SFP28-25GB-SR

25Gb/s 850nm SFP28 Transceiver

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
- 80nm high sensitivity PIN-TIA receiver
- 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

Application

- 25GBASE-SR
- 24.33Gbps CPRI

Overview

SFP28-25GB-SR SFP28 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.

Order Information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI
SFP28-25GB-SRI	24.33Gbps 25.78Gbps	850nm-VCSEL	MMF	100m on OM4	LC	-40~85C	Y
SFP28-25GB-SR	24.33Gbps 25.78Gbps	850nm-VCSEL	MMF	100m on OM4	LC	0~70C	Y

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	T_S	-40	-	+85	°C	1
Supply Voltage	V_{CC}	-0.5	-	+4.0	V	
Operating Relative Humidity	RH	-	-	+95	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T_C	-40	-	+85	°C	**1**
Operating Case Temperature	T_C	0	-	+70	°C	**2**
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Power Supply Current	I_{CC}	-	-	360	mA	
Maximum Power Dissipation	P_D	-	-	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

Transmitter						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Center Wavelength	λ_t	840	850	860	nm	
Average Optical Power, 25GE	P_{avg}	-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)	P_{OFF}	-	-	-30	dBm	
Spectral Width (RMS)	σ		-	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	
Receiver						
Center Wavelength	λr	840	850	860	nm	
Stressed OMA Sensitivity, 25GE		-	-	-5.2	dBm	
OMA Sensitivity, 25GE@1E-6	P_{SEN_OMA}	-	-	-10.2	dBm	
Average Rx Sensitivity, 25GE@1E-6	P_{SEN}	-	-	-10.3	dBm	
Receiver Overload	P_{IN-OL}	2.5	-	-	dBm	
Reflectance	Ref	-	-	-12	dB	
LOS Assert	LOS_A	-30	-	-17	dBm	
LOS De-assert	LOS_D	-	-	-17	dBm	
LOS Hysteresis	LOS_H	0.5	-	-	dB	

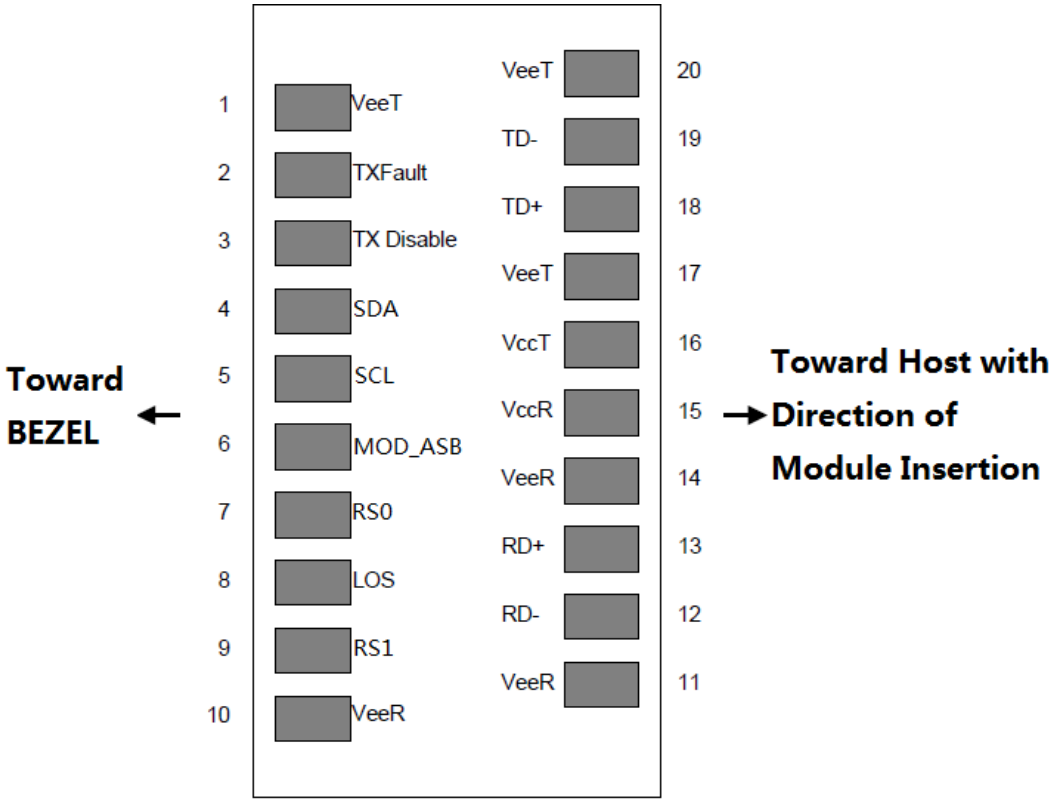
Notes:

1. Measured with a PRBS 2^{31}-1 test pattern @25.78125 Gb/s.

Electrical Characteristics

		Transmitter (Module Input)				
Parameter		**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Differential Data Input Amplitude		$V_{IN,P-P}$	100	-	900	mVpp	
Differential Input Impedance		Rin	-	100	-	Ω	
Tx_Fault	Normal Operation	V_{IL}	-0.3	-	0.4	V	
	Tx Fault	V_{IH}	2.4	-	V_{CC}+0.3	V	
Tx_Disable	Normal Operation	V_{IL}	-0.3	-	0.8	V	
	Laser Disable	V_{IH}	2.0	-	V_{CC}+0.3	V	
		Receiver (Module Output)					
Differential Data Output Amplitude		$V_{OUT,P-P}$	450	-	900	mVpp	
Differential Output Impedance		Rout	-	100	-	Ω	
Differential Termination Mismatch			-	-	±5	%	
Output Rise/Fall Time, 20%~80%		T_R	9.5	-	-	ps	
Rx_LOS	Normal Operation	V_{OL}	-0.3	-	0.4	V	
	Lose Signal	V_{OH}	2.4	-	V_{CC}+0.3	V	

Pin Definition

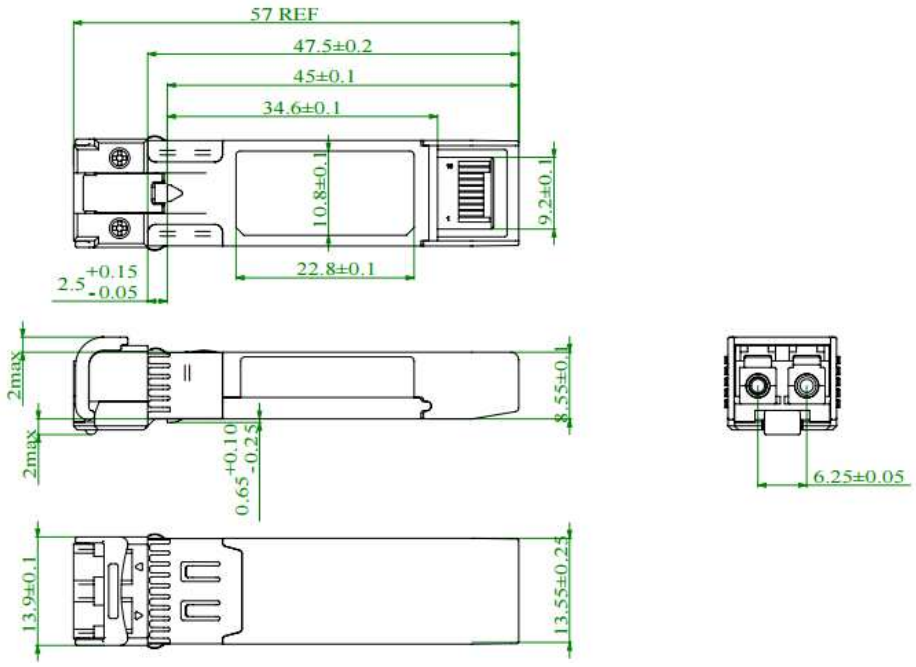


Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground	1
2	Tx_Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx_Disable	Transmitter Disable – High or open disables the transmitter	
4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)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



Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	−40 to 85	±3	ºC	Internal
Voltage	0 to V_{CC}	±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

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.