

DataSheet

10G 1490/1550nm SFP+ BIDI 80km Transceiver

P/N: WST-SFP+BX8-xx



Features:

- Up to 11.3Gbps Data Links
- Up to 80km transmission on SMF
- Power dissipation:
 - <1.5W for CT version, WST-SFP+BX8-xC
 - <1.7W for FT version, WST-SFP+BX8-xF
 - <1.8W for IT version, WST-SFP+BX8-xI
- 1490nm/1550nm EML laser and APD receiver
- EEPROM with Serial ID functionality
- 2-Wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable
- Compliant with SFP+MSA with LC connector
- Single +3.3V Power Supply
- Operating temperature range:
 - C Temp: 0 ~70C, WST-SFP+BX8-xC
 - F Temp: -5C~ +85C, WST-SFP+BX8-xF
 - I Temp: -40C~ +85C, WST-SFP+BX8-xI
- Compliant with RoHS

Applications:

- 10G Ethernet
- OTU2/2e
- Other Optical Links

Santander

- Compliant with SFP-8431
- Compliant with SFP-8432
- Compliant with SFP-8472
- Compliant with IEEE802.3ae

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Maximum Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity	RH		95	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Top	0		70	°C	WST-SFP+BX8-xC
		-5		85		WST-SFP+BX8-xF
		-40		85		WST-SFP+BX8-xI
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Data Rate	BR		10.3125	11.3	Gbps	
Transmission Distance	TD			80	km	
Coupled fiber	Single mode fiber					9/125um SMF

Electrical Characteristics

(tested under recommended operating conditions, unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	Vcc	3.135		3.465	V	
Supply Current	Icc			450	mA	WST-SFP+BX8-xC
				500		WST-SFP+BX8-xF
				540		WST-SFP+BX8-xI
Power Consumption	P			1.5	W	WST-SFP+BX8-xC
				1.7		WST-SFP+BX8-xF
				1.8		WST-SFP+BX8-xI
Transmitter						
CML Inputs(Differential)	Vin	150		1200	mVpp	1
Input Impedance(Differential)	Zin	85	100	115	Ω	
TX_DIS Disable		2		Vcc+0.3	V	
TX_DIS Enable		0		0.8	V	
TX_FAULT Fault		2		Vcc+0.3	V	
TX_FAULT Normal		0		0.5	V	
Receiver						
CML Outputs (Differential)	Vout	350		700	mVpp	1
Output Impedance (Differential)	Zout	85	100	115	Ω	
RX_LOS LOS		2		Vcc+0.3	V	2
RX_LOS Normal		0		0.8	V	2
MOD_DEF (0:2) VoH		2.5			V	With Serial ID
MOD_DEF (0:2) VoL		0		0.5	V	With Serial ID

Notes:

1. CML logic, internally AC coupled.
2. Loss Of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Optical Specifications

(tested under recommended operating conditions, unless otherwise noted)

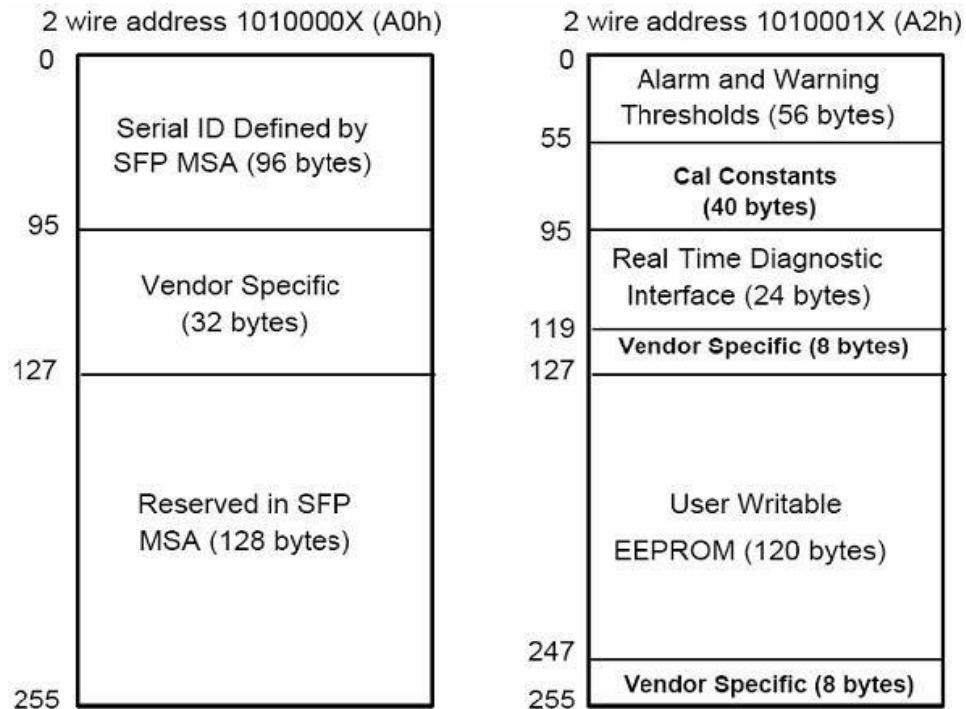
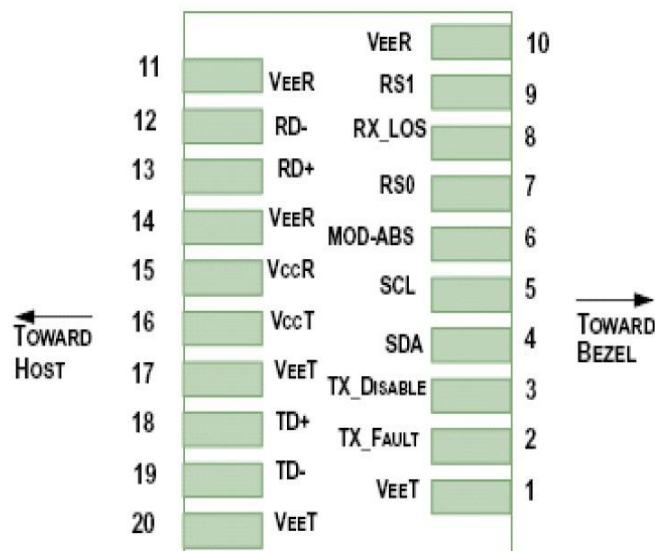
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate			10.3125	11.3	Gbps	
Transmitter						
Center Wavelength	λ	1480	1490	1550	nm	WST-SFP+BX8-Ux
		1540	1550	1560	nm	WST-SFP+BX8-Dx
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	Pout	-1		4	dBm	1
Extinction Ratio	ER	8.2			dB	
Average Power of OFF Transmitter	Poff			-30	dBm	
Relative Intensity Noise	RIN			-128	dB/Hz	2
Receiver						
Wavelength Range	λ_C	1540	1550	1560	nm	WST-SFP+BX8-Ux
		1480	1490	1550		WST-SFP+BX8-Dx
Receiver Sensitivity	Pmin			-23	dBm	3
Receiver Overload	Pmax	-6			dBm	
LOS De-Assert	LOSD			-24	dBm	
LOS Assert	LOSA	-38			dBm	
LOS-Hysteresis	LOSH	0.5		6	dB	

Note:

1. Output is coupled into a 9/125um SMF.
2. 12dB reflection.
3. Measured with worst ER, BER less than 1E-12 and PRBS 2³¹-1 at 10.3125Gbps.

EEPROM Serial ID Memory Contents

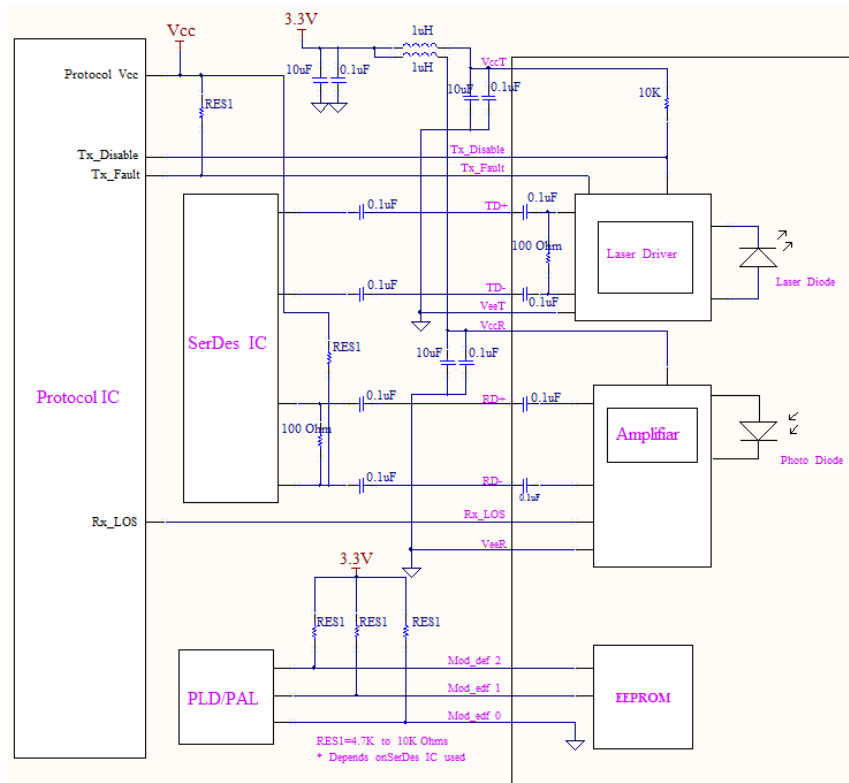
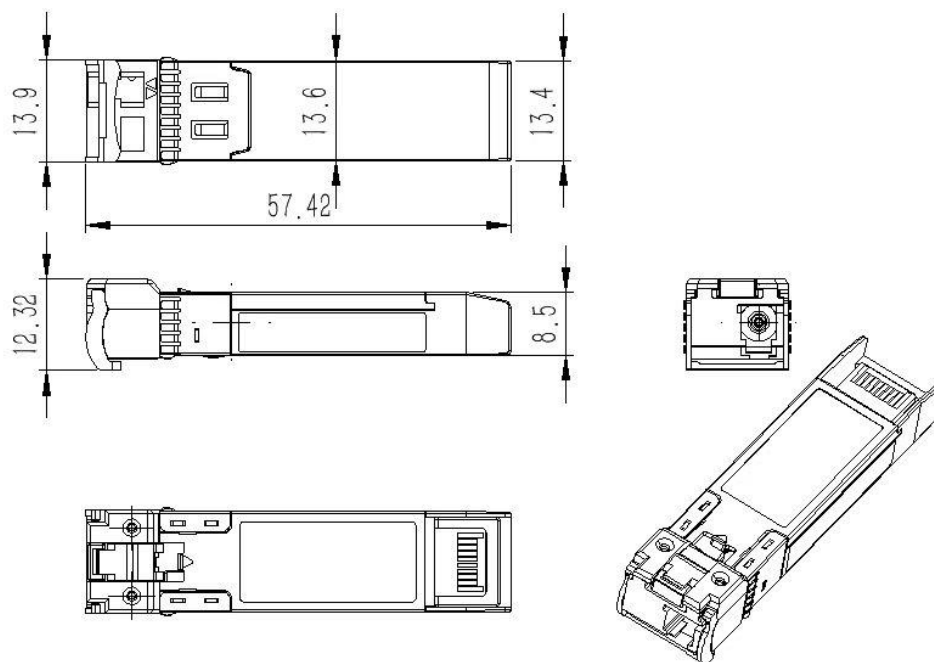
Accessing Serial ID Memory uses the 2 wire address 1010000X(A0h). Memory Contents of Serial ID are shown in

**Pin Description**

Pin	Symbol	Name/Description	Ref.
1	V _{EET}	Module transmitter ground	1
2	T _{FAULT}	Module transmitter fault	2
3	T _{DIS}	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2 wire serial interface data input/output (SDA)	4
5	SCL	2 wire serial interface clock input (SCL)	4
6	MOD_ABS	Module Absent, connect to VeeR or VeeT in the module	4
7	RS0	Rate select0, optionally control SFP+ receiver. When high, input data rate >4.5Gb/s; when low, input data rate <=4.5Gb/s	5
8	LOS	Receiver Loss of Signal Indication	6
9	RS1	Rate select0, optionally control SFP+ transmitter. When high, input data rate >4.5Gb/s; when low, input data rate <=4.5Gb/s	1
10	V _{EER}	Module receiver ground	1
11	V _{EER}	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	V _{EER}	Module receiver ground	1
15	V _{CCR}	Module receiver 3.3V supply	
16	V _{CCT}	Module transmitter 3.3V supply	
17	V _{EET}	Module transmitter ground	1
18	TD+	Transmitter inverted data out put	
19	TD-	Transmitter non-inverted data out put	
20	V _{EET}	Module transmitter ground	1

Notes:

1. Circuit ground is internally isolated from chassis ground
2. Tx FAULT is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on Tx DIS >2.0V or open, enabled on Tx DIS <0.8V.
4. Should be pulled up with 4.7kΩ- 10kΩ host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. Internally pulled down per SFF-8431 Rev 4.1.
6. LOS is open collector output. It should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Typical Application Circuit**Mechanical Dimension**

Unit: mm

Ordering Information

Part No	Specification										
	Pack age	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Other	Bail Latch color	Application code
WST-SFP+BX8-UC	SFP+	10.3125 Gbps	1490nm EML	-1 ~ 4 dBm	APD	-23 dBm	0~70℃	80km	DDM; RoHS	Purple	10GBASE-BX-U
WST-SFP+BX8-DC	SFP+	10.3125 Gbps	1550nm EML	-1 ~ 4 dBm	APD	-23 dBm	0~70℃	80km	DDM; RoHS	Yellow	10GBASE-BX-D
WST-SFP+BX8-UF	SFP+	10.3125 Gbps	1490nm EML	-1 ~ 4 dBm	APD	-23 dBm	-5~85℃	80km	DDM; RoHS	Purple	10GBASE-BX-U
WST-SFP+BX8-DF	SFP+	10.3125 Gbps	1550nm EML	-1 ~ 4 dBm	APD	-23 dBm	-5~85℃	80km	DDM; RoHS	Yellow	10GBASE-BX-D
WST-SFP+BX8-UI	SFP+	10.3125 Gbps	1490nm EML	-1 ~ 4 dBm	APD	-23 dBm	-40~85℃	80km	DDM; RoHS	Purple	10GBASE-BX-U
WST-SFP+BX8-DI	SFP+	10.3125 Gbps	1550nm EML	-1 ~ 4 dBm	APD	-23 dBm	-40~85℃	80km	DDM; RoHS	Yellow	10GBASE-BX-D

Modification History

Revision	Date	Description	Originator	Review	Approved
V1.0	27-Apr-2023	New Issue	Ken Cheng	Shao Yu Lee	Wayne Liao
V1.1	01-Apr-2025	Added F temp product	Joanne Ni	Ken Cheng	Wayne Liao

**Headquarters**

16F-5, No. 75, Sec. 1, Xintai 5th Rd., Xizhi Dist.,
New Taipei City 22101, Taiwan
Tel: +886-2-2698-7208
Fax: +886-2-2698-7210
Email: sales@wavesplitter.com
Website: https://wavesplitter.com/