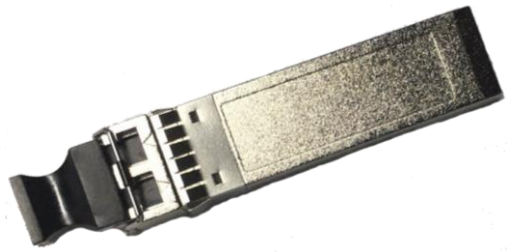
Data Sheet

25GBASE-SR SFP Transceiver

P/N: WST-S28-SR-C



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
- Password protection for A0h and A2h
- eCPRI Specification V2.0

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	

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	-	-	
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

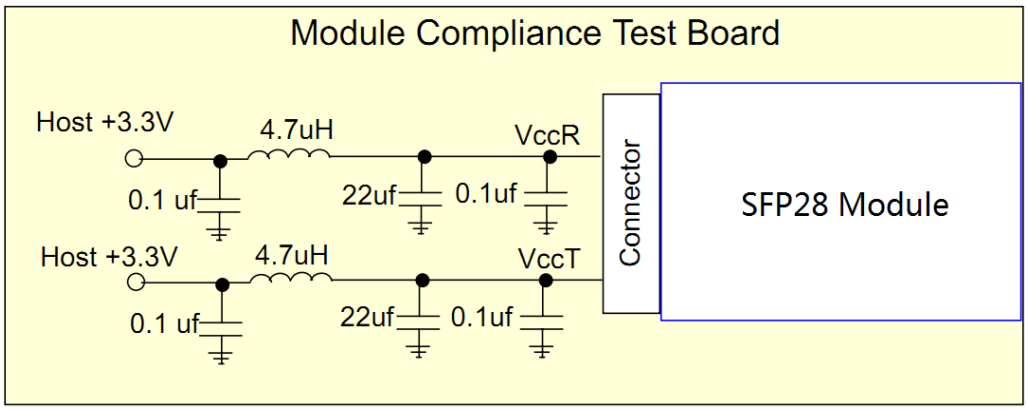


Figure 1. Recommended Host Board Power Supply Circuit

Recommended Interface Circuit

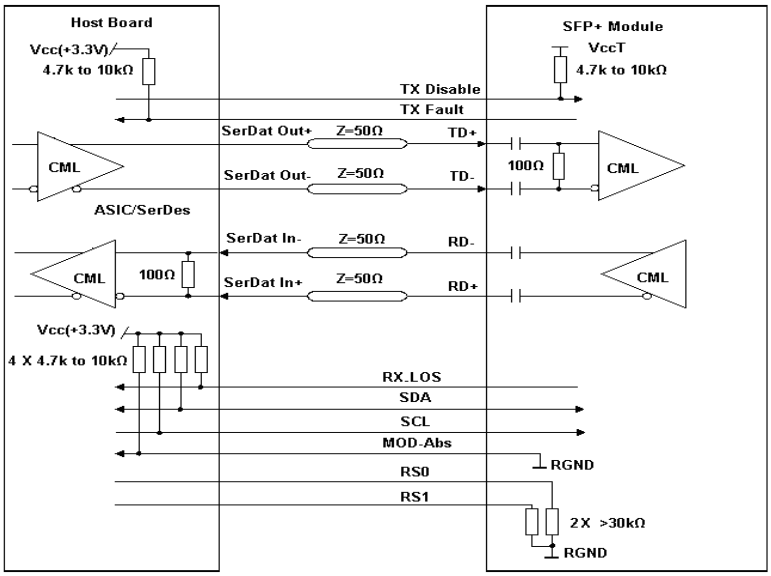


Figure 2. Recommended Interface Circuit

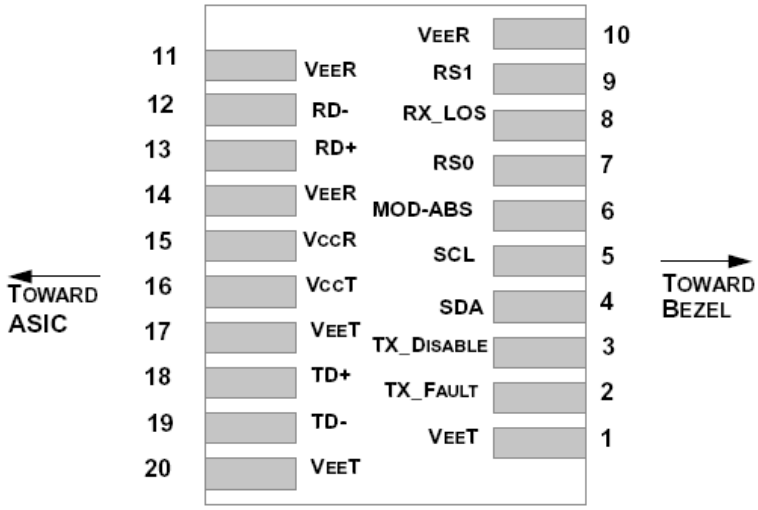


Figure 3. Pin View

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

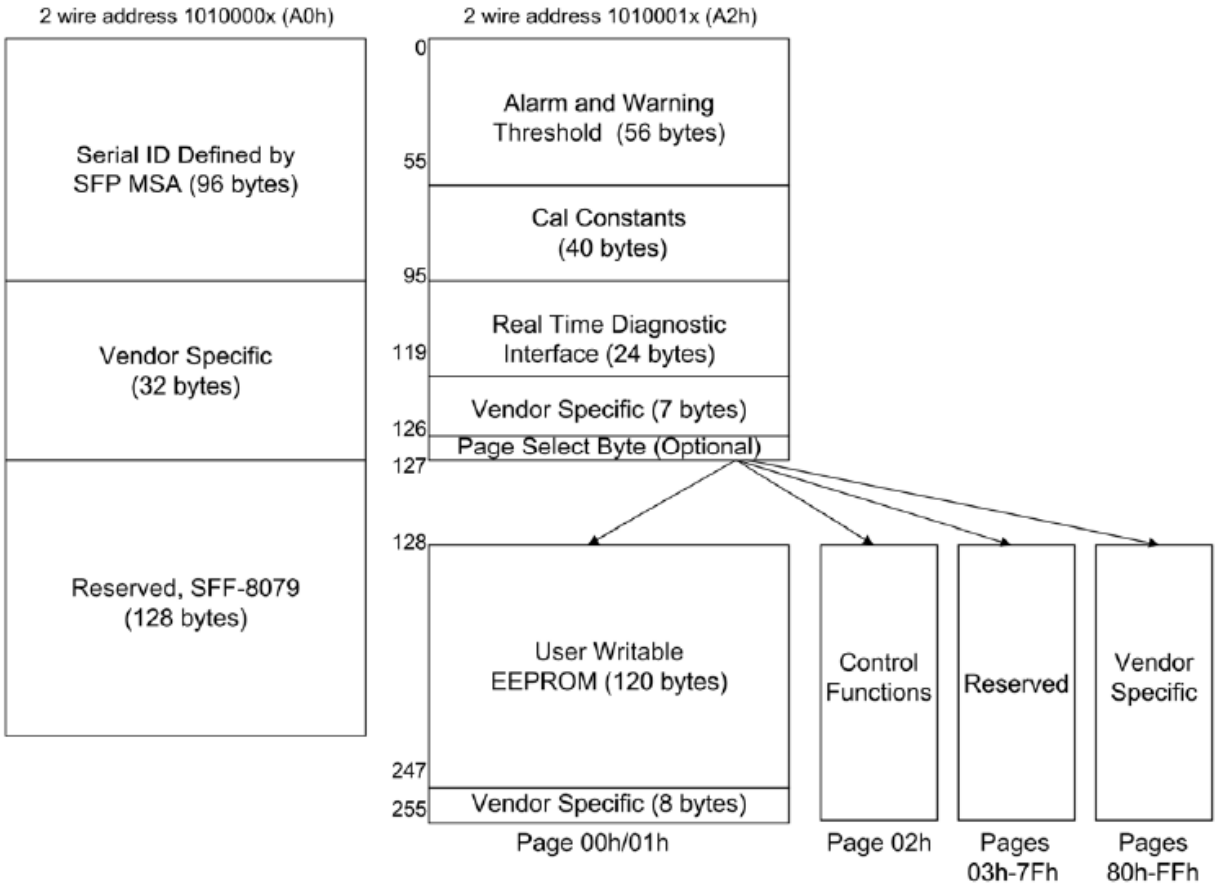
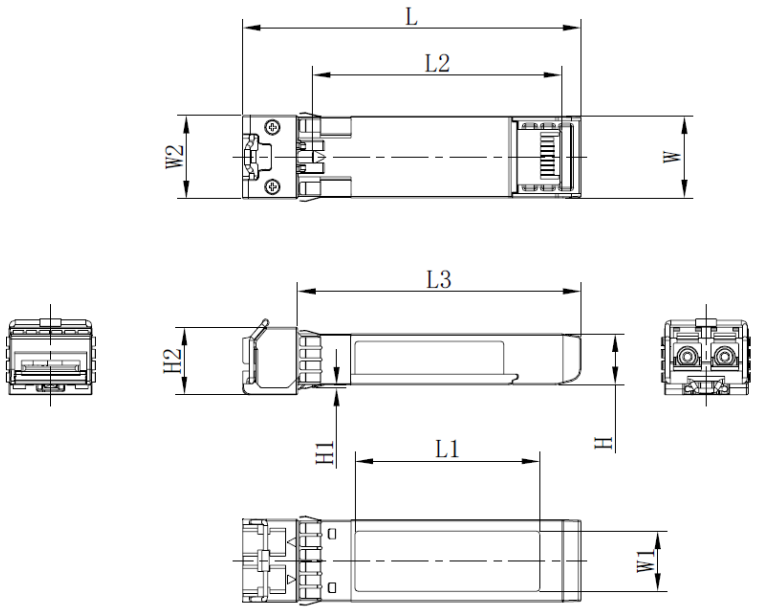


Figure 4. Memory Map

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.

Ordering Information

Part No	Specification									
	Package	**Data rate per Lane**	**Laser**	**Optical Power**	**Detector**	**Max. Receive Sensitivity (OMA)**	**Temp**	**Reach**	**Other**	**Application code**
WST-S28-SR-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**

Modification History

Revision	Date	Description	Originator	Review	Approved
V1	30-Apr -2019	New Issue	Ivy Chen	Wayne Liao	Wayne Liao
V1.1	26-Mar-2020	Update Feature	Ivy Chen	Wayne Liao	Wayne Liao

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