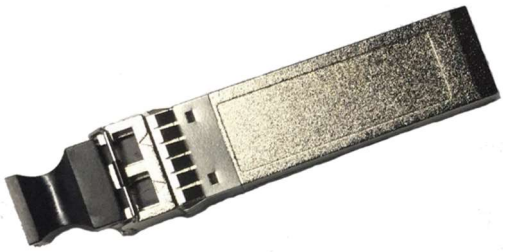

25GBASE-SR SFP Transceiver

Features:

- Supports 25.78Gb/s bit rate
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Digital diagnostics functions are available via the I^2C interface
- Operating case temperature
- Commercial: 0°C to +70 °C
- +3.3V single power supply
- Power consumption less than 1W
- RoHS compliant

Applications:

- 25GBASE-SR Ethernet
- 32G Fiber Channel
- Other optical links

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc	-0.5	-	+3.6	V	
Storage Temperature	T_s	-40	-	+85	°C	
Operating Humidity	RH	+5	-	+85	%	1

Notes:

1. No condensation

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T_C	0	-	+70	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.47	V	
Power Supply Current	Icc	-	-	300	mA	
Power Dissipation	Pd	-	-	1.0	W	
Bit Rate	BR	8.5	25.78125	-	Gbps	

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Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes
Transmitter							
Differential Data Input Swing		$V_{in,P-P}$	200	-	1600	mV_{PP}	
Input Differential Impedance		Z_{IN}	90	100	110	Ω	
Tx_Fault	Normal Operation	V_{OL}	0	-	0.8	V	
	Transmitter Fault	V_{OH}	2.0	-	V_{CC}	V	
Tx_Disable	Normal Operation	V_{IL}	0	-	0.8	V	
	Laser Disable	V_{IH}	2.0	-	V_{CC}+0.3	V	
Receiver							
Differential Date Output		V_{out}	400	-	800	mV	
Output Differential Impedance		Z_D	90	100	110	Ω	
Rx_LOS	Normal Operation	V_{OL}	0	-	0.8	V	
	Lose Signal	V_{oH}	2.0	-	V_{CC}	V	

Optical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Optical transmitter Characteristics						
Bit Rate	BR	Gbps	8.5	25.78125	-	1
Center Wavelength Range	λc	nm	820	850	880	
RMS Spectral Width	Δλ	nm	-	-	0.6	
Average Launch power Tx_off	Poff	dBm	-	-	-30	
Average Optical Power	P_0	dBm	-5.0		2.4	2
Extinction Ratio	ER	dB	2.0	-	-	
Optical return loss tolerance	ORL	dB	-	-	12	
Optical Eye Mask	-	%	5	-	-	

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Optical Receiver Characteristics						
Bit Rate	BR	Gbps	8.5	25.78125	-	1
Center Wavelength Range	λc	nm	820	-	880	
Damage threshold	DT	dBm	3.4	-	-	
Overload Input Optical Power	P_{IN}	dBm	2.4	-	-	
Receive Sensitivity (Average Power)	-	dBm	-	-	-10.3	3
Receive Sensitivity (Average Power)	-	dBm	-	-	-5.2	4
LOS De-Assert	LOS_D	dBm	-	-	-13	
LOS Assert	LOS_A	dBm	-30	-	-	
LOS Hysteresis	LOS_H	dB	0.5			

Notes:

1. Set low of RS0/RS1 pin and 0 of RS0/RS1 bit. Engine CDR lock at low bit rate.
2. Set high of RS0/RS1 pin and 0 of RS0/RS1 bit. Engine CDR lock at high bit rate.
3. Coupled into 50/125 MMF.
4. BER=5x10-5; PRBS 231-1 @25.78125Gbps.
5. BER=1x10-12; PRBS231-1@25.78125Gbps.

Recommended Host Board Power Supply Circuit

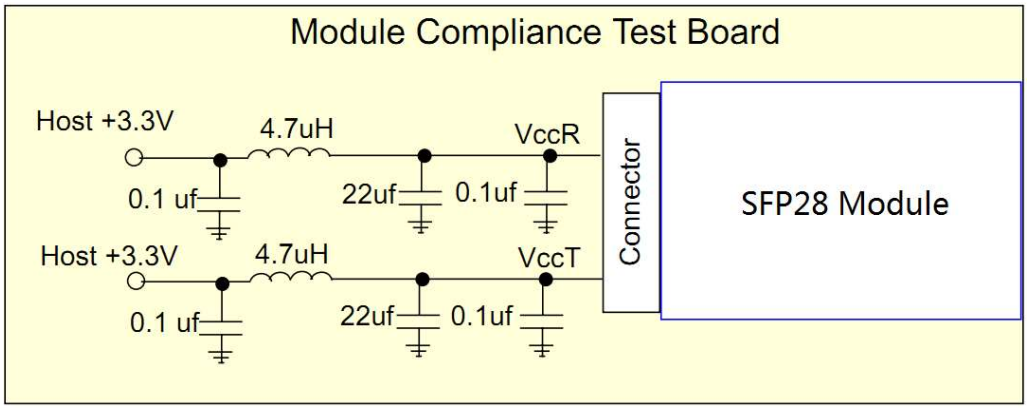

Figure 1. Recommended Host Board Power Supply Circuit

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Recommended Interface Circuit

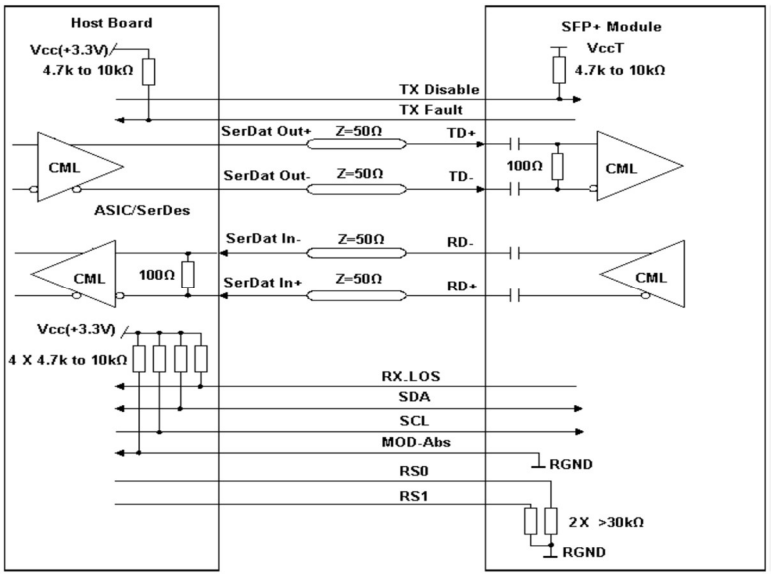

Figure 2. Recommended Interface Circuit

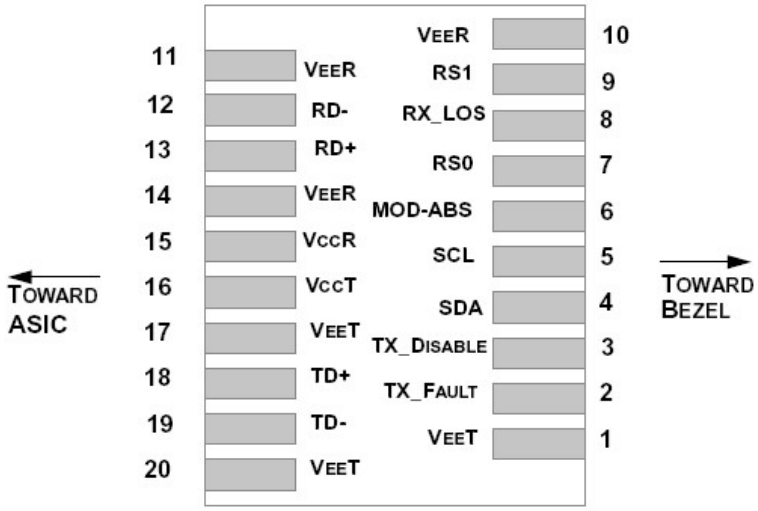

Figure 3. Pin View

Pin Definition

Pin	Symbol	Name/Description	Notes
1	$V_{EE}T$	Module Transmitter Ground	1
2	TX_FAULT	Module Transmitter Fault	2
3	TX_DISABLE	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2-Wire Serial Interface Data Line (MOD-DEF2)	
5	SCL	2-Wire Serial Interface Clock (MOD-DEF1)	
6	MOD_ABS	Module Absent, connected to $V_{EE}T$ or $V_{EE}R$ in the module	2

7	RS0	Rate Select 0	4
8	RX_LOS	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as Signal Detect)	2
9	RS1	Rate Select 1	4
10	$V_{EE}R$	Module Receiver Ground	1
11	$V_{EE}R$	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	$V_{EE}R$	Module Receiver Ground	1
15	$V_{CC}R$	Module Receiver 3.3 V Supply	
16	$V_{CC}T$	Module Transmitter 3.3 V Supply	
17	$V_{EE}T$	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	$V_{EE}T$	Module Transmitter Ground	1

Notes:

1. The module ground pins are isolated from the module case.
2. The pins shall be pulled up with 4.7K-10Kohms to a voltage between 3.14V and 3.46V on host board.
3. The pin is pulled up to VCCT with a 4.7K-10KΩ resistor in the module.
4. See SFF-8472 Rev12.2 Table 10-2.

Monitoring Specification

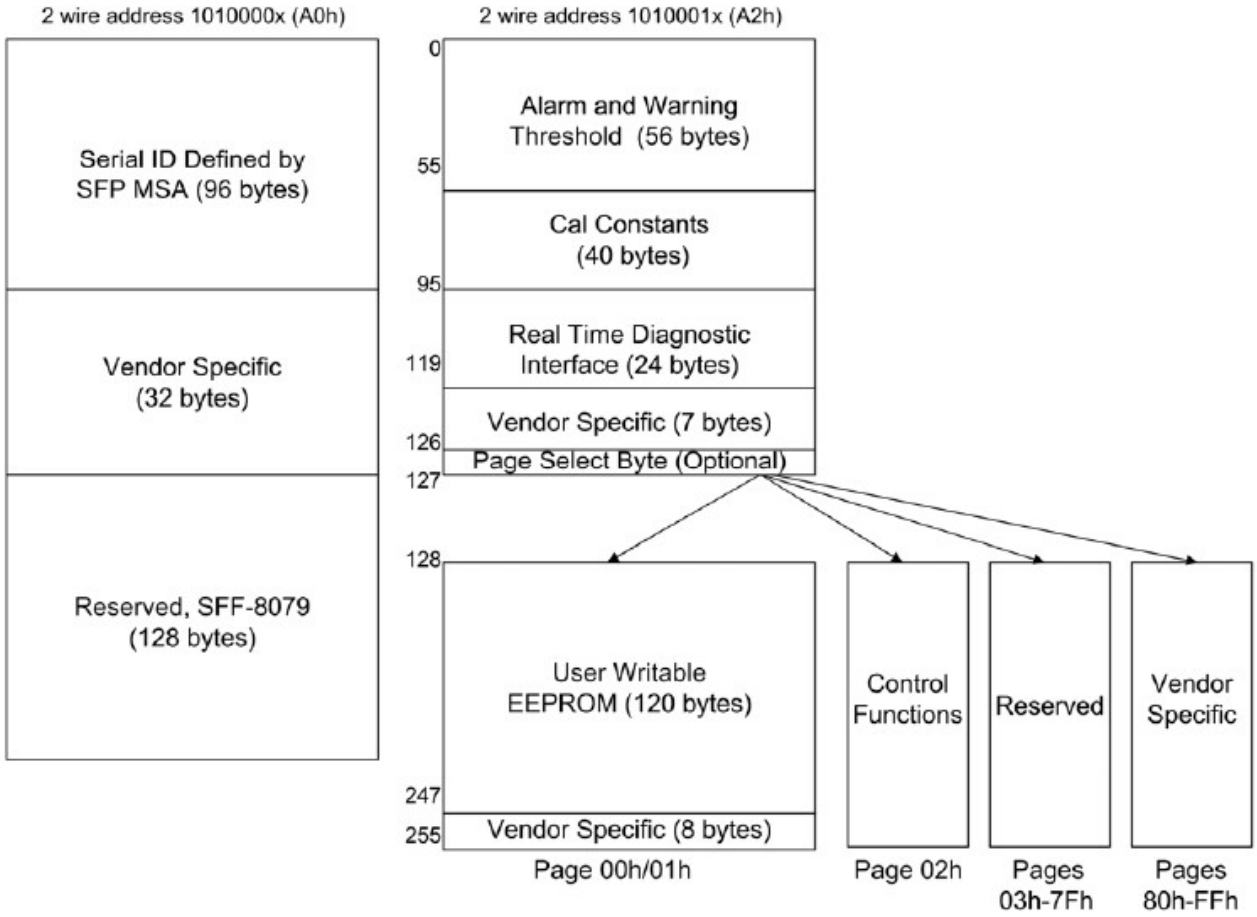

Figure 4. Memory Map

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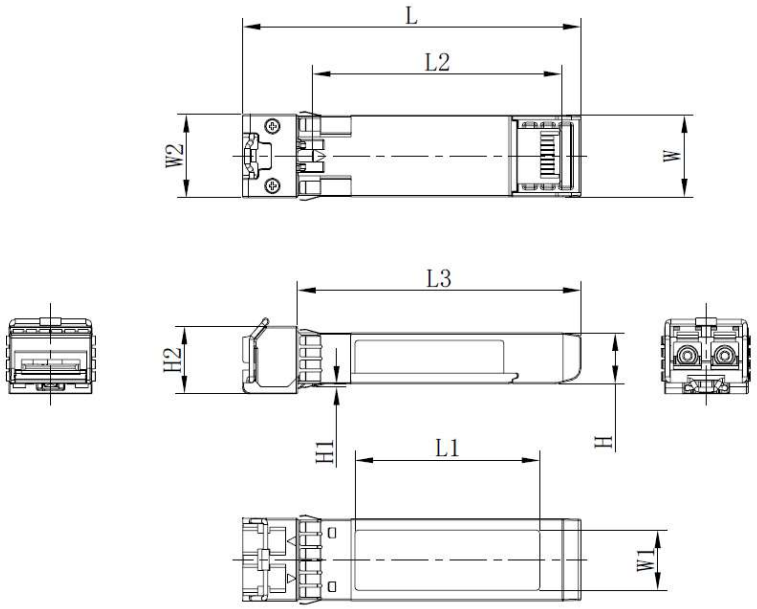
Mechanical Design Diagram



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

Unit: mm

Laser Safety

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

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Sum Up

Part No	Specification									
	Package	Data rate per Lane	Laser	Optical Power	Detector	Max. Receive Sensitivity (OMA)	Temp	Reach	Other	Application code
EGS-S28-SR4-C	SFP28	25.78 Gbps each Channel	850nm VCSEL	-5~ +2.4 each Channel	PIN	-10.3dBm each Channel	0~70°C	70m on OM3 MMF and 100m on OM4 MMF	DDM RoHS	25GBASE-SR Ethernet

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