

## SFP-25G-SR-SFM

25Gbps SFP28 Transceiver, Multi Mode, 100m Reach



### Product Features

- ❖ Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- ❖ 100m transmission over OM4 MMF
- ❖ 70m transmission over OM3 MMF
- ❖ 850nm VCSEL laser transmitter
- ❖ 850nm high sensitivity PIN-TIA receiver
- ❖ SFP28 MSA compliant
- ❖ Built-in digital diagnostic functions
- ❖ Single +3.3V power supply

- ❖ Operating case temperature: 0 to +70 ° C or -40 to +85 ° C
- ❖ RoHS 6 Compliant

## Applications

- ❖ 25GBASE-SR
- ❖ 24.33Gbps CPRI

## Description

The SFP28-25G-SR transceivers are designed for 24.33Gbps and 25.78Gbps data rate over MMF and support up to 100m link length on OM4 and 70m link length on OM3. They are compliant to IEEE802.3by, 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		-	100	m	Over OM4 MMF

**Note1,2:** See order information

## Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Center Wavelength	$\lambda_t$	840	850	860	nm	
Average Optical Power, 25GE	Pavg	-6	-	2.4	dBm	
Optical Modulation Amplitude, 25GE	OMA	-3.2	-	-	dBm	
OMA-TDP, 25GE	OMA_TDP	-4	-	-	dBm	
Average Output Power (Laser Turn off)	POFF	-	-	-30	dBm	
Spectral Width (RMS)	$\sigma$		-	0.6	nm	
Extinction Ratio, 25GE	ER	2	-	-	dB	
Transmitter and Dispersion Penalty	TDP	-	-	3.13	dB	1
Optical Return Loss Tolerance	ORLT	-	-	11	dB	
<b>Receiver</b>						
Center Wavelength	$\lambda_r$	840	850	860	nm	
Stressed OMA Sensitivity, 25GE		-	-	-5.2	dBm	
OMA Sensitivity, 25GE@1E-6	PSEN_OM A	-	-	-10.2	dBm	
Average Rx Sensitivity, 25GE@1E-6	PSEN	-	-	-10.3	dBm	
Receiver Overload	PIN-OL	2.5	-	-	dBm	
Reflectance	Ref	-	-	-12	dB	
LOS Assert	LOSA	-30	-	-17	dBm	
LOS De-assert	LOSD	-	-	-17	dBm	
LOS Hysteresis	LOSH	0.5	-	-	dB	

**Notes1:** Measured with a PRBS 231-1 test pattern @25.78125 Gb/s.

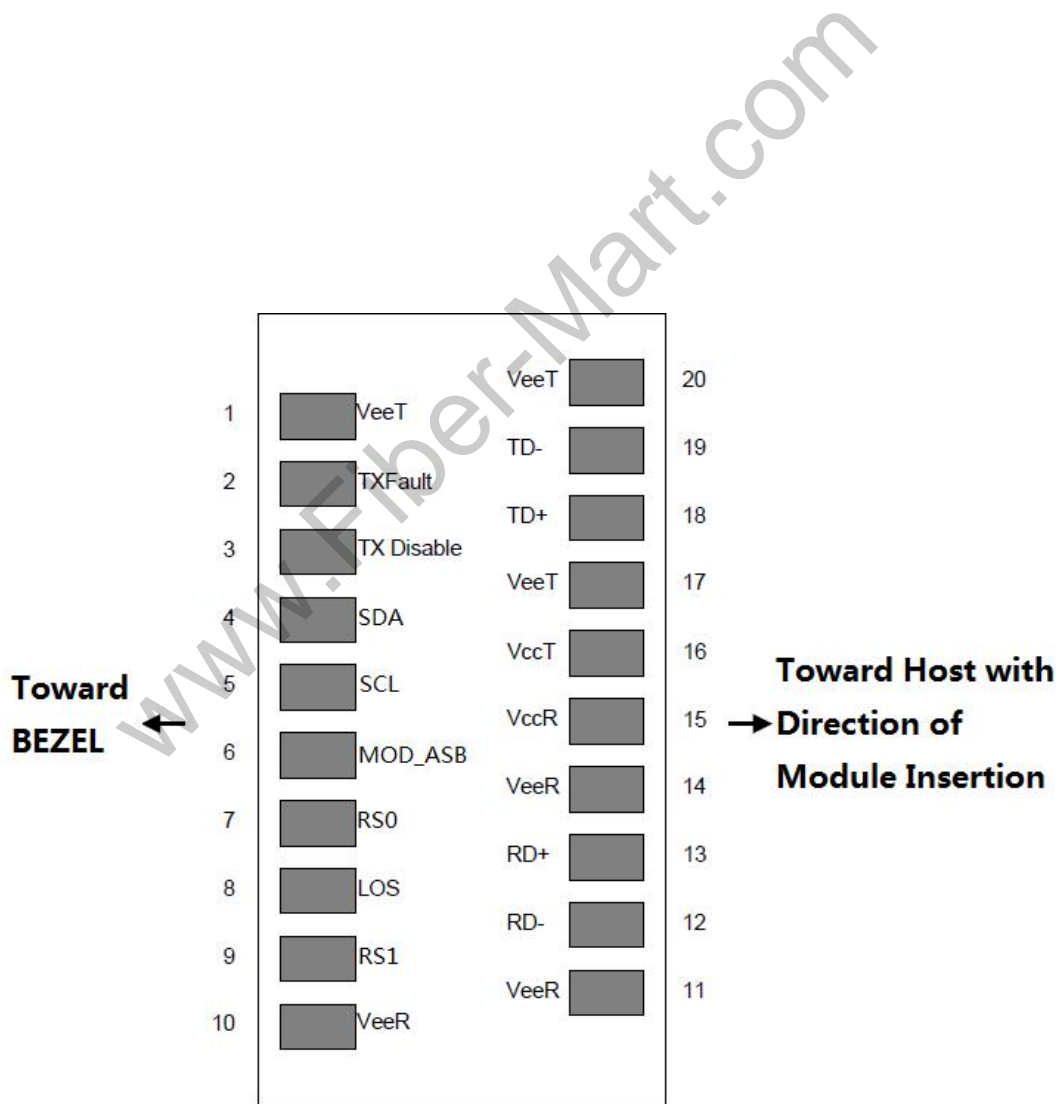
## Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter (Module Input)</b>						
Differential Data Input Amplitude	VIN,P-P	100	-	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
<b>Receiver (Module Output)</b>						
Differential Data Output Amplitude	VOUT,P-P	450	-	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

## 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

## Pin Definition



Pin	Symbol	Name/Description	Note
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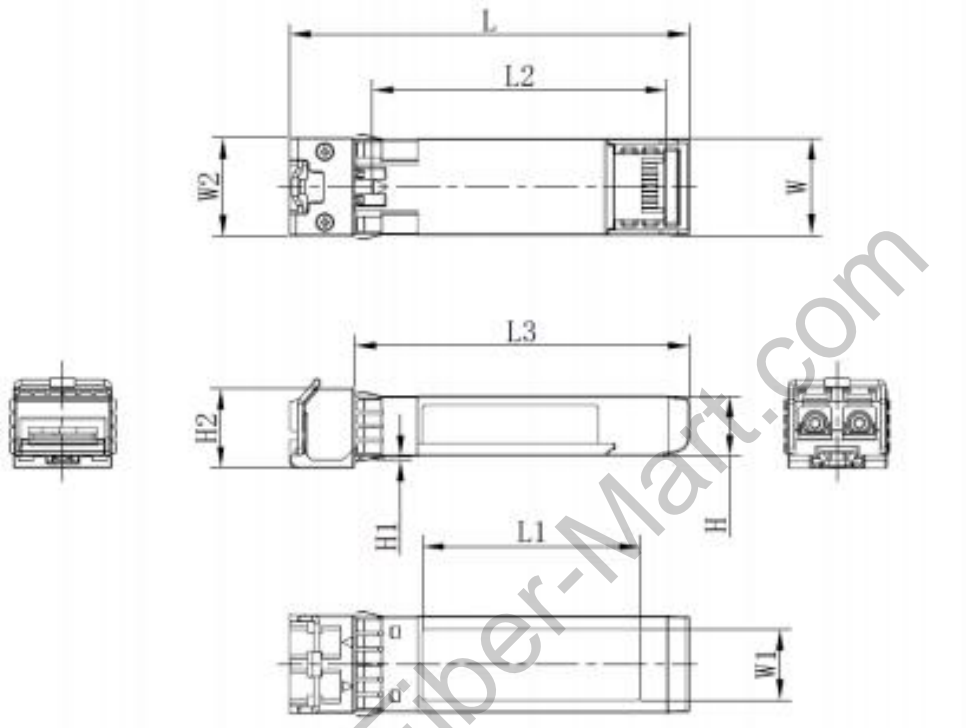
1	VeeT	Transmitter Ground	1
2	Tx_Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx_Disable	Transmitter Disable - High or open disables the transmitter	
4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	3
6	MOD_ABS	Module Absent, connected 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	

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.

## Mechanical Dimension



Unit: mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
MAX	56.9	31.2	41.95	47.7	13.8	10.2	14.0	8.6	0.6	11.5
Typical	56.7	31.0	41.80	47.5	13.7	10.0	-	8.5	0.55	11.3
MIN	56.5	30.8	41.65	47.3	13.5	9.8	-	8.4	0.5	11.1

## Ordering Information

Part Number	Product Description
SFP-25G-SR-SFM	25Gbps SFP28,850nm, LC, 100m, 0°C~+70°C, with DDM
SFP-25G-SR-SFMI	25Gbps SFP28,850nm, LC, 100m, -40°C~+85°C, with DDM