

## 25Gb/s SFP28 SR 850nm 100m Optical Transceiver

### Features

- Data Rate Up to 25.78Gbps
- Built-in CDR
- Up to 70m transmission distance on OM3 MMF
- Up to 100m transmission distance on OM4 MMF
- 850nm VCSEL and PIN receiver
- 25GAUI C2M Electrical Interface
- 2-wire interface for integrated Digital Diagnostic monitoring
- SFP+ MSA package with duplex LC connector
- Hot pluggable
- Very low EMI and excellent ESD protection
- +3.3V power supply
- Power consumption less than 1W
- Operating case temperature: 0~+70°C

### Applications

- 25G BASE-SR
- CPRI

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### Compliance

- SFF-8431
- SFF-8432
- SFF-8472
- IEEE802.3by-2016
- RoHS compliance

## Description

SFP-25G-SR transceiver is a high performance, cost effective modules, which is optimized for CPRI and 25G Ethernet, supporting MAX data-rate of 25.78Gbps, and transmission distance up to 70m on OM3 MMF. The transceiver consists of two sections: The transmitter section incorporates an 25G 850nm VCSEL, driver and CDR.. The receiver section consists of a PIN photo-diode integrated with a transimpedance preamplifier (TIA), limiting amplifier and CDR. The transceiver is hot pluggable into the 20-pin connector.

The high-speed electrical interface is base on low voltage logic, with nominal 100 Ohms differential impedance and AC coupled in the transceiver.

A serial EEPROM in the transceiver allows the user to access transceiver monitoring and configuration data via the 2-wire SFP Management Interface.

## Absolute Maximum Ratings

<b>Table1-Absolute Maximum Ratings</b>				
Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T <sub>S</sub>	-40	+85	°C
Supply Voltage	V <sub>CC3</sub>	0	3.6	V
Relative Humidity(Non-condensing)	RH	5	85	%
RX Input Average Power	P <sub>max</sub>		3.4	dBm

## Recommended Operating Conditions

<b>Table2-Recommended Operating Conditions</b>					
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T <sub>C</sub>	0		70	°C
Power Supply Voltage	V <sub>CC3</sub>	3.13	3.3	3.47	V
	I <sub>CC3</sub>			288	mA
Power Dissipation	P <sub>D</sub>			1	W
Data Rate			25.78125		Gbps
Transmission Distance(OM4 MMF)				100	m

## Optical,Electrical Characteristic

Tested under recommended operating conditions, unless otherwise noted

**Table3-Transmitter Operating Characteristic-Optical, Electrical**

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	$\lambda_c$	840	850	860	nm	
RMS Spectral Width				0.6	nm	
Laser Off Power	Poff			-30	dBm	
Average Optical Power	Pavg	-5		2.4	dBm	
Optical Modulation Amplitude	OMA	-6.4		3	dBm	
Extinction Ratio	ER	2			dB	
Transmitter Dispersion Penalty	TDP			4.3	dB	
Optical Return Loss Tolerance				12	dB	
Optical Eye Mask		5			%	Note1
Differential input impedance			100		$\Omega$	
Tx Input Diff Voltage	VI	180		700	mV	
Tx Fault	VoL	-0.3		0.4	V	At 0.7mA
	IoH	-50		37.5	uA	Note2
Tx_Disable	VIL	-0.3		0.8	V	
	VIH	2		VCC+0.3	V	

Notes:

[1] BER =5x 10<sup>-5</sup> .

[2] Measured with a 4.7 k $\Omega$  load pulled up to Vcc.

**Table4-Receiver Operating Characteristic-Optical, Electrical**

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	$\lambda_r$	840	850	860	nm	
Receiver Sensitivity (Average Power)	Psens			-10.3	dBm	Note1
Los Assert	LosA	-30			dBm	
Los Dessert	LosD			-13	dBm	
Los Hysteresis	LosH	0.5			dB	
Overload	Pin	2.4			dBm	
Receiver Reflectance				-12	dB	
Rx Output Diff Voltage	Vo	300		900	mV	
Rx_LOS	VoL	-0.3		0.4	V	At 0.7mA
	IoH	-50		37.5	uA	Note2
RS0,RS1	VIL	-0.3		0.8	V	
	VIH	2		VCC+0.3	V	

Notes:

[1] ER=3dB; PRBS 2<sup>31</sup>-1;BER =5x 10<sup>-5</sup> .

[2] Measured with a 4.7 k $\Omega$  load pulled up to Vcc.

## Recommended Host Board Power Supply Circuit

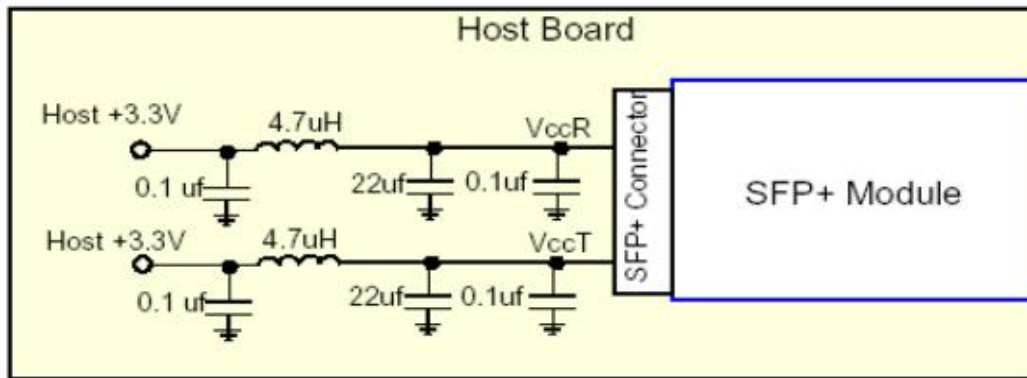


Figure1 Recommended Host Board Power Supply Circuit

## Pin Description

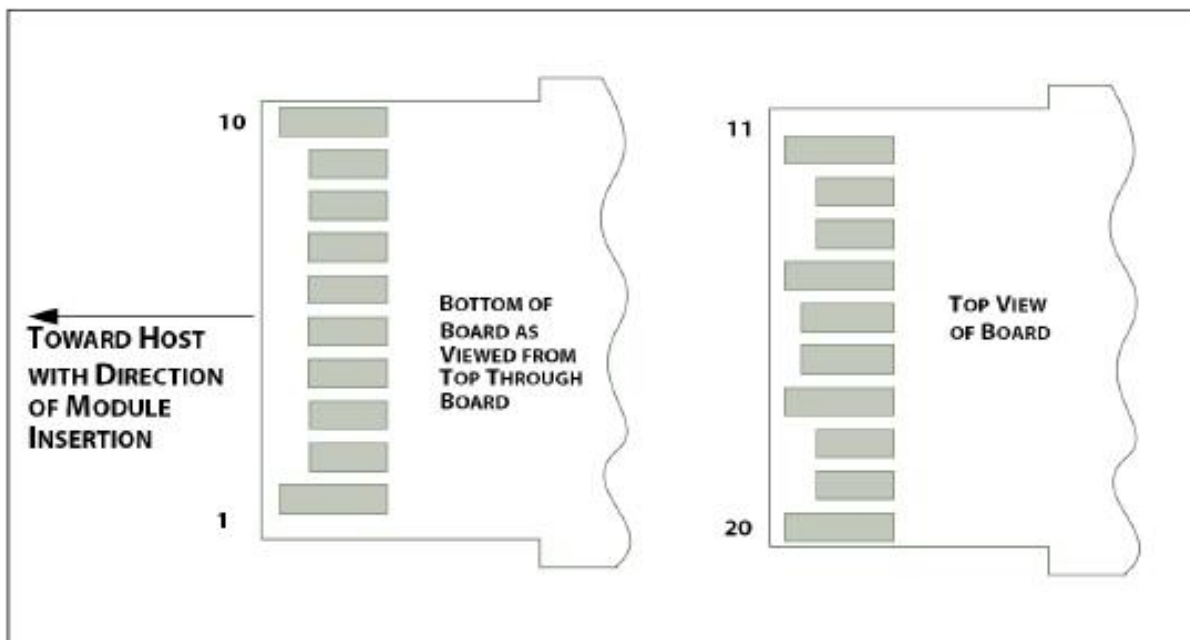


Figure2 Pin view

## Pin Assignment

**Table5-Pin Assignment**

Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2
3	LVTTL-I	TX_Disable	Transmitter Disable; Turns off transmitter laser output	3
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line (Same as MOD-DEF2 as defined in the INF-8074i)	4
5	LVTTL-I/O	SCL	2-wire Serial Interface Clock (Same as MOD-DEF1 as defined in the INF-8074i)	4
6		MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	5
7	LVTTL-I	RS0		6
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication (In FC designated as RX_LOS, in S ONET designated as LOS, and in Ethernet designated at Signal Detect)	2
9	LVTTL-I	RS1		
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Non-Inverted Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Transmitter 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

[1] The module signal ground pins, VeeR and VeeT, shall be isolated from the module case.

[2] This pin is an open collector/drain output pin and shall be pulled up with 4.7k-10kohms to Host\_Vcc on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module VccT/R + 0.5 V.

[3] This pin is an open collector/drain input pin and shall be pulled up with 4.7k-10kohms to VccT in the module.

[4] See sff-8431 4.2 2-wire Electrical Specifications .

[5] This pin shall be pulled up with 4.7k-10kohms to Host\_Vcc on the host board.

## Monitoring Specification

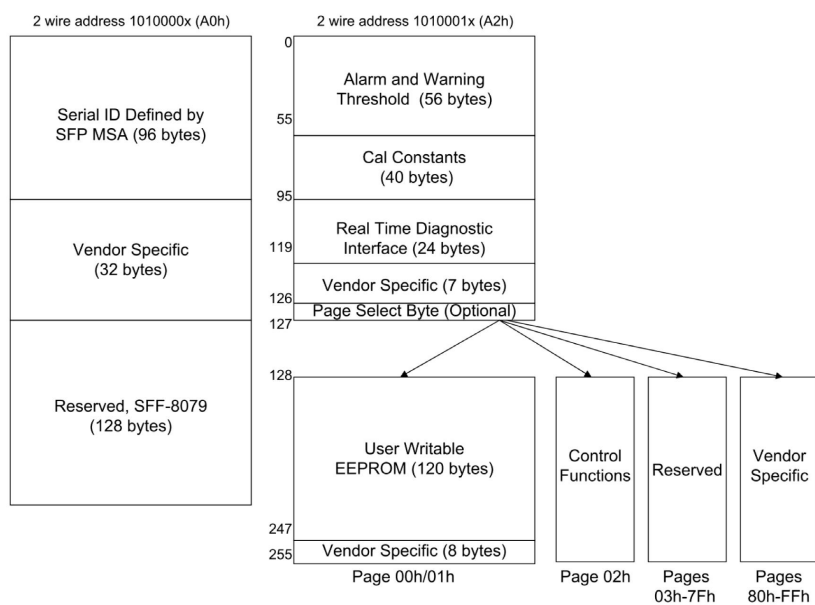
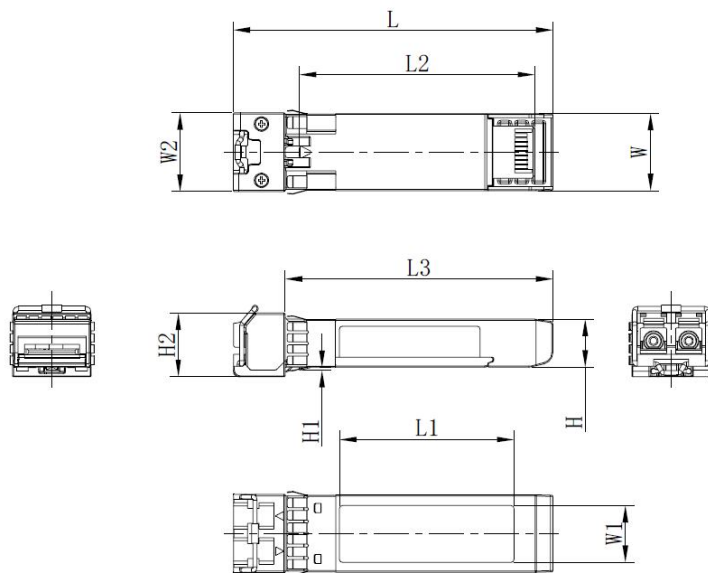


Figure3 Memory map

## Mechanical



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