

## **SFP-TSOP-2-C-OPC**

Cisco® Compatible OC-48 TSOP Intelligent Transceiver (SMF, 1310nm, 2km, LC, DOM)

### **Features**

- 2.5Gbps, SR1, 2km, Optical Data Link
- Compliant with SFP MSA
- Remote DDM
- 1310nm FP Laser TDM Application
- Wide Dynamic Range PIN-PD Receiver
- Protocol Processor for Intelligent Transceiver
- Supports Transparent SONET Over Packet (TSOP)
- Metal Package for Lower EMI
- LC Duplex Connector
- Single Power Supply Voltage: 3.3V
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



### **Applications:**

- OC-48 Transmission
- Access and Enterprise

### **Product Description**

This Cisco® compatible SFP transceiver provides OC-48 (2488mbps) transmission rates for up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm 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. It is built to meet or exceed the specifications of Cisco®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

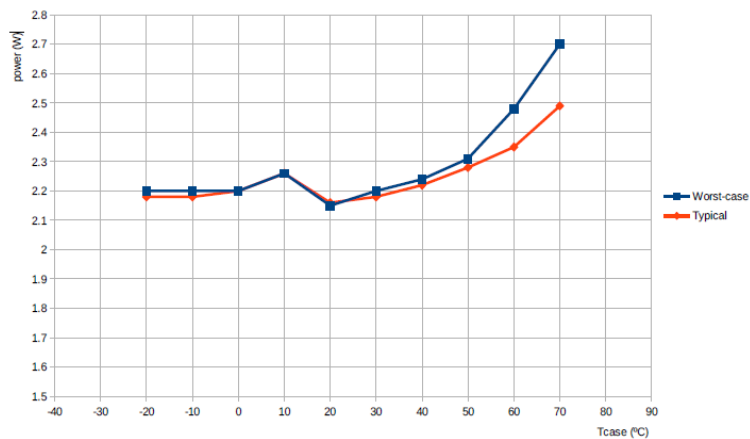
Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage		V <sub>cc</sub>	0		4.0	V	
Storage Temperature		T <sub>stg</sub>	-40		85	°C	
Operating Case Temperature		T <sub>c</sub>	0		70	°C	
Operating Relative Humidity			5		85	%	
Relative Humidity			5		95	%	
Transmission Distance		D <sub>max</sub>	2			km	
Bit Error Rate	Electrical	BER		10.3		Gbps	
	Optical	BER		2.488		Gbps	

## Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Current		I <sub>cc</sub>			861	mA	
Power Supply Voltage		V <sub>cc</sub>	3.135	3.30	3.465	V	
Power Consumption					2.7	W	
ESD (High-Speed Pins)					500	V	1
Voltage Ramp for Dying Gasp					-22	mV/μsec	
Transmitter							
Input Differential Impedance		PIN		100		Ω	
Single-Ended Data Input Swing		V <sub>IN,pp</sub>	100		625	mV	
Tx_Disable Voltage		V <sub>D</sub>	2.4			V	
Tx_Enable Voltage		V <sub>EN</sub>			0.8V		
Receiver							
Differential Data Output Swing		V <sub>OUT</sub>	200		800	mVp-p	
Data Output Rise/Fall Time		T <sub>r</sub> /T <sub>f</sub>			260	pm	20-80%

## Notes:

1.



## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Power	POUT	-8		-3	dBm	1
Extinction Ratio	ER	8.2			dB	
Optical Wavelength	$\lambda$	1270	1310	1360	nm	
Spectral Width	$\sigma_{RMS}$			4.0	nm	
Relative Intensity Noise	RIN			-113	dB/Hz	
Jitter Generation (12kHz~20MHz)				0.1	UI	
Jitter Generation (500Hz~20MHz)				0.5	UI	
Jitter Tolerance		0.15			UI	
Dispersion Penalty	DP			1	dB	
Receiver						
Average Sensitivity	Rsens1			-19	dBm	2
Maximum Input Power	Pmax	-3			dBm	
Optical Wavelength	$\lambda$	1260		1620	nm	
LOS Assert	LOSA	-35			dBm	
LOS De-Assert	LOSD			-14	dBm	
LOS Hysteresis		0.5	2	3	dB	

### Notes:

1. Using 9/125 SMF.
2. Measured with PRBS of  $2^{23}-1 \times 10^{-10}$  BER and 8.2dB extinction ratio at 1310nm.

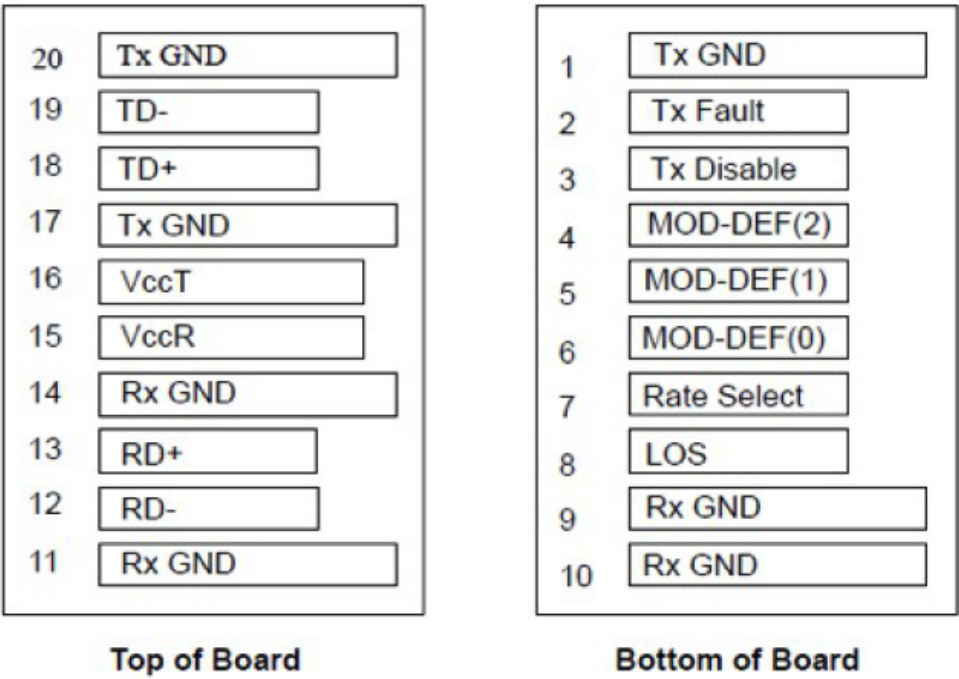
## Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	Tx GND	Transmitter Ground.	1	1
2	Tx Fault	Transmitter Fault Indication.	3	2
3	Tx Disable	Transmitter Disable.	3	3
4	Mod-Def2	Module Definition 2.	3	4
5	Mod-Def1	Module Definition 1.	3	4
6	Mod-Def0	Module Definition 0.	3	4
7	Rate Select	No User Connection.	3	
8	LOS	Loss of Signal.	3	5
9	Rx GND	Receiver Ground.	1	1
10	Rx GND	Receiver Ground.	1	1
11	Rx GND	Receiver Ground.	1	1
12	RD-	Receiver Negative Data Out.	3	
13	RD+	Receiver Positive Data Out.	3	
14	Rx GND	Receiver Ground.	1	1
15	VccR	Receiver Power.	2	
16	VccT	Transmitter Power.	2	
17	Tx GND	Transmitter Ground.	1	1
18	TD+	Transmitter Positive Data In.	3	
19	TD-	Transmitter Negative Data In.	3	
20	Tx GND	Transmitter Ground.	1	1

## Notes:

1. The circuit ground is internally isolated from the frame ground. Tx GND and Rx GND may be internally isolated within the Trx module.
2. Tx Fault is an open collector output that shall be pulled up with a 4.7kΩ to 10kΩ on the host board. Pull-up voltage between 2.0V and VccT+0.3V. When “high,” output indicated a laser fault of some kind. When “low,” output indicates normal operation. The LD output is not turned off in case of Tx Fault.
3. Tx Disable is an input that is used to shut down the transmitter optical output. It is pulled within the Trx with a 4.7kΩ to 10kΩ.
4. Mod-Def 0, 1, and 2 are the SFP module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ on the host board. The pull-up voltage shall be VccT.  
Mod-Def0 indicated that the module is present.  
Mod-Def1 is the clock line of 2-wire serial interface for Serial ID.  
Mod-Def2 is the data line of 2-wire serial interface for Serial ID.
5. LOS is an open collector output. Shall be pulled up with a 4.7kΩ to 10kΩ on the host board. Pull-up voltage between 2.0 and VccR+0.3. “Logic 0” indicates normal operation.

Electrical Pin-Out Details



1

Tx GND

2

Tx Fault

3

Tx Disable

4

MOD-DEF(2)

5

MOD-DEF(1)

6

MOD-DEF(0)

7

Rate Select

8

LOS

9

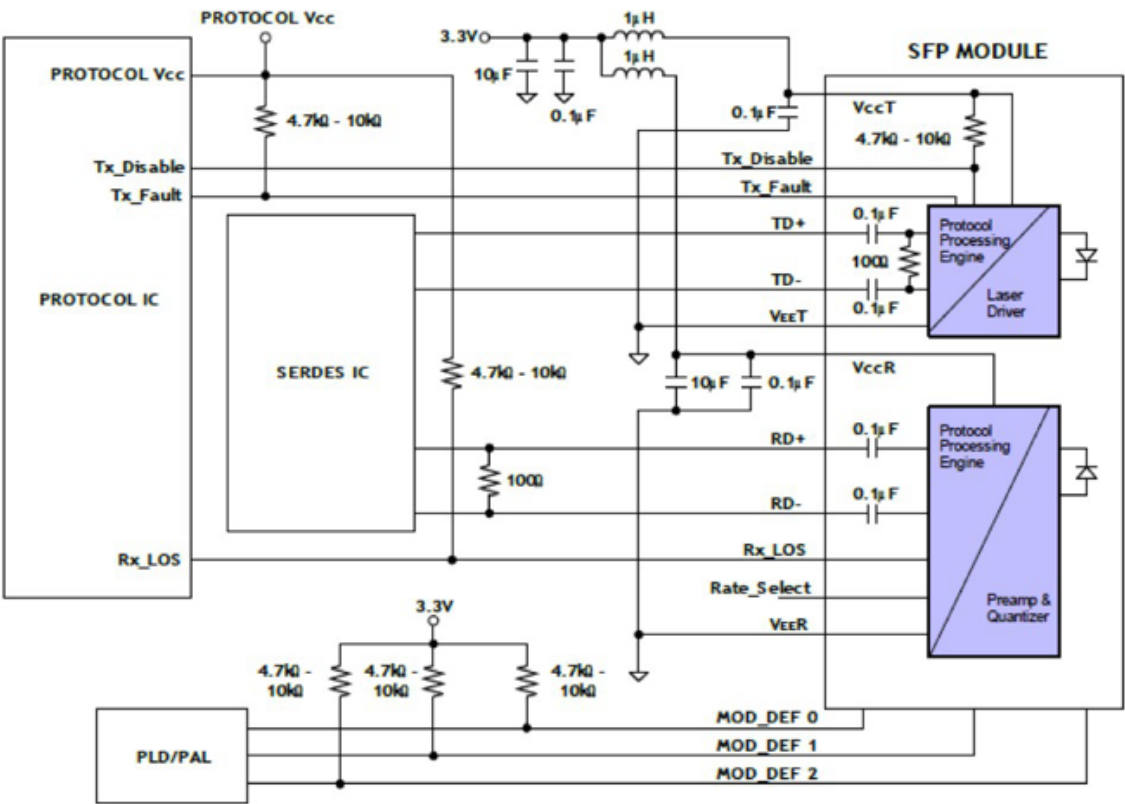
Rx GND

10

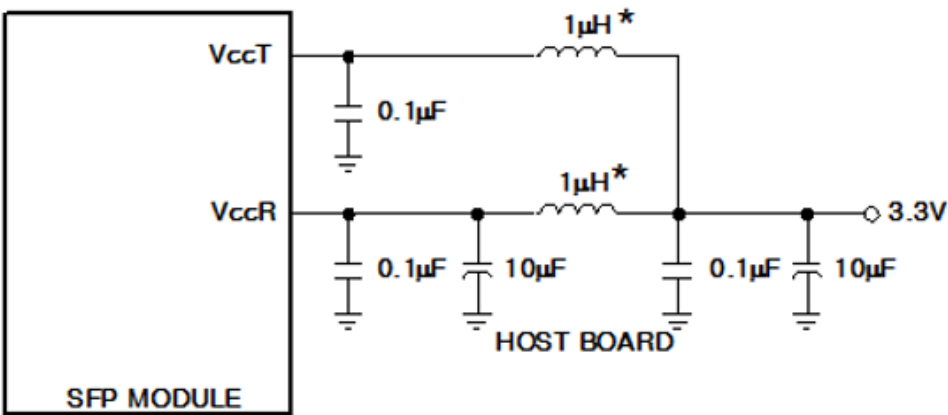
Rx GND

Bottom of Board

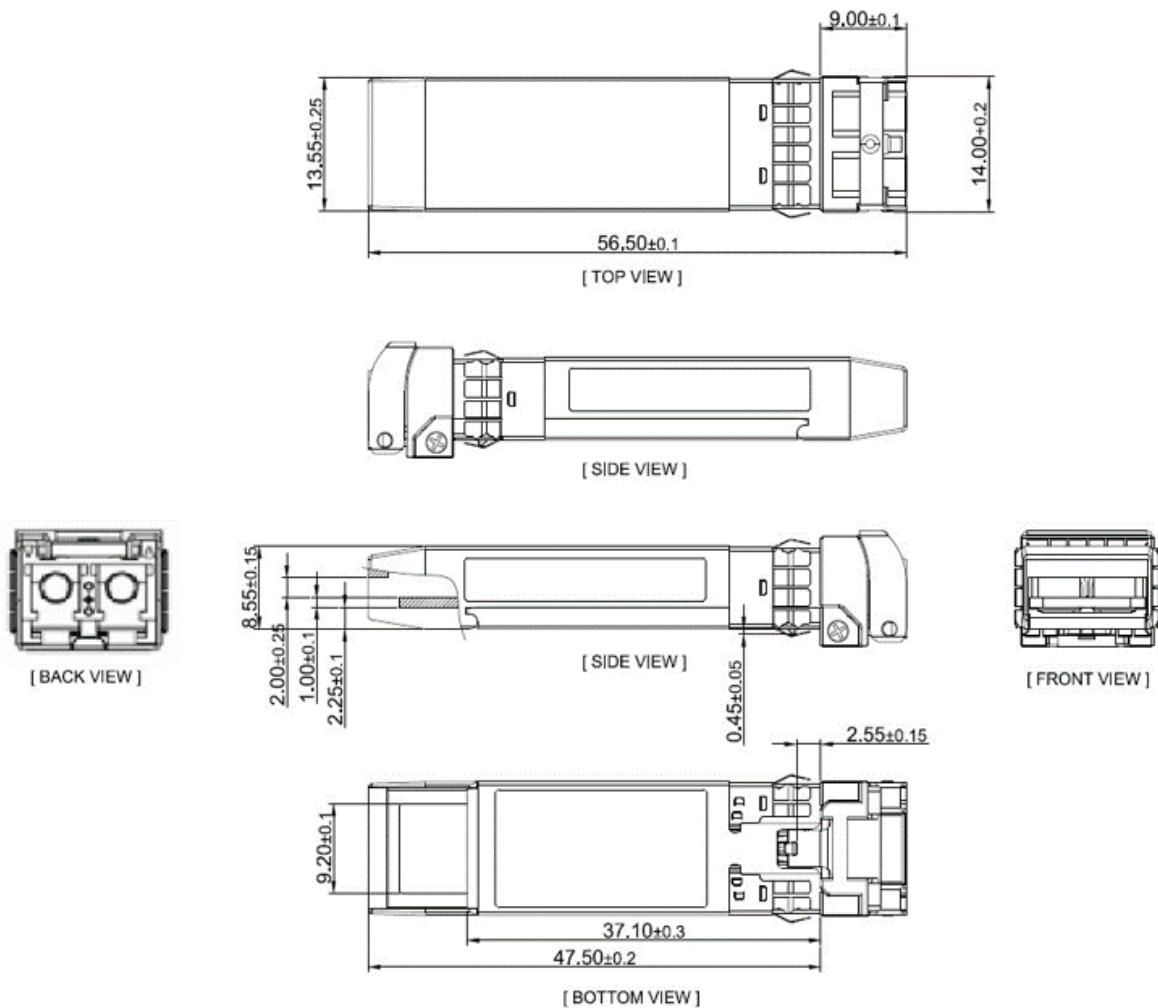
SFP Host Board



Recommended Host Board Supply Filtering Network



Mechanical Specifications



## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

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Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

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