SFP13002PA0D000

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

Product Description

This Industry Standard SFP transceiver provides OC-48 (2488mbs) 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 Industry Standard 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

Features:

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

Applications:

- OC-48 Transmission
- Access and Enterprise

For your product safety, please read the following information carefully before any manipulation of the transceiver:

ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.

LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

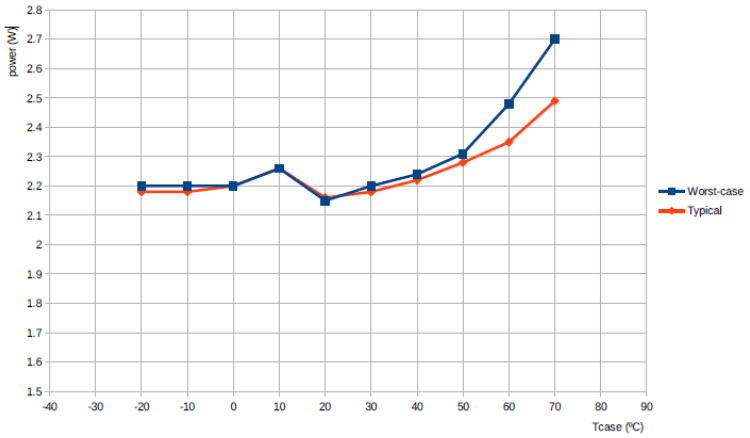
Absolute Maximum Ratings

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage		Vcc	0		4.0	V	
Storage Temperature		Tstg	-40		85	°C	
Operating Case Temperature		Tc	0		70	°C	
Operating Relative Humidity			5		85	%	
Relative Humidity			5		95	%	
Transmission Distance		Dmax	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	Icc			861	mA	
Power Supply Voltage	Vcc	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	VIN,pp	100		625	mV	
Tx_Disable Voltage	VD	2.4			V	
Tx_Enable Voltage	VEN			0.8V		
Receiver						
Differential Data Output Swing	VOUT	200		800	mVp-p	
Data Output Rise/Fall Time	Tr/Tf			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	Λ	1270	1310	1360	nm	
Spectral Width	σRMS			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	λ	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 x 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:

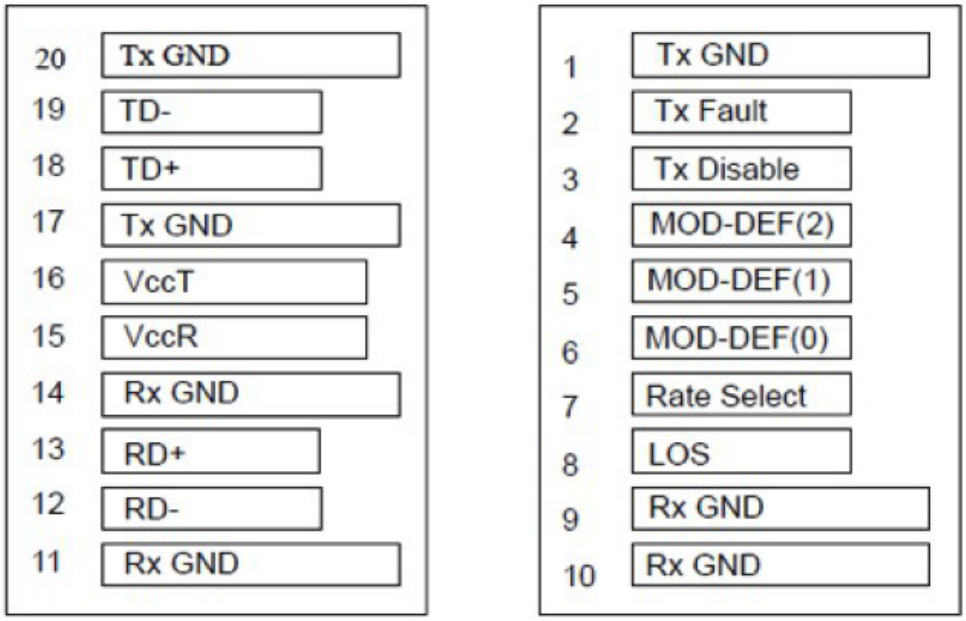
1. The circuit ground is internally isolated from the frame ground. Tx GND and Rx GND may be internally isolated within the Trx module.
2. Tx Fault is an open collector output that shall be puled up with a 4.7kΩ to 10kΩ on the host board. Pull-up voltage between 2.0V and VccT+0.3V. When “high,” output 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.

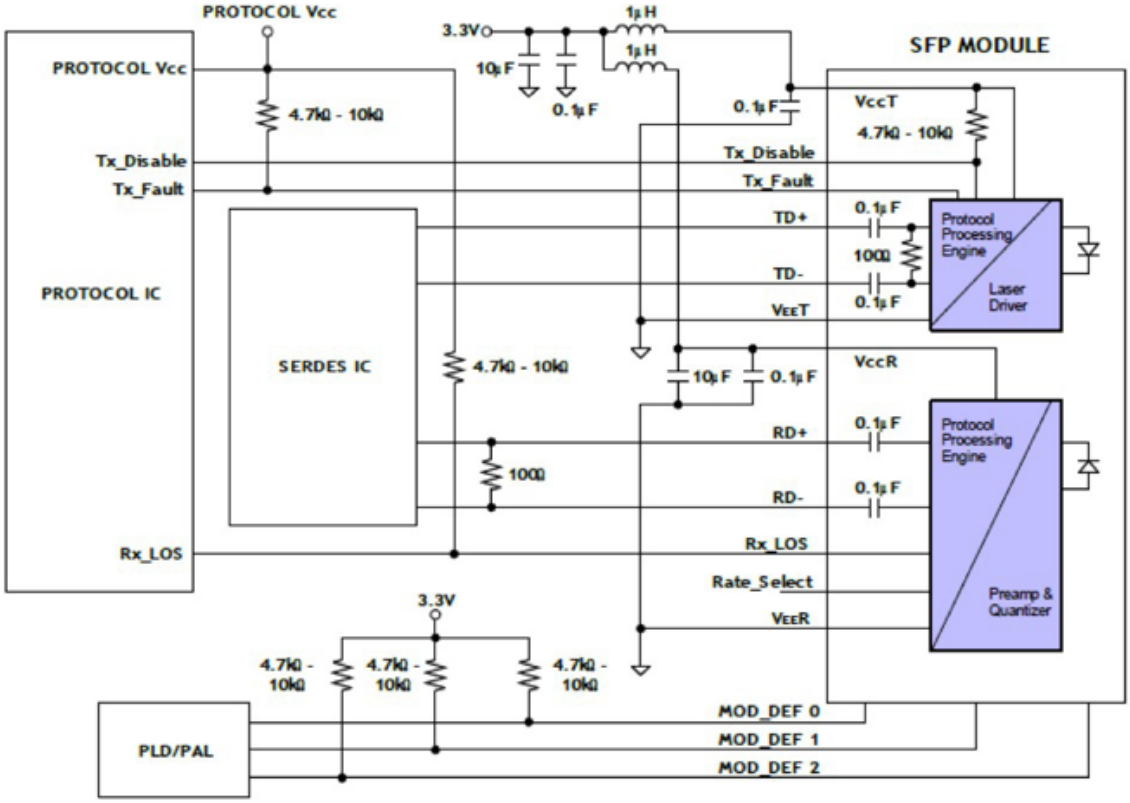
   Mod-Def2 is the data line of 2-wire serial interface for Serial ID.
5. LOS is an open collector output. Shall be pulled up with a 4.7kΩ to 10kΩ on the host board. Pull-up voltage between 2.0 and VccR+0.3. “Logic 0” indicates normal operation.

Electrical Pin-Out Details

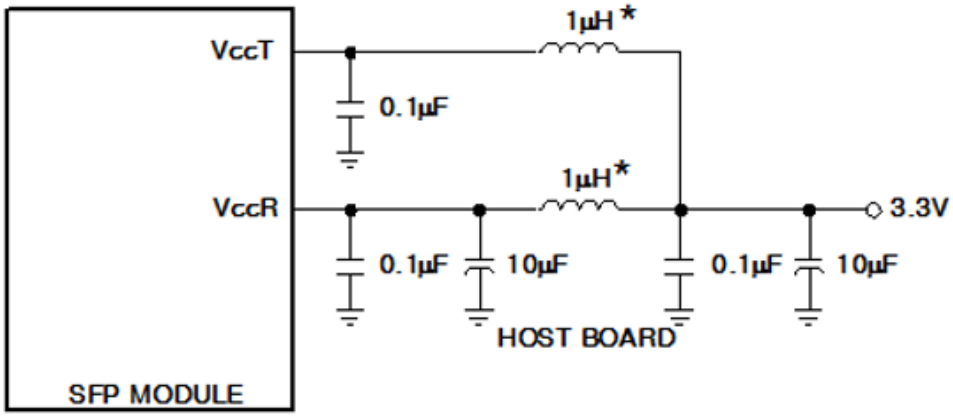


Top of Board **Bottom of Board**

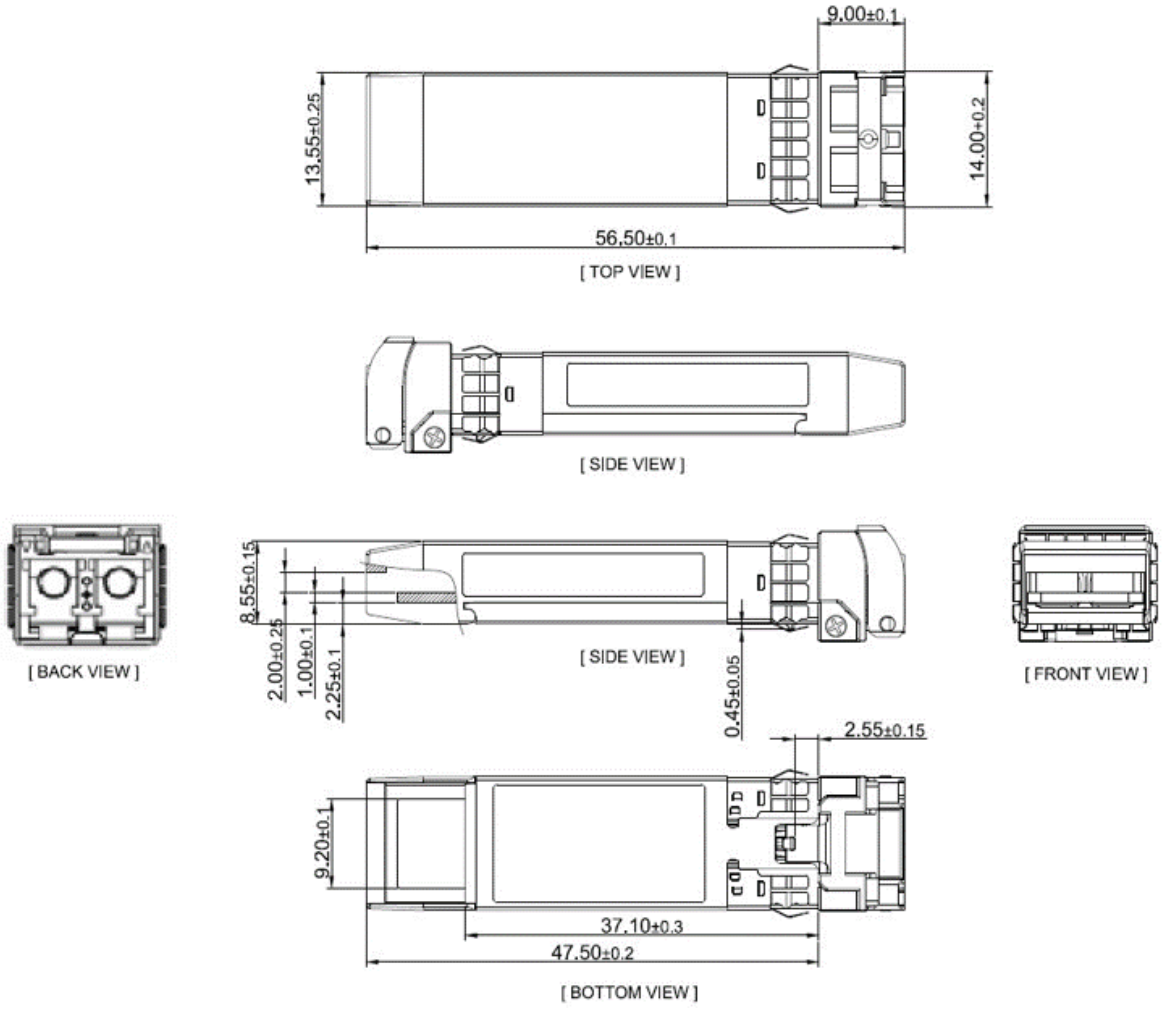
SFP Host Board



Recommended Host Board Supply Filtering Network



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.