

Optical Transceiver Module

WS-PEE348L-xD (1.25G T1490/R1550nm 80km BIDI SFP)



■ Performance Characteristics

- ◆ Hot Pluggable
- ◆ Single LC optical interface
- ◆ 1490nm DFB transmitter, PIN photo-detector
- ◆ Low power consumption
- ◆ All-metal housing for superior EMI performance
- ◆ Advanced firmware allow customer system encryption
- ◆ Information to be stored in transceiver
- ◆ Cost effective SFP solution, enables higher port densities and greater bandwidth
- ◆ RoHS compliant (lead free)
- ◆ Operating case temperature: Commercial: 0 to 70 °C
Industrial: -40 to 85 °C

■ Applications

- ◆ Gigabit Ethernet
- ◆ Gigabit Fiber Channel
- ◆ Other optical links

■ Standards

- ◆ Compliant with SFP MSA (INF-8074i)
- ◆ Compliant with IEEE802.3z Gigabit Ethernet
- ◆ SFF-8472 Rev 10.2

■ Description

The SFP transceiver is high performance, cost effective module supporting 1.25Gbps and 80km transmission distance with SMF(9/125μm).

The transceiver consists of two sections: a 1490nm DFB laser transmitter, a PIN photodiode integrated with a trans-impedance amplifier (TIA). The transceiver satisfies class1 laser safety requirements.

The transceiver is compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA.

■ Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	VCC	-0.5	-	4	V
Storage Temperature Range	TS	-40	-	85	°C
Relative Humidity - Storage	RHS	0	-	95	%
Relative Humidity - Operating	RHO	0	-	85	%

■ Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature Range	TC	0	-	70	°C
		-40	-	85	
Power Supply Voltage	VCC	3.14	3.3	3.46	V
Supply Current	ICC	-	-	300	mA
Data Rate	BR	-	1.25	-	Gbps

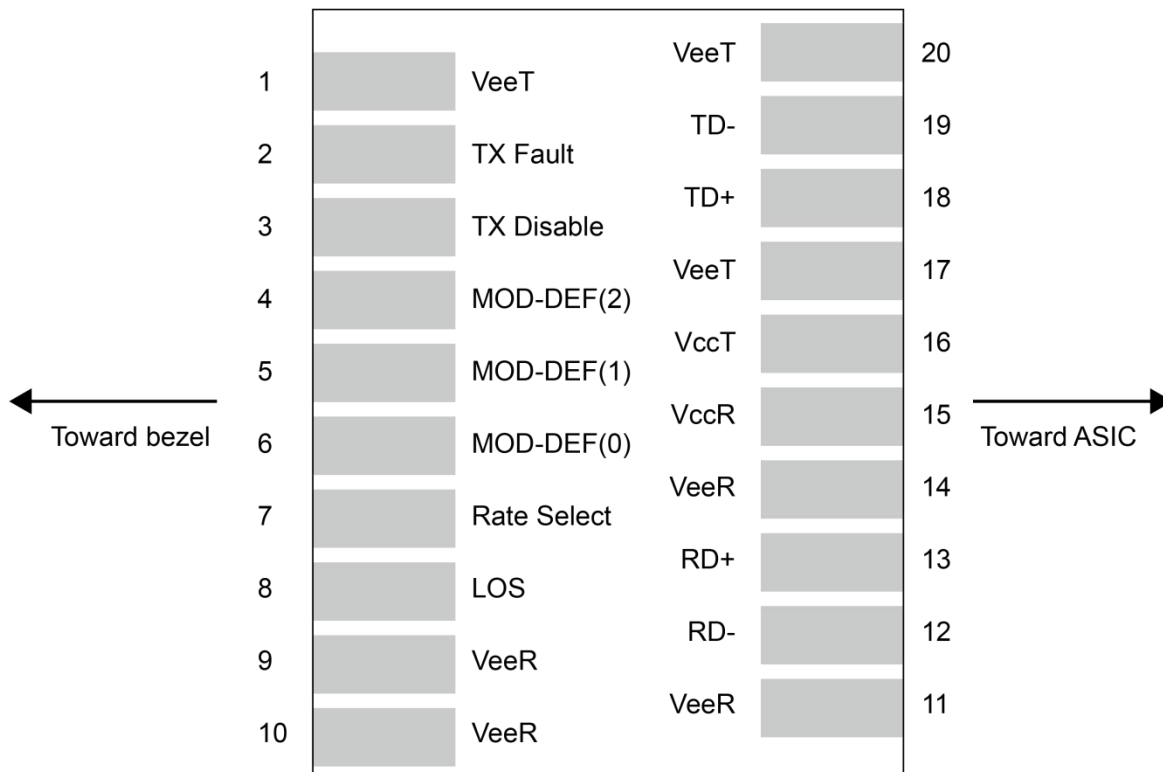
■ Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter Electrical Characteristics					
Differential Input Voltage Swing	VIN	400	-	2000	mV
Tx Differential Input Impedence	ZIN	-	100	-	Ω
Transmitter Disable Voltage	VDIS	2.0	-	VCC+0.3	V
Transmitter Enable Voltage	VEN	0	-	0.8	V
TFAULT Logic High	VTFH	2.4	-	VCC	V
TFAULT Logic Low	VTFL	VEE	-	VEE+0.4	V
Receiver Electrical Characteristics					
Differential output Voltage Swing	VOUT	400	-	1000	mV
Rx Differential Output Impedence	ZOUT	-	100	-	Ω
LOS Assert Voltage	VLOSA	2.4	-	VCC	V
LOS De-assert Voltage	VLOSD	VEE	-	VEE+0.4	V

Optical Characteristics

Transmitter Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Laser Type		DFB				
Data Rate	-	-	1.25	-	Gb/s	
Center Wavelength Range	λ	1470	1490	1510	nm	
RMS Spectral Width	$\Delta\lambda$	-	-	1	nm	
Average Launch power of OFF transmitter	POFF	-	-	-45	dBm	
Launch Optical Power	Pout	-2	-	5	dBm	1
Extinction Ratio	ER	9	-	-	dB	
Relative Intensity Noise	RIN	-	-	-128	dB/Hz	
Optical Return Loss Tolerance		-	-	12	dB	
Transmitter and Dispersion Penalty	TDP	-	-	3.2	dB	
Eye Diagram	Complies with IEEE802.3z eye masks when filtered					
Receiver Characteristics						
Receiver Type		PIN				
Data Rate	-	-	1.25	-	Gb/s	
Operating Central Wavelength	λ	1500	1550	1580	nm	
Receiver Sensitivity	Sen	-	-	-26	dBm	2
Receiver Overload	PSAT	-3	-	-	dBm	
LOS Assert	LOSA	-40	-	-	dBm	
LOS De-Assert	LOSD	-	-	-26	dBm	
LOS Hysteresis	LOSH	0.5	3	5	dB	
Notes						
1. Average power figures are informative only, per IEEE 802.3z.						
2. Measured with 27-1 PRBS@1.25Gbps,BER<10-12						

Pin Definitions

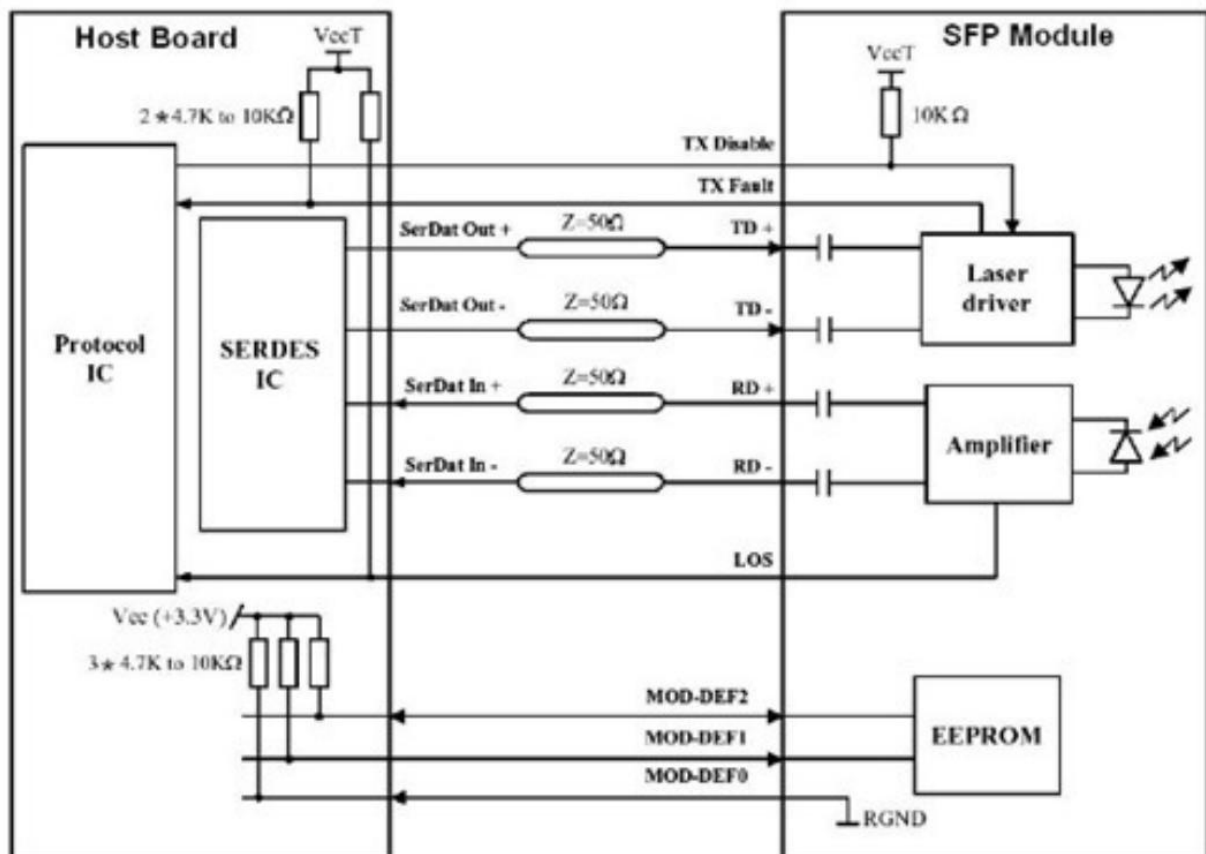


Pin	Symbol	Description	Notes
1	VEET	Transmitter Ground	
2	TFAULT	Transmitter Fault Indication	1
3	TDIS	Transmitter Disable	2
4	MOD_DEF(2)	SDA Serial Data Signal	1
5	MOD_DEF(1)	SCL Serial Clock Signal	1
6	MOD_DEF(0)	TTL Low	
7	Rate Select	Not Connected	
8	RX_LOS	Loss of Signal	1
9	VEER	Receiver ground	
10	VEER	Receiver ground	
11	VEER	Receiver ground	
12	RD-	Inv. Received Data Out	
13	RD+	Received Data Out	
14	VEER	Receiver ground	
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground	
18	TD+	Transmit Data In	
19	TD-	Inv. Transmit Data In	
20	VEET	Transmitter Ground	

Notes

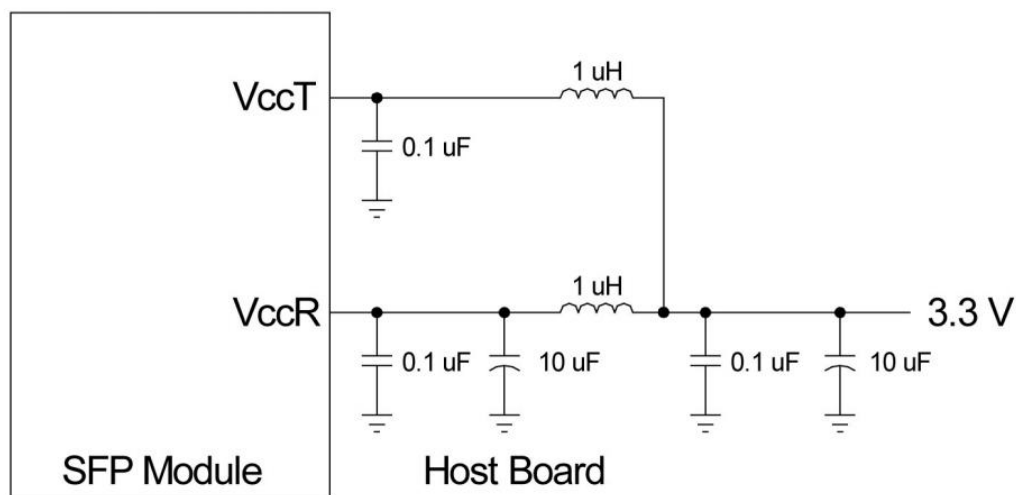
1. Shall be pulled up with 4.7k-10k Ohms to a voltage between 3.15V and 3.6V on the host board.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

Recommended Interface Circuit

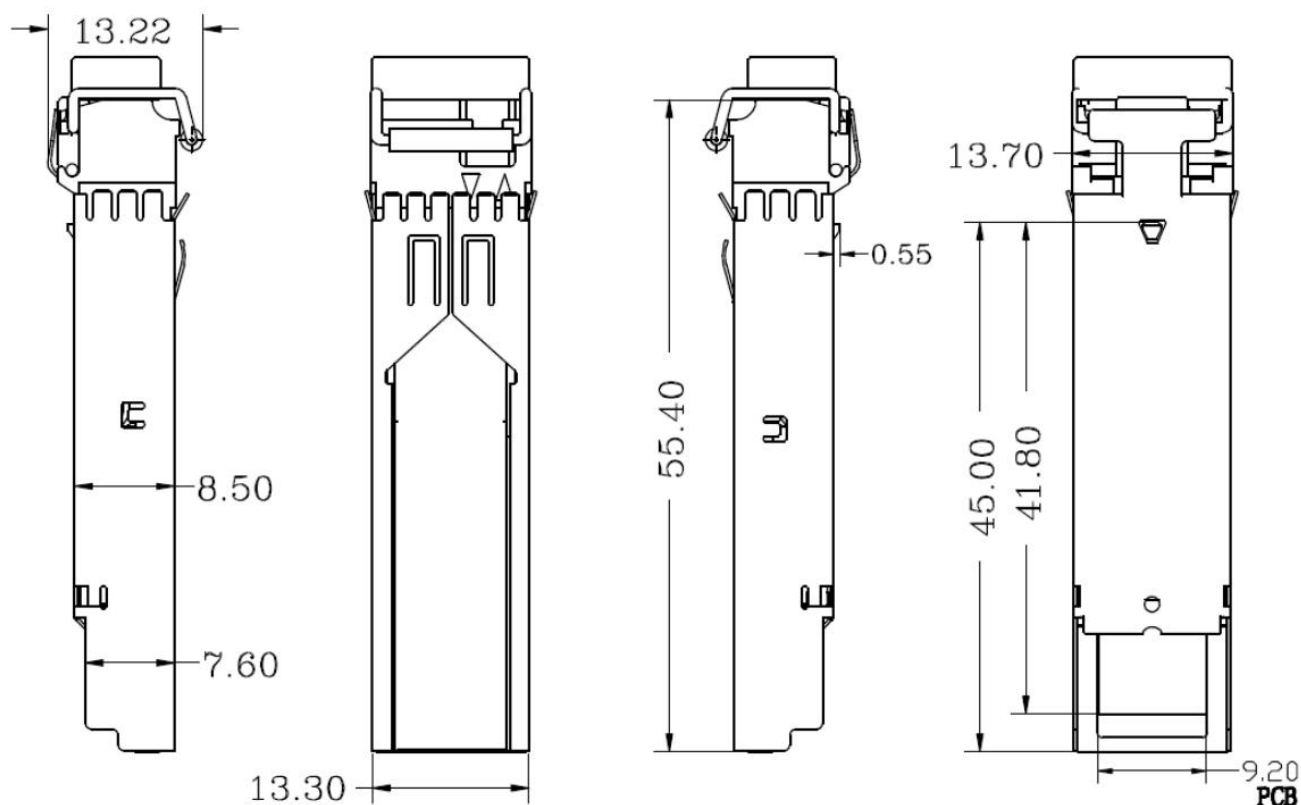


■ Recommended Host Board Supply Filtering Circuit

The MSA power supply noise rejection filter is required on the host PCB to meet data sheet performance. The MSA filter incorporates an inductor which should be rated 400mA DC and 1Ω serial resistance or better. It should not be replaced with a ferrite. The required filter is illustrated in Figure. The MSA also specifies that 4.7K to 10KΩ pull-up resistors for Tx Fault, LOS, and MOD_DEF(0,1,2) are required on the host PCB. Figure is the suggested transceiver/host interface.



■ Mechanical Dimensions



■ Ordering information

Part Number	Product Description
WS-PEE348L-ID	BIDI SFP, 1.25Gbps, Tx1490/Rx1550nm, SM, 80km, -40°C~+85°C, With DDM
WS-PEE348L-SD	BIDI SFP, 1.25Gbps, Tx1490/Rx1550nm, SM, 80km, 0°C~+70°C, With DDM

■ Package Dimension



Carton (400pcs) 10.5kg

Note: The specific packing box size is determined according to the quantity ordered by the customer.

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