WAVESPLITTER™ TECHNOLOGIES, INC.

Data Sheet

25G SFP28 1310nm LR 10km Transceiver

P/N: WST-S28-LR-x

Features:

- Compliant with SFF-8402 SFP28 MSA
- 10 Gbps/ 25.78 Gbps serial optical interface
- 1310nm DFB transmitter and PIN PD receiver
- Superior eye performances
- Up to 10km on 9/125 um SMF
- Low power consumption
  - Max. 1.2W for WST-S28-LR-C
  - Max. 1.5W for WST-S28-LR-I
- Operating temperature range:
  - 0°C to 70°C operation: WST-S28-LR-C
  - -40°C to 85°C operation: WST-S28-LR-I
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- Support CPRI Option 8/10 @ 10.13/ 24.33Gbps

Applications:

- 25G Ethernet
- CPRI Option 8/10

Standards:

- Complaint with SFF-8402 SFP28 MSA
- SFF-8472 Digital Diagnostic Function
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- RoHS 2.0 Compliant

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature	$T_{Storage}$	-40	+85	°C	
Relative Humidity	RH	0	+85	%	

Recommended Operating Conditions (Tc=25°C, unless noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Case Temperature	T_C	0		70	°C	WST-S28-LR-C
		-40		85		WST-S28-LR-I
Power Supply Voltage	V_{CC}	3.15	3.30	3.45	V	
Signaling Rate each Channel			25.78125		Gbps	

Electrical Characteristics (Tc within operating temperature range, unless noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Consumption	P			1.2	W	WST-S28-LR-C
				1.5		WST-S28-LR-I
Supply Current	Icc			360	mA	WST-S28-LR-C
				450		WST-S28-LR-I

TRANSMITTER CHARACTERISTICS (Tc within operating temperature range, unless noted)

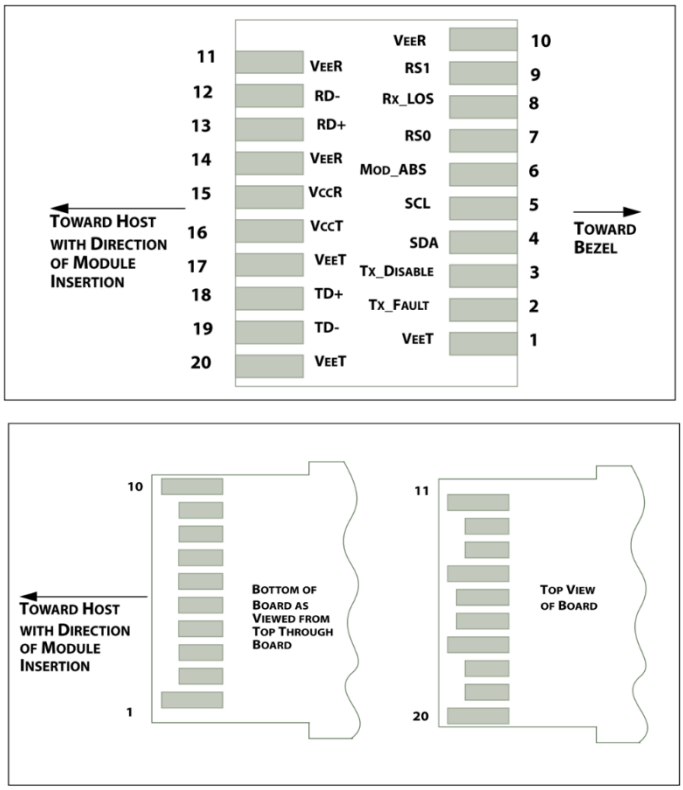
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Center Wavelength	λ	1295		1325	nm	
Average Optical Power	P_{avg}	-7.0		2.0	dBm	
Side-mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.0			dB	
Optical Modulation Amplitude	TxOMA	-4.0		2.2	dBm	
Transmitter and Dispersion Penalty	TDP			2.7	dB	
Average Launch Power of OFF Transmitter	P_{off}			-20	dBm	
Optical Return Loss Tolerance				20	dB	
Transmitter Reflectance				-26	dB	

RECEIVER CHARACTERISTICS (Tc within operating temperature range, unless noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Center Wavelength	λ	1295		1325	nm	
Damage Threshold		3.0			dBm	
Receive Power Overload		2.0			dBm	
Receiver Reflectance				-26	dB	
Receiver Sensitivity (OMA)	S_{OMA}			-12.0	dBm	1
LOS Assert	LOS_A	-30			dBm	
LOS De-Assert	LOS_D			-15	dBm	
LOS Hysteresis		0.5			dB	

Note 1: Measured with worst ER; BER < $5x10^{-5}$ @25G, BER <$1x10^{-12}$ @10G and PRBS 2^{31}-1.

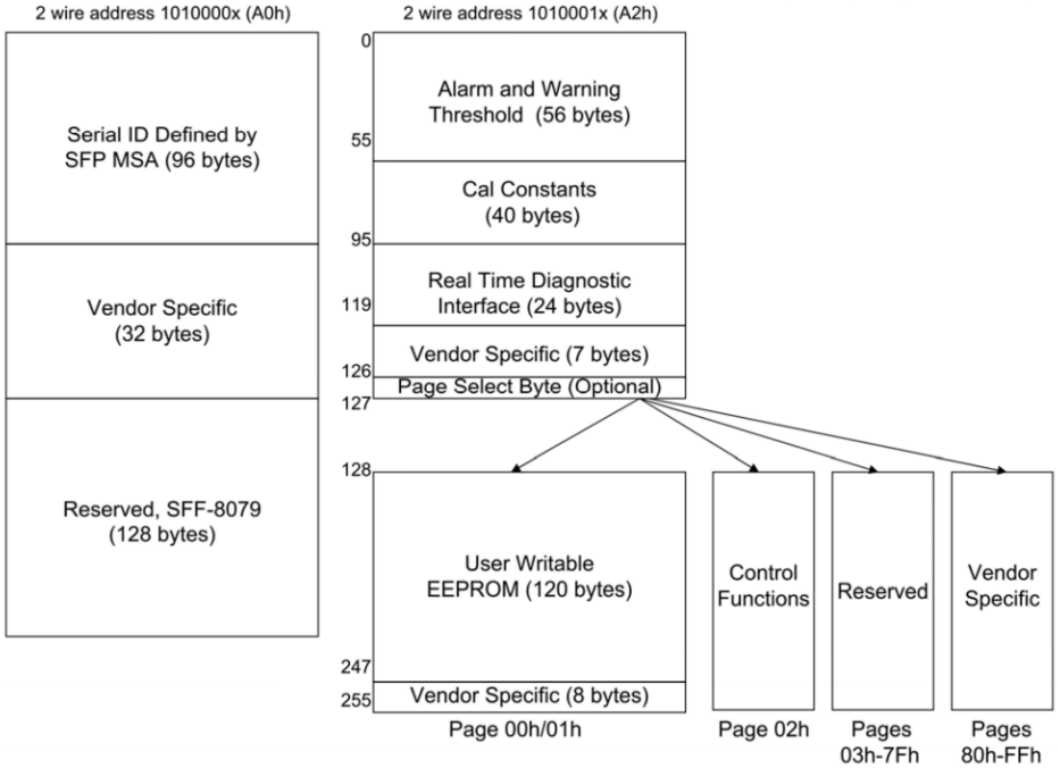
Pin Assignment



Pin Description

PIN	Logic	Symbol	Name / Description
1		VeeT	Module Transmitter Ground
2	LVTTL-O	TX_Fault	Module Transmitter Fault
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line
5	LVTTL-I	SCL	2-Wire Serial Interface Clock
6		MOD_DEF0	Module Definition, Grounded in the module
7	LVTTL-I	RS0	Receiver Rate Select
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW
9	LVTTL-I	RS1	Transmitter Rate Select (not used)
10		VeeR	Module Receiver Ground
11		VeeR	Module Receiver Ground
12	CML-O	RD-	Receiver Inverted Data Output
13	CML-O	RD+	Receiver Data Output
14		VeeR	Module Receiver Ground
15		VccR	Module Receiver 3.3 V Supply
16		VccT	Module Receiver 3.3 V Supply
17		VeeT	Module Transmitter Ground
18	CML-I	TD+	Transmitter Non-Inverted Data Input
19	CML-I	TD-	Transmitter Inverted Data Input
20		VeeT	Module Transmitter Ground

EEPROM Map

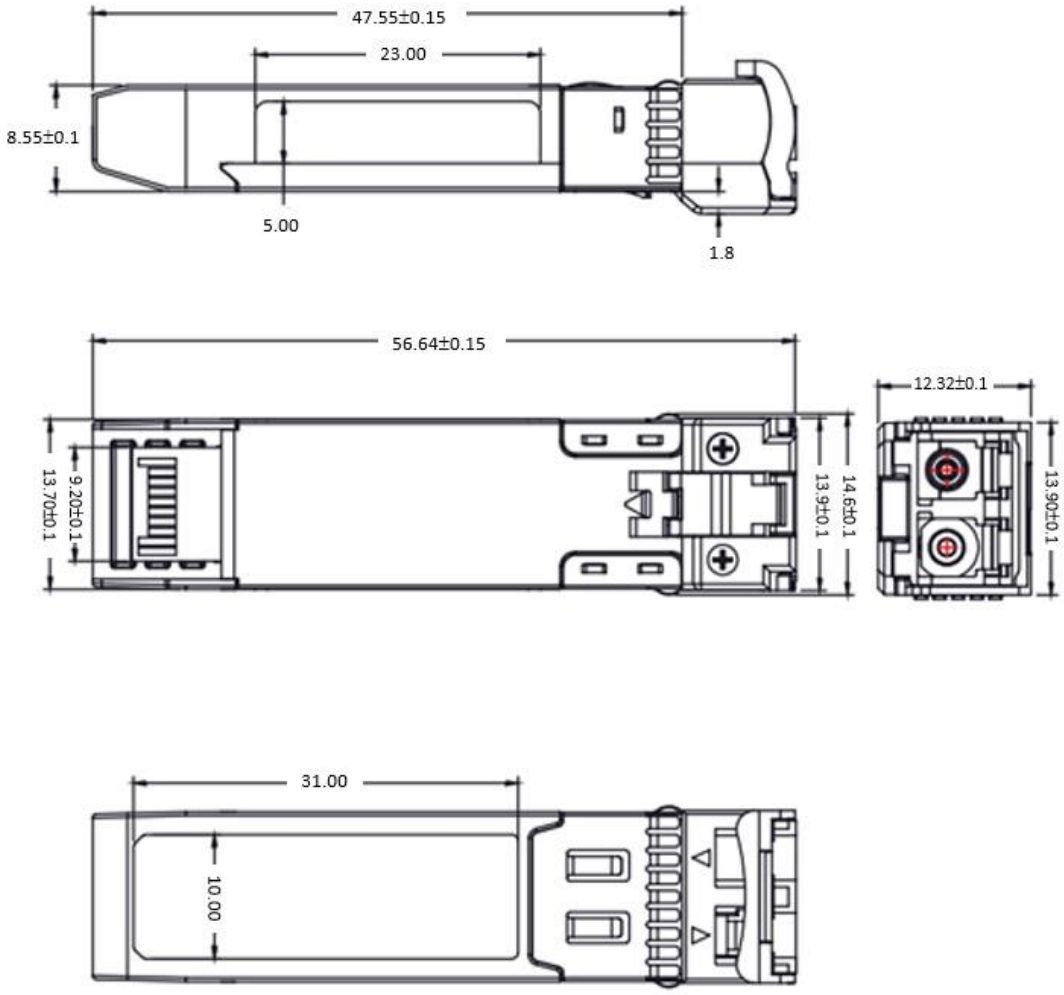


Digital Diagnostic Monitor Characteristics (DDM)

The following digital diagnostic characteristics are defined over the Recommended Operating Environment unless otherwise specified. It is compliant to SFF8472 Rev12.3 with internal calibration mode. For external calibration mode please contact our sales stuff.

Parameter	Symbol	Min.	Max.	Unit
Temperature Monitor Absolute Error	DMI_Temp	-3	3	°C
Laser Power Monitor Absolute Error	DMI_TX	-3	3	dB
RX Power Monitor Absolute Error	DMI_RX	-3	3	dB
Supply Voltage Monitor Absolute Error	DMI_VCC	-3%	3%	V
Bias Current Monitor Absolute Error	DMI_Ibias	-10%	10%	mA

Outline Dimensions



Bail Color: Blue

Unit: mm

Ordering Information

Part No	Specification									
	Package	Data rate per Lane	Laser	Optical Power	Detector	Max. Receiver sensitivity (OMA)	Temp	Reach	Other	Application code
WST-S28-LR-C	SFP28	10/25.78125 Gbps	1310nm DFB	-7.0~ +2 each Channel	PIN	-12.0dBm	0~70°C	10km	DDM RoHS	10G/25G Ethernet CPRI 8/10
WST-S28-LR-I	SFP28	10/25.78125 Gbps	1310nm DFB	-7.0~ +2 each Channel	PIN	-12.0dBm	-40~85°C	10km	DDM RoHS	10G/25G Ethernet CPRI 8/10

Modification History

Revision	Date	Description	Originator	Review	Approved
V1.0	26-Apr-2019	New Issue	Shao-Yu Lee	Tom Tang	Wayne Liao
V1.1	19-May-2021	Update Ordering Information	Shao-Yu Lee	Tom Tang	Wayne Liao
V1.2	15-Dec-2021	Update 10 Gbps	Shao-Yu Lee	Tom Tang	Wayne Liao
V1.3	30-Dec-2021	Change components Rev 40 to 41	Shao-Yu Lee	Tom Tang	Wayne Liao

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