

## 10G SFP+ Active Optical Cables

P/N: WST-SFP+AOCLCxxx



### Features:

- Electrical interface compliant to SFF-8431
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 150m on OM2 MMF and 300m on OM3 MMF
- Digital diagnostics functions are available via the I<sup>2</sup>C interface
- RoHS compliant
- Hot Pluggable

### Applications:

- 10 Gigabit Ethernet
- InfiniBand QDR, SDR, DDR
- Servers, switches, storage and host card adapters

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TST	-5	75	°C
Relative Humidity	RH	0	85	%
Supply Voltage	VCC	-0.5	3.6	V
Case Operating Temperature	TOPC			°C

### Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case temperature	T <sub>A</sub>	0		+70	°C
Supply Voltage	V <sub>cc</sub>	3.14	3.3	3.47	V
Supply current	I <sub>cc</sub>			300	mA
Dissipation	P <sub>d</sub>			1	W
Channel Data Rate	D <sub>r</sub>		10.3125		Gbps

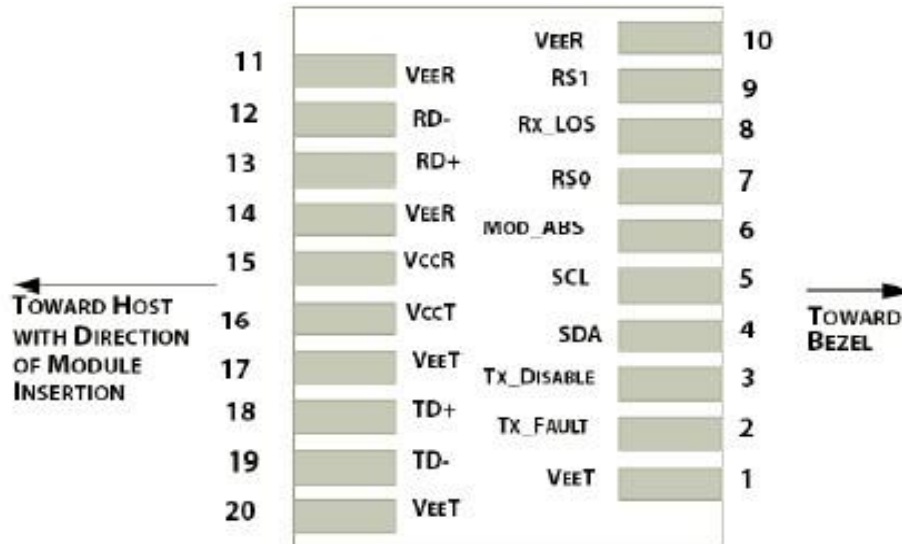
**Transmitter (Channel Data Rate 10.3125Gbps,  $V_{RCCR}=3.3V$ , PRBS31, Case Operating Temperature 0~70°C)**

Parameter		Symbol	Min	Typical	Max	Unit
Input differential impedance		Zin	90	100	110	$\Omega$
Differential Data Input Swing		Vin PP	200		1000	mV
Tx_Fault	Normal Operation	V <sub>OL</sub>	V <sub>EE</sub> -0.3		0.4	V
	Transmitter Fault	V <sub>OH</sub>	2.0		V <sub>CC</sub> +0.3	V
Tx_Disable	Normal Operation	V <sub>IL</sub>	V <sub>EE</sub> -0.3		0.8	V
	Laser Disable	V <sub>IH</sub>	2.0		V <sub>CC</sub> +0.3	V
Average launch power		P <sub>AVG</sub>				dBm
Extinction Ratio		ER				dB
Centre Wavelength		$\lambda_c$		850		nm

**Receiver (Channel Data Rate 10.3125Gbps,  $V_{RCCR}=3.3V$ , PRBS31, Case Operating Temperature 0~70°C)**

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	$\lambda_c$		850		nm
Differential Data Output Swing	Vout PP	200		1000	mV
Bit Error Rate	BER			E-12	
Receiver Overload	PinMAX	2.5			dBm
Output Differential Impedance	Zout	90	100	110	ohm
LOS Fault	V <sub>OH</sub>	2.0		V <sub>CC</sub> +0.3	V
LOS Normal	V <sub>OL</sub>	V <sub>EE</sub> -0.3		0.4	V

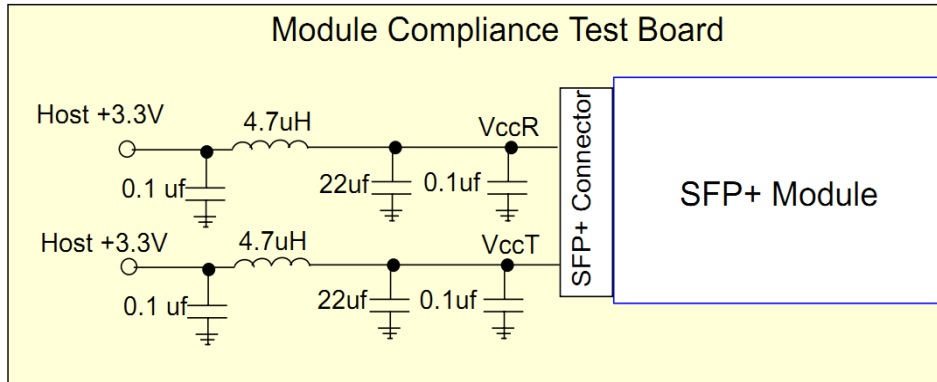
**Pin Assignment**



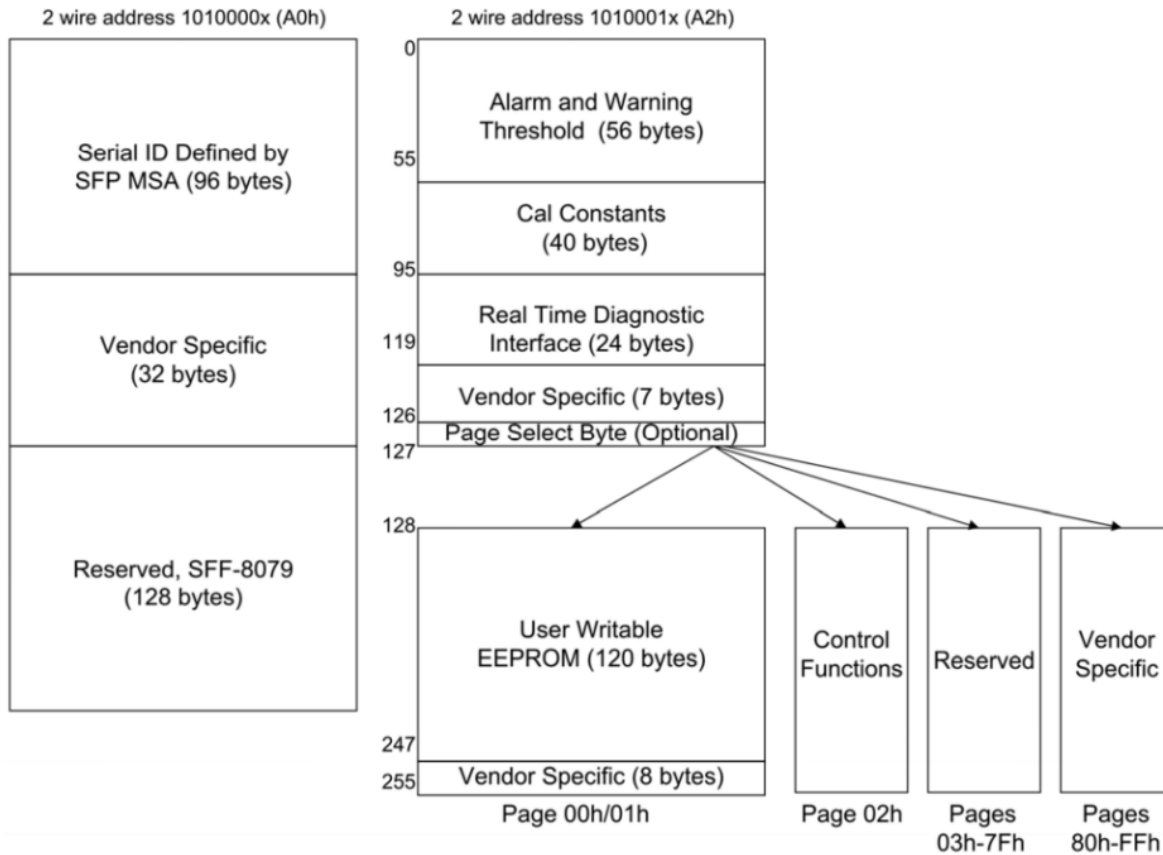
PIN	Name	Function/Description
1	VeeT	Transmitter Ground
2	Tx_Fault	Transmitter Fault - High indicates a fault condition
3	Tx_Disable	Transmitter Disable – High or open disables the transmitter
4	SDA	Two wire serial interface Data Line
5	SCL	Two wire serial interface Clock Line
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module
7	RS0	Rx Rate Select,not used
8	RX_LOS	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1	Tx Rate Select,not used
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Receiver Inverted DATA out
13	RD+	Receiver Non-inverted DATA out
14	VeeR	Receiver Ground
15	VccR	Receiver Power Supply
16	VccT	Transmitter Power Supply

17	VeeT	Transmitter Ground
18	TD+	Transmitter Non-Inverted DATA in
19	TD-	Transmitter Inverted DATA in
20	VeeT	Transmitter Ground

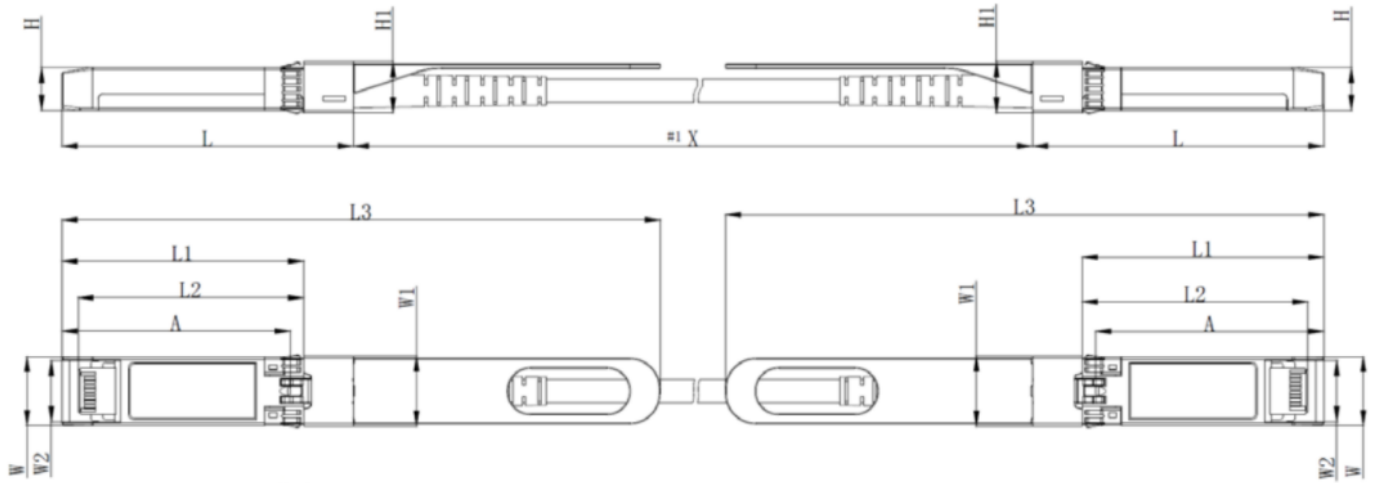
**Module Power Supply Tolerance Filtering:**



**EEPROM MAP**



**Mechanical Drawing**



Unit:mm

	L	L1	L2	L3	W	W1	W2	H	H1	A
MAX	57.6	47.7	44.55	119.9	13.8	14.0	12.3	8.7	10.3	45.25
Typical	57.4	47.5	44.35	117.9	13.55	13.8	12.1	8.5	10.1	45
MIN	57.2	47.3	44.15	115.9	13.3	13.6	11.9	8.4	9.9	44.65

Unit: mm

Cable Length (Unit: m)	Tolerant (Unit: cm)
< 1.0	+5/-0
1.0~4.5	+15/-0
5.0~14.5	+30/-0
≥15.0	+2%/-0

**Ordering Information**

Part No	Specification						
	Package	Data rate	Fiber	Cable Type	Cable Length	Temp.	Application
WST-SFP+AOCLC0H3	SFP+	10Gbps	OM3	Ribbon LSZH	0.5m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC012	SFP+	10Gbps	OM2	Ribbon LSZH	1m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC052	SFP+	10Gbps	OM2	Ribbon LSZH	5m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC102	SFP+	10Gbps	OM2	Ribbon LSZH	10m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC152	SFP+	10Gbps	OM2	Ribbon LSZH	15m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC302	SFP+	10Gbps	OM2	Ribbon LSZH	30m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCLC502	SFP+	10Gbps	OM2	Ribbon LSZH	50m	0~70°C	0GbE InfiniBand SDR, QDR, DDR
WST-SFP+AOCxCmmy	SFP+	10Gbps	y	x	mm	0~70°C	0GbE InfiniBand SDR, QDR, DDR

- x = cable type: L=LSZH, P=OFNP, R=OFNR
- m = length
- y = Fiber type: 2=OM2, 3=OM3

\*Please contact our sales for more information

**Modification History**

Revision	Date	Description	Originator	Review	Approved
V1.0	13-Feb-2020	New Issue	Ivy Chen	Wayne Liao	Wayne Liao
V1.1	8-Apr-2020	Order information definition	Ivy Chen	Wayne Liao	Wayne Liao
V1.2	26-Apr-2021	Revise contents and mechanical	ShaoYu Lee	Wayne Liao	Wayne Liao
V1.3	19-Mar-2024	Update company information	Joanne Ni	Ken Cheng	Wayne Liao



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