

### **SFP-10GB-CW-49-100-C-C**

Cisco® Compatible TAA 10GBase-CWDM SFP+ Transceiver (SMF, 1490nm, 100km, LC, DOM)

#### **Features:**

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 10x Gigabit Ethernet over CWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise
- Mobile Fronthaul CPRI/OBSAI

#### **Product Description**

This Cisco® SFP+ transceiver provides 10GBase-CWDM throughput up to 100km over single-mode fiber (SMF) using a wavelength of 1490nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



## Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Maximum Supply Voltage	V <sub>MAX</sub>	-0.5		4	V	
Storage Temperature	T <sub>STO</sub>	-40		85	°C	3
Operating Temperature	T <sub>c</sub>	0		70	°C	2
Data Rate	DR	1.2		11.3	Gb/s	1
Bit Error Rate	BER			10 <sup>-12</sup>		

### Notes:

1. IEEE 802.3ae
2. Case temperature
3. Ambient temperature

## Electrical Characteristics (TOP=25°C, V<sub>CC</sub>=3.3 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.46	V	
Power Supply Current	I <sub>CC</sub>		450	500	mA	
Transmitter						
Input Differential Impedance	R <sub>IN</sub>	100		2200	Ω	
Differential data input swing	V <sub>IN PP</sub>	120		850	mV	
Transmit Disable Voltage	V <sub>D</sub>	2		V <sub>CC</sub>	V	
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	
Receiver						
Differential data output swing	V <sub>OUT PP</sub>	300		850	mV	
Data output rise time/fall time (20%-80%)	t <sub>r</sub> /t <sub>f</sub>	28			ps	
LOS Fault	V <sub>LOS A</sub>	2		V <sub>CC</sub> HOST	V	
LOS Normal	V <sub>LOS D</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.5	V	

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	$P_{TX}$	0		4	dBm	1
Optical Center Wavelength – 1550nm	$\lambda_c$	1545	1551	1557	Nm	
Extinction Ratio	EX	9			dB	
Spectral Width (-20dB)	$\Delta\lambda$			.06	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			4	dB	
Total Jitter						2
Launch Power of OFF Transmitter	$P_{OUT\_OFF}$			-30	dBm	1
Receiver						
Optical Center Wavelength	$\lambda_c$	1260		1620	nm	
Average Receiver Power	$P_{RX}$	-23		-8	dBm	
Receiver Sensitivity @10.3Gb/s	$RX\_SEN$			-2	dBm	3
Receiver Reflectance	$TR_{RX}$			-27	dB	
LOS Assert	$LOS_A$	-35			dBm	
LOS De- Assert	$LOS_D$			-27	dBm	
LOS Hysteresis	$LOS_H$	0.5			dB	

### Notes:

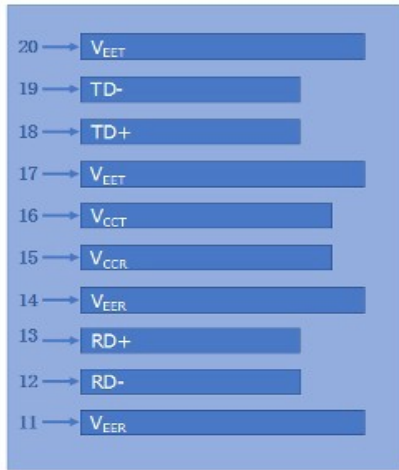
1. Average
2. According to IEEE 802.3ae requirement
3. Measured with the PRBS  $2^{31}-1$  test mode.  $BER < 10^{-12}$

## Pin Descriptions

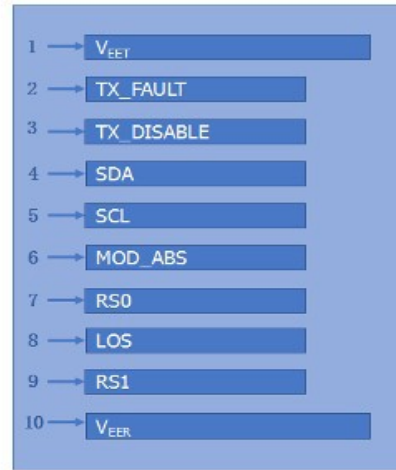
Pin	Symbol	Name/Descriptions	Ref.
1	VEET	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault	
3	TX_DISABLE	Transmitter Disable. Laser output disabled on high or open	2
4	SDA	2-wire Serial Interface Data Line	3
5	SCL	2-wire Serial Interface Clock Line	3
6	MOD_ABS	Module Absent. Grounded within the module	3
7	RS0	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	4
9	RS1	No connection required	1
10	VEER	Receiver ground (common with transmitter ground)	1
11	VEER	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	VEER	Receiver ground (common with transmitter ground)	1
15	VCCR	Receiver power supply	
16	VCCT	Transmitter power supply	
17	VEET	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	VEET	Transmitter ground (common with receiver ground)	1

## Notes:

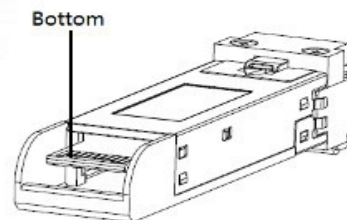
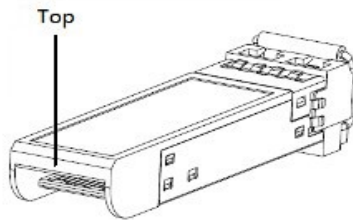
1. Circuit ground is isolated from Chassis ground.
2. Disabled:  $T_{DIS} > 2V$  or open Enabled:  $T_{DIS} < 0.8V$
3. Should be pulled up with 4.7 – 10k ohm on host board to a voltage between 2V and 3.6V
4. LOS is open collector output.



Top of Board

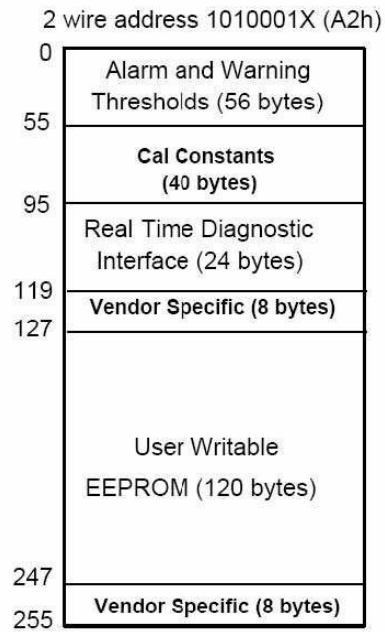
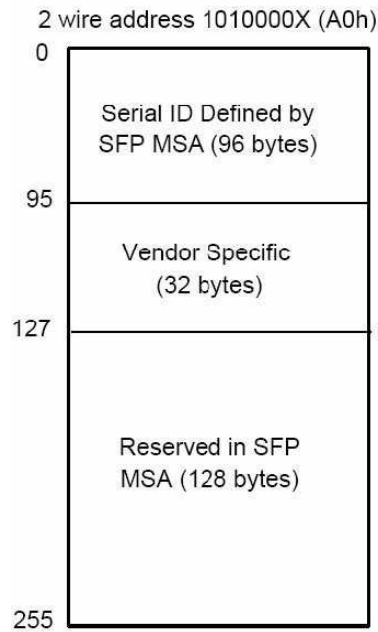


Bottom of Board

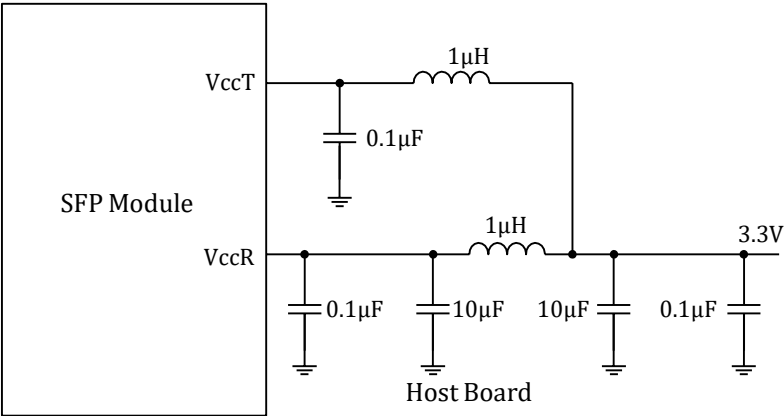


Pin-out of connector Block on Host board

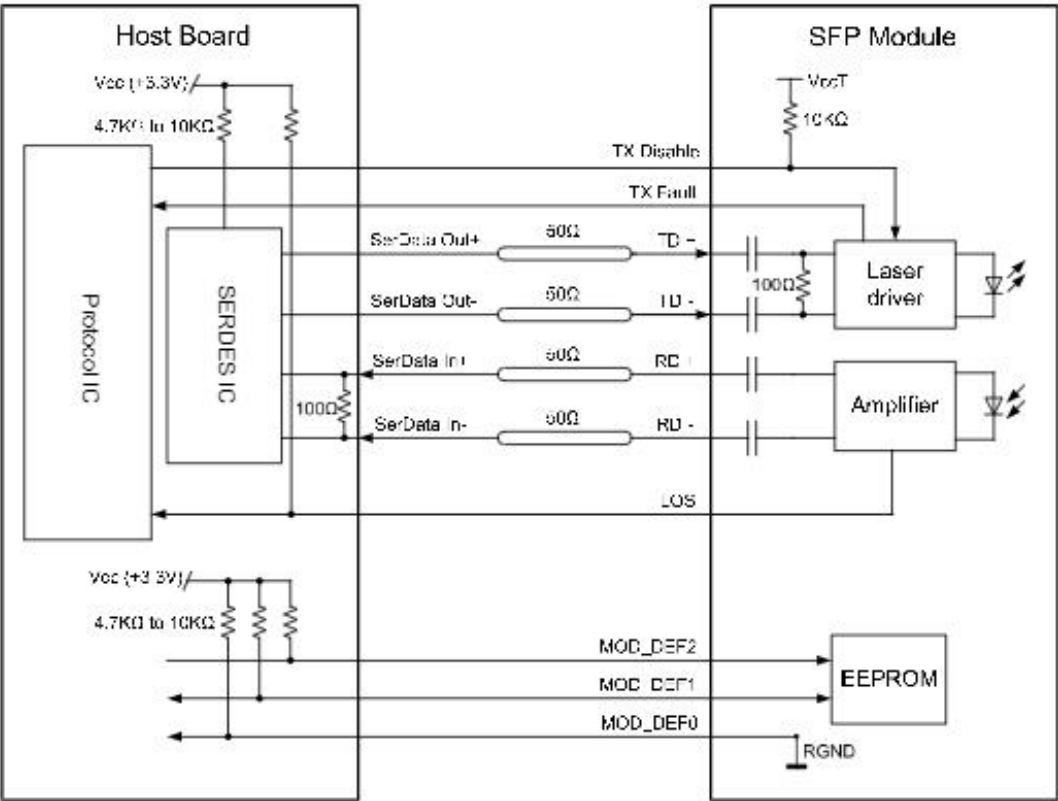
## Digital Diagnostic Memory Map



Required Host Board Components

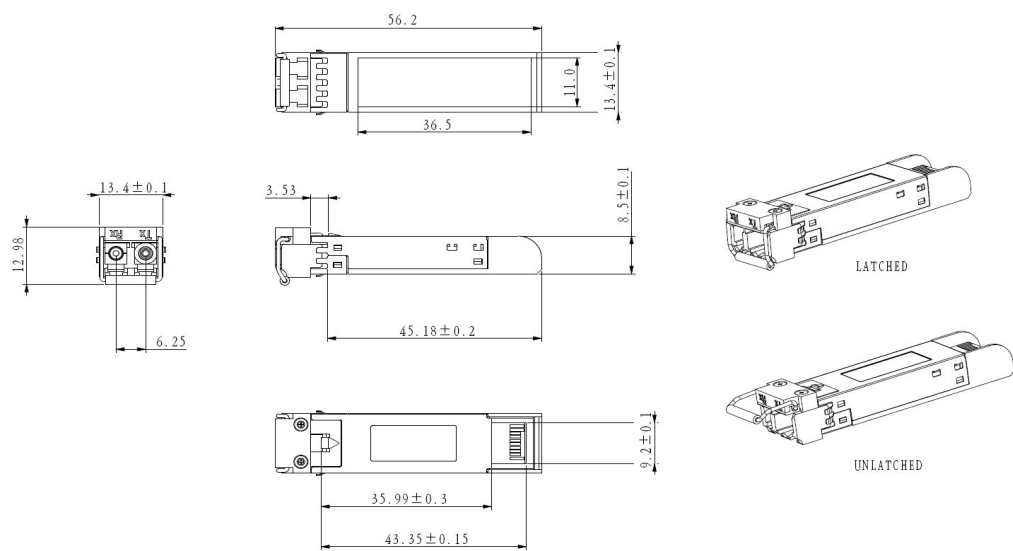


Recommended Application Interface Circuit



**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



## About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

## Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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