Datasheet

SFP-25G-MR-SR-FL

25G, SFP28, Duplex LC, 25GBASE-SR, MMF, 100m, COM

Quick Spec

Rate Category:	25G
Form Factor:	SFP28
Interface Type:	25GBASE-SR
Standard / Protocol:	IEEE 802.3by 25GBASE-SR
TX Wavelength:	850nm
RX Wavelength:	850nm
Cable Type:	MMF
Reach:	70m (OM3), 100m (OM4)
DDM:	Supported
Connector Type:	Duplex LC (UPC)
Power Consumption:	1W max
Operating Temperature:	0°C to +70°C (COM)

Overview

The FluxLight SFP-25G-MR-SR-FL is a 25Gb/s SFP28 transceiver for short-reach multimode fiber links. It transmits and receives 25.78125Gb/s NRZ data at 850 nm over duplex LC, supporting up to 70 m on OM3 and 100 m on OM4 fiber in compliance with IEEE 802.3by 25GBASE-SR. The transmitter uses an 850 nm VCSEL and the receiver an integrated GaAs photodetector with limiting post-amplifier; built-in clock and data recovery (CDR) on both paths cleans up signal jitter. Full reach requires RS-FEC (Clause 108) enabled on the host.

The hot-pluggable module draws less than 1 W from a single +3.3V supply and provides real-time digital diagnostic monitoring of temperature, supply voltage, laser bias current and transmit/receive optical power over the two-wire serial (I2C) interface per SFF-8472. Every FluxLight optic is programmed and tested for 100% compatibility with the target OEM platform and is backed by a lifetime warranty.

Features

- Compliant with IEEE 802.3by 25GBASE-SR
- SFP28 MSA compliant (SFF-8402), hot-pluggable
- 25.78125Gb/s data rate
- 850nm VCSEL transmitter, GaAs photodetector receiver
- Built-in Tx and Rx clock and data recovery (CDR)
- Up to 70m on OM3 and 100m on OM4 multimode fiber (RS-FEC required on host)
- Duplex LC (UPC) connector
- Average launch power −8.4 to +2.4 dBm; receiver sensitivity −7.2 dBm (unstressed)
- Digital Diagnostics Monitoring (DDM/DOM) per SFF-8472
- Single +3.3V power supply, <1W power dissipation
- Operating case temperature: 0°C to +70°C (COM)
- Class 1 laser product (IEC 60825-1)
- RoHS 6 compliant
- 100% compatible with OEM equipment
- Backed by a lifetime warranty

Applications

- 25G Ethernet over multimode fiber (OM3/OM4)
- Data center short-reach interconnect: server-to-switch, ToR/EoR and leaf uplinks
- 25G server and storage NIC connections
- 4×25G breakout from 100GBASE-SR4 ports using MPO-to-duplex-LC fan-out cables

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	85	°C
Operating Case Temperature	TOP	0	70	°C
Power Supply Voltage	VCC	-0.3	3.6	V
Relative Humidity (non-condensation)	RH	5	85	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	TOP	0		70	°C
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Data Rate			25.78125		Gb/s
Data Rate Accuracy		-100		100	ppm
Tx_DISABLE Input Voltage – High		2			V
Tx_DISABLE Input Voltage – Low				0.8	V
Link Distance, OM3 (50/125 µm)	D			70	m
Link Distance, OM4 (50/125 µm)	D			100	m

Electrical and Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Power Consumption				1.0	W	
Supply Current	Icc			300	mA	
Transmitter						
Center Wavelength	λC	840	850	860	nm	
Spectral Width (RMS)	Δλ			0.6	nm	
Average Output Power	Pout	-8.4		2.4	dBm	
Extinction Ratio	ER	2			dB	
Receiver						
Center Wavelength	λC	840	850	860	nm	
Average Receive Power	Pin	-10.3		2.4	dBm	
Unstressed Receiver Sensitivity	Sen			-7.2	dBm	1
Receiver Reflectance	RR			-12	dB	
LOS Assert	LOSA			-30	dBm	
LOS De-Assert	LOSD			-13	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Note:

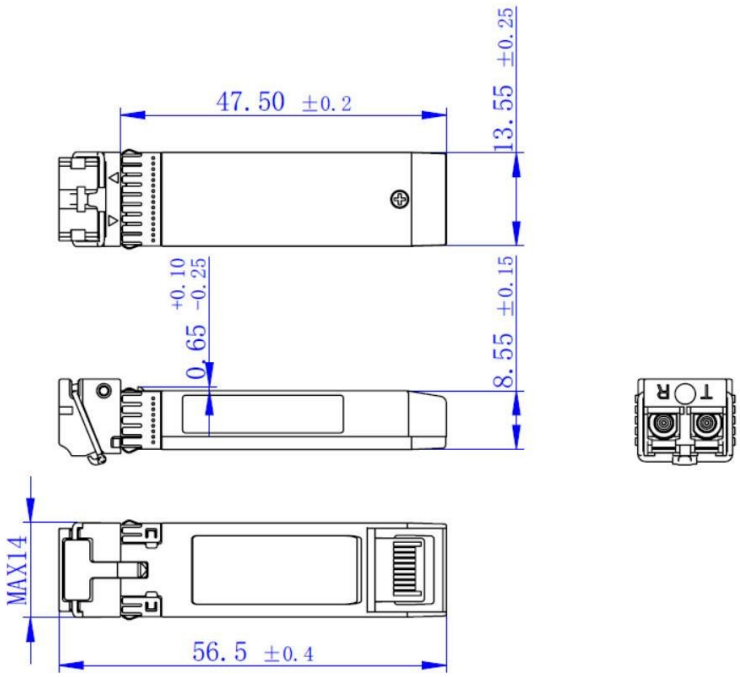
1. BER = 5×10^{-5}, measured with PRBS $2^{31}-1$ at 25.78Gb/s. RS-FEC required on host.

Digital Diagnostic Functions

The following digital diagnostic characteristics are defined over the normal operating conditions unless otherwise specified.

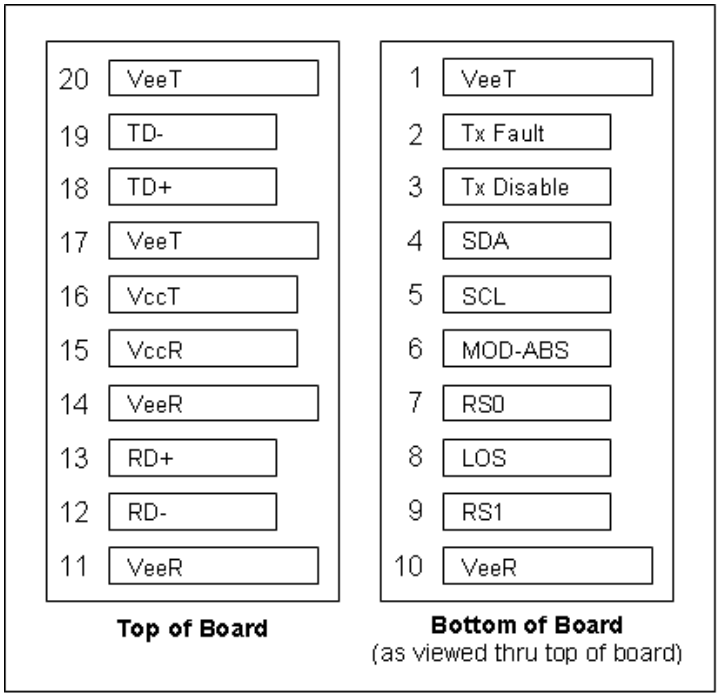
Parameter	Symbol	Min	Max	Unit
Temperature monitor absolute error	DMI_Temp	-5	5	°C
Supply voltage monitor absolute error	DMI_VCC	-0.1	0.1	V
Channel RX power monitor absolute error	DMI_RX_Ch	-3	3	dB
Channel Bias current monitor	DMI_Ibias_Ch	-10%	10%	mA
Channel TX power monitor absolute error	DMI_TX_Ch	-3	3	dB

Mechanical Dimensions



Units: mm

Pin Assignment and Description



Pin	Signal Name	Description	Plug Seq.
1	VeeT	Transmitter Ground	1
2	TX FAULT	Transmitter Fault Indication	3
3	TX DISABLE	Transmitter Disable	3
4	SDA	SDA Serial Data Signal	3
5	SCL	SCL Serial Clock Signal	3
6	MOD_ABS	Module Absent. Grounded within the module	3
7	RS0	Not Connected	3
8	LOS	Loss of Signal	3
9	RS1	Not Connected	3
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inv. Received Data Out	3
13	RD+	Received Data Out	3
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	2
16	VccT	Transmitter Power Supply	2
17	VeeT	Transmitter Ground	1
18	TD+	Transmit Data In	3
19	TD-	Inv. Transmit Data In	3
20	VeeT	Transmitter Ground	1

ESD

This transceiver is specified as ESD threshold 1kV for high-speed data pins and 2kV for all other electrical input pins, tested per MIL-STD-883, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Laser Safety

This is a Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).