CPRI (option 10) applications, like in 5G mobile networks. The family offers modules for the I-temp range from -40 °C to +85°C and C-temp range from 0°C to +70°C.

Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	0	85	%

Information and specifications are subject to change without notice.
Please visit www.china-tscom.com for more information

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Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	VCC	3.15	3.30	3.45	V
Operating Case Temperature(standard)	Tca	0	-	70	°C
Operating Case Temperature(industrial)	Tca	-40	-	85	°C

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Supply Current	Icc	-	-	348	mA
Power Consumption	-	-	-	1200	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	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 LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Optical Characteristics (TSSPB-2325G-LR, 1270 DFB & PIN/TIA)

Parameter	Symbol	Min.	Typical	Max	Unit
Transmitter					
Optical Wavelength	λ	1260	1270	1280	nm
Side Mode Suppress Ratio	SMSR	30	-	-	dB
Spectral Width (-20dB)	Δλ	-	-	1	nm
Average Output Power	Po	-5	-	2	dBm
Extinction Ratio	ER	3.5	-	-	dB
Receiver					

Receiver Sensitivity (OMA)	SEN	-	-	-18	dBm
Receiver Overload	Pmax	2	-	-	dBm
Centre Wavelength	λ	1320	-	1340	nm
LOS De-Assert	Lda	-	-	-19	dBm
LOS Assert	Lsa	-30	-	-	dBm
LOS Hysteresis	Lh	0.5	-	-	dB

Optical Characteristics (TSSPB-3225G-LR, 1330 DFB & PIN/TIA)

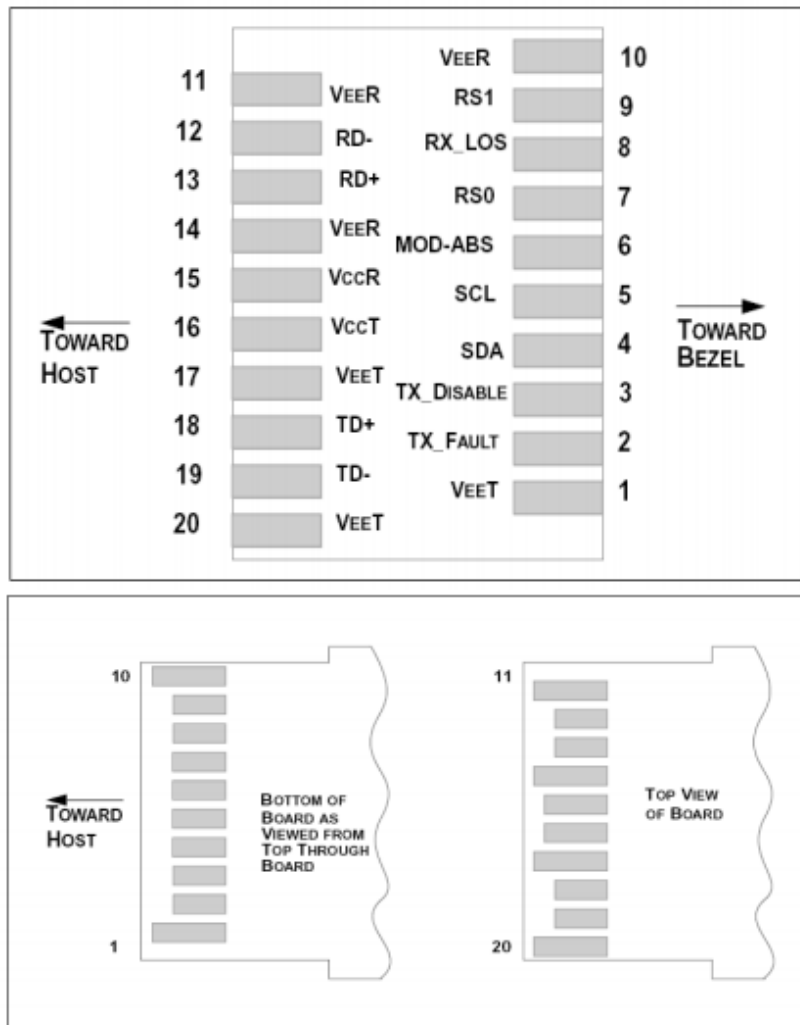
Parameter	Symbol	Min.	Typical	Max	Unit
Transmitter					
Optical Wavelength	λ	1320	1330	1340	nm
Side Mode Suppress Ratio	SMSR	30	-	-	dB
Spectral Width(-20dB)	$\Delta\lambda$	-	-	1	nm
Average Output Power ^{1&2}	Po	-5	-	2	dBm
Extinction Ratio	ER	3.5	-	-	dB
Receiver					
Receiver Sensitivity (OMA) ²	SEN	-	-	-18	dBm
Receiver Overload	Pmax	2	-	-	dBm
Centre Wavelength	λ	1260	-	1270	nm
LOS De-Assert	Lda	-	-	-19	dBm
LOS Assert	Lsa	-30	-	-	dBm
LOS Hysteresis	Lh	0.5	-	-	dB

Notes:

[1] Class 1 Laser Safety per FDA/CDRH and IEC-825-1 regulations.

[2] Measured with a PRBS 2³¹-1 test pattern, @25.78Gb/s, BER@5x10⁻⁵

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]	No connection required
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	No connection required

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
TSSPB-2325G-LRC	25Gbps, SFP+ BIDI TX1270nm/RX1330nm 10km, 0°C ~ +70°C
TSSPB-3225G-LRC	25Gbps, SFP+ BIDI TX1330nm/RX1270nm, 10km, 0°C ~ +70°C
TSSPB-2325G-LRT	25Gbps, SFP+ BIDI TX1270nm/RX1330nm 10km, -40°C ~ +85°C
TSSPB-3225G-LRT	25Gbps, SFP+ BIDI TX1330nm/RX1270nm, 10km, -40°C ~ +85°C

References

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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