

SFP28-25G-LR

25Gbps SFP28 Transceiver, Single Mode, 10km Reach



Product Features

- ❖ Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- ❖ Up to 10km transmission on SMF
- ❖ 1310nm DML laser transmitter
- ❖ SFP28 MSA compliant
- ❖ Built-in digital diagnostic functions
- ❖ Single +3.3V power supply
- ❖ Operating case temperature: -40 to +85 ° C or 0 to +70 ° C

- ❖ RoHS 6 Compliant

Applications

- ❖ 25GBASE-LR
- ❖ 24.33Gbps CPRI

Description

The SFP28-25G-LR transceivers are designed for 24.33Gbps and 25.78Gbps data rate over SMF and support up to 10km link length. They are compliant to IEEE802.3ba, SFF-8402, SFF-8432. Digital diagnostic monitoring interface compliant to SFF-8472 is available via an I2C interface.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	TS	-40	-	+85	°C	1
Supply Voltage	VCC	-0.5	-	+4.0	V	
Operating Relative Humidity	RH	-	-	+95	%	

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	TC	-40	-	+85	°C	1
Operating Case Temperature	TC	0	-	+70	°C	2
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Power Supply Current	ICC	-	-	360	mA	
Maximum Power Dissipation	PD	-	-	1.2	W	
Bit Rate	BR	24.3	25.78	26.5	Gb/s	
Transmission Distance	TD		-	10	km	Over SMF

Note1, 2: See order information

Optical Characteristics

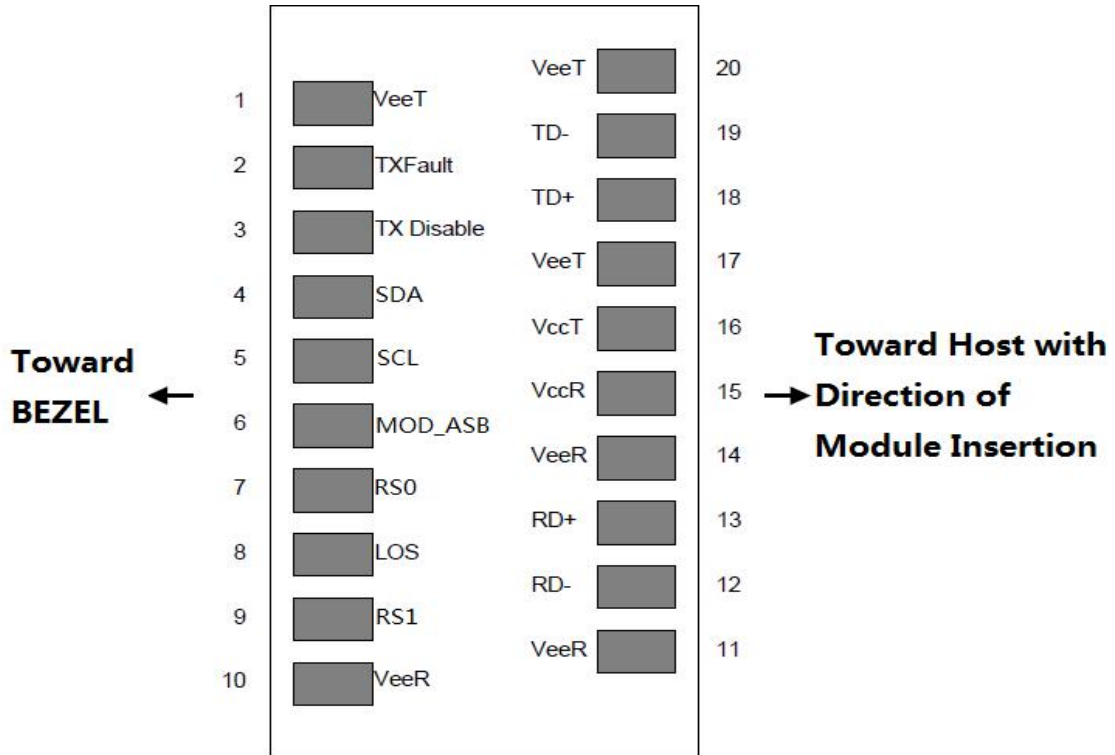
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Center Wavelength	λ_t	1295	1310	1325	nm	
Average Optical Power, 25GE	Pavg	-4.5	-	2.5	dBm	
Optical Modulation Amplitude, 25GE	OMA	-2	-	-	dBm	
OMA-TDP, 25GE	OMA_TDP	-3	-	-	dBm	
Average Output Power (Laser Turn off)	POFF	-	-	-30	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Extinction Ratio, 25GE	ER	3.5	-	-	dB	
Transmitter and Dispersion Penalty	TDP	-	-	2.7	dB	1
Optical Return Loss Tolerance	ORLT	-	-	11	dB	
Receiver						
Center Wavelength	λ_r	1260	1310	1355	nm	
Stressed OMA Sensitivity, 25GE		-	-	-8.3	dBm	
OMA Sensitivity, 25GE@1E-12	PSEN_OMA	-	-	-9.6	dBm	
Average Rx Sensitivity, 25GE@1E-12	PSEN	-	-	-11.4	dBm	
Receiver Overload	PIN-OL	2.5	-	-	dBm	
Reflectance	Ref	-	-	-26	dB	
LOS Assert	LOSA	-30	-	-17	dBm	
LOS De-assert	LOSD	-	-	-17	dBm	
LOS Hysteresis	LOSH	0.5	-	-	dB	

Notes 1: Measured with a PRBS 231-1 test pattern @25.78125 Gb/s.

Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter (Module Input)						
Differential Data Input Amplitude	VIN,P-P	200	-	900	mVpp	
Differential Input Impedance	Rin	-	100	-	Ω	
Tx_Fault	Normal Operation	VIL	-0.3	-	0.4	V
	Tx Fault	VIH	2.4	-	VCC+0.3	V
Tx_Disable	Normal Operation	VIL	-0.3	-	0.8	V
	Laser Disable	VIH	2.0	-	VCC+0.3	V
Receiver (Module Output)						
Differential Data Output Amplitude	VOUT,P-P	300	-	900	mVpp	
Differential Output Impedance	Rout	-	100	-	Ω	
Differential Termination Mismatch		-	-	± 5	%	
Output Rise/Fall Time, 20%~80%	TR	9.5	-	-	ps	
Rx_LOS	Normal Operation	VOL	-0.3	-	0.4	V
	Lose Signal	VOH	2.4	-	VCC+0.3	V

Pin Definition



Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground	1
2	Tx_Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx_Disable	Transmitter Disable - High or open disables the transmitter	
4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	3
6	MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	
7	RS0	Rate Select 0 - Not used, Presents high input impedance	5
8	RX_LOS	Receiver Loss of Signal(LVTTL-O). Logic 0 indicates normal operation	4
9	RS1	Rate Select 1 - Not used, Presents high input impedance	5
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O), AC Coupled	

13	RD+	Receiver Non-Inverted DATA out. AC Coupled	
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14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground	1

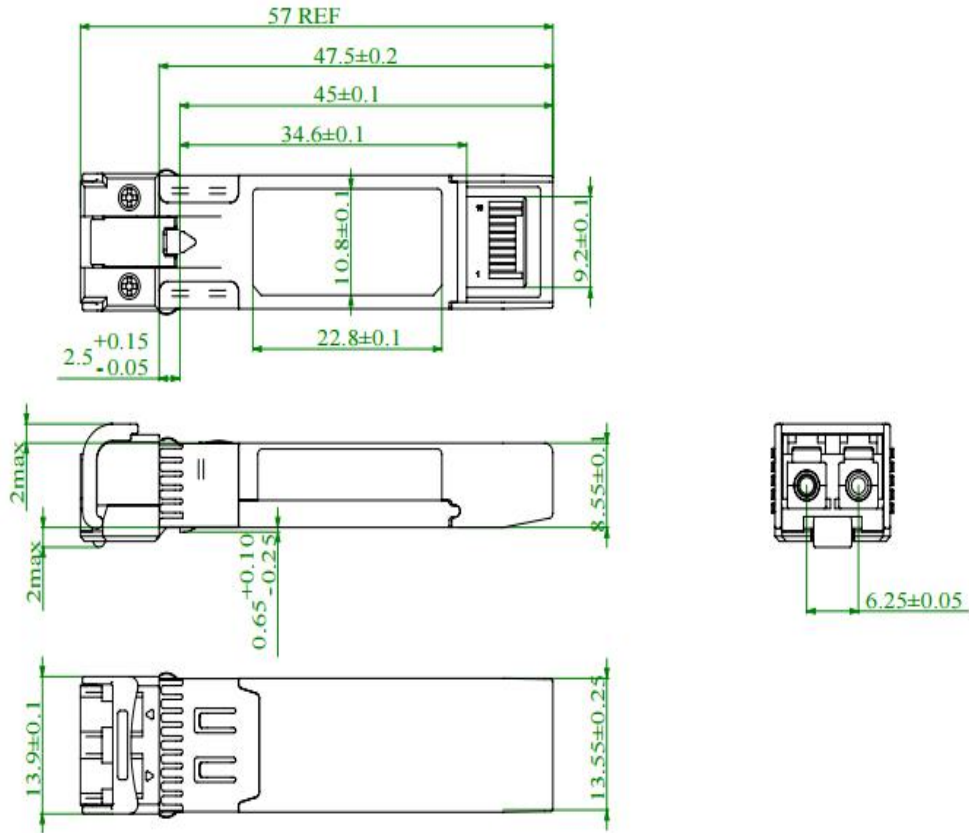
Notes:

1. Module ground pins GND are isolated from the module case.
2. Tx_Fault is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on Host board.
3. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V.
5. RS0 and RS1 pins are pulled low to GND with a resistor > 30KΩ in module.

Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-40 to 85	±3	°C	Internal
Voltage	0 to VCC	±5%	V	Internal
Tx Bias Current Per Lane	0 to 100	±10%	mA	Internal
Tx Output Power Per Lane	-5 to +3	±3	dBm	Internal
Rx Power (Each Lane)	-12 to +2.5	±3	dBm	Internal

Mechanical Dimension



Ordering Information

Part Number	Product Description
SFP28-25G-LRC	25Gbps SFP28, 1310nm, LC, 10km, 0°C~+70°C, with DDM
SFP28-25G-LRI	25Gbps SFP28, 1310nm, LC, 10km, -40°C~+85°C, with DDM