

**Product Overview**

The MOD-MGSX550-D of Small Form Factor Pluggable (SFP) transceiver module is specifically designed for high performance integrated duplex data link over multi mode optical fiber. The high-speed oxide VCSEL and photo diode are provided as a light source and a detector, respectively. An EEPROM contained the detailed product information and digital diagnostics function for the host equipment is accessed by the 2-wire serial CMOS EEPROM protocol. It complies with SFP MSA, SONET/SDH standards, Class 1 laser products, EN60825, and EN60950.



**Features**

- RoHS Compliant
- Digital Diagnostics are Internal Calibrated
- Operation Temperature: 0~70°C
- 850nm oxide VCSEL
- 550m link distance<sup>(indicative only)</sup>
- Hot pluggable
- Metal enclosure, low EMI
- Single 3.3V power supply
- Low Power Dissipation

**Applications**

- Metro Access Rings
- Point-to-Point networking
- 2/1x Fiber Channel
- Gigabit Ethernet
- Suitable for Fast Ethernet and OC-12

**Ordering information**

Product Code	Description/Clasp Color
<b>MOD-MGSX550-D</b>	850nm, <b>Black</b>

**2/1x Fiber Channel / Gigabit Ethernet  
850 nm SX SFP Transceiver  
RoHS, SFF-8472 Compliant  
Specification: MOD-MGSX550-D**

**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T <sub>S</sub>	<b>-40</b>		<b>+85</b>	°C	
Supply Voltage	V <sub>CC</sub> T V <sub>CC</sub> R	<b>0</b>		<b>5.5</b>	V	
Relative Humidity	RH	<b>0</b>		<b>85</b>	%	

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Temperature	T <sub>OP</sub>	<b>0</b>		<b>70</b>	°C	
Supply Voltage	V <sub>CC</sub> T,R	<b>3.1</b>	<b>3.3</b>	<b>3.5</b>	V	
Supply Current	I <sub>TX</sub> +I <sub>RX</sub>		<b>200</b>	<b>300</b>	mA	

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**Transmitter Electro-Optical Interface** ( $T_C = 0\sim 70^\circ\text{C}, V_{CC,T,R}=3.1\text{V}<V_{CC}<3.5\text{V}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter Differential Input Voltage	TD +/-	<b>400</b>		<b>2000</b>	mVp-p	A
Optical Output Power(62.5/125)	P <sub>O</sub>	<b>-9</b>		<b>-1</b>	dBm	A
Optical Output Power(50/125)	P <sub>O</sub>	<b>-9.5</b>		<b>-3</b>		
Optical Extinction Ratio	E <sub>R</sub>	<b>9</b>			dB	A
Center Wavelength	λ <sub>C</sub>	<b>830</b>	<b>850</b>	<b>860</b>	nm	A
Spectral Width	Δλ			<b>0.85</b>	nm	A
Optical Rise / Fall Time	t <sub>r</sub> / t <sub>f</sub>			<b>150</b>	ps	A,B
Tx_Fault - High	V <sub>Fault_H</sub>	<b>2</b>		V <sub>CC</sub>	V	A
Tx_Fault - Low	V <sub>Fault_L</sub>	V <sub>ee</sub>		V <sub>ee</sub> + <b>0.5</b>	V	A
Tx_Disable - High	V <sub>Disable_H</sub>	<b>2</b>		V <sub>CC</sub>	V	A
Tx_Disable - Low	V <sub>Disable_L</sub>	V <sub>ee</sub>		V <sub>ee</sub> + <b>0.8</b>	V	A

**Notes:**

**A.** All of data is measured at 4250Mbps , PRBS 2<sup>7</sup>-1 ,NRZ.

**B:** 20%~80%

**Receiver Electro-Optical Interface** ( $T_C = 0\sim 70^\circ\text{C}, V_{CC,T,R}=3.1\text{V}<V_{CC}<3.5\text{V}$ )

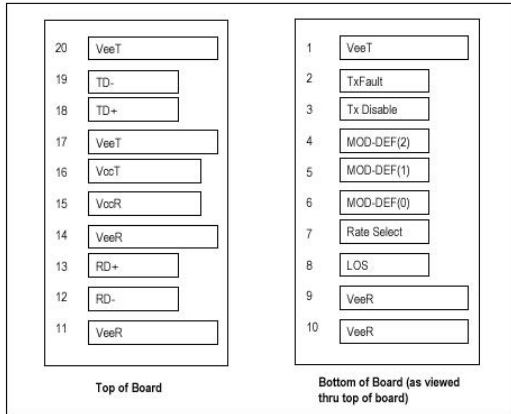
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Receiver Differential Output Voltage	RD +/-	<b>600</b>	<b>800</b>		mV <sub>p-p</sub>	
Receiver Overload	P <sub>IN</sub> MAX	<b>-3</b>			dBm	A,B
Receiver Sensitivity(2.125G)	P <sub>IN</sub> MIN			<b>-18</b>	dBm	
Receiver Sensitivity(1.25G)				<b>-20</b>	dBm	
Operating Center Wavelength	λ <sub>c</sub>	<b>770</b>		<b>860</b>	nm	
Receiver LOS Assert Level	P <sub>RX_LOS A</sub>	<b>-35</b>			dBm	B
Receiver LOS Deassert Level	P <sub>RX_LOS D</sub>			<b>-18.5</b>	dBm	B
Receiver Loss of Signal Hysteresis		<b>0.5</b>	<b>2</b>		dB	B

**Notes:**

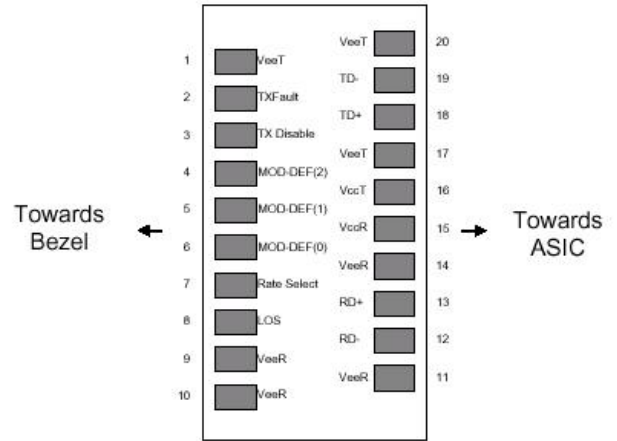
**A.** With BER better than or equal to  $1 \times 10^{-12}$

**B.** measured in the center of the eye opening with 2<sup>7</sup> -1 PRBS, NRZ

**Pin Description**



**SFP Transceiver Electric Pad Layout**



**Diagram of Host Board Connector Block Pin Numbers and Names**

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Pin No.	Pin Name	Function	Plug Seq.	Notes
1	V <sub>cc</sub> T	Transmitter Ground	1	1
2	TX Fault	Transmitter Fault Indication	3	2
3	TX Disable	Transmitter Disable	3	3
4	MOD_DEF 2	Module Definition 2	3	4
5	MOD_DEF 1	Module Definition 1	3	4
6	MOD_DEF 0	Module Definition 0	3	4
7	Rate Select	Select between full or reduced receiver bandwidth	3	5
8	LOS	Loss of Signal	3	6
9	V <sub>cc</sub> R	Receiver Ground	1	1
10	V <sub>cc</sub> R	Receiver Ground	1	1
11	V <sub>cc</sub> R	Receiver Ground	1	1
12	RD -	Inv. Receiver Data Out	3	
13	RD +	Receiver Data Out	3	
14	V <sub>cc</sub> R	Receiver Ground	1	1
15	V <sub>cc</sub> R	Receiver Power	2	
16	V <sub>cc</sub> T	Transmitter Power	2	
17	V <sub>cc</sub> T	Transmitter Ground	1	1
18	TD +	Transmitter Data In	3	
19	TD -	Inv. Transmitter Data In	3	
20	V <sub>cc</sub> T	Transmitter Ground	1	1

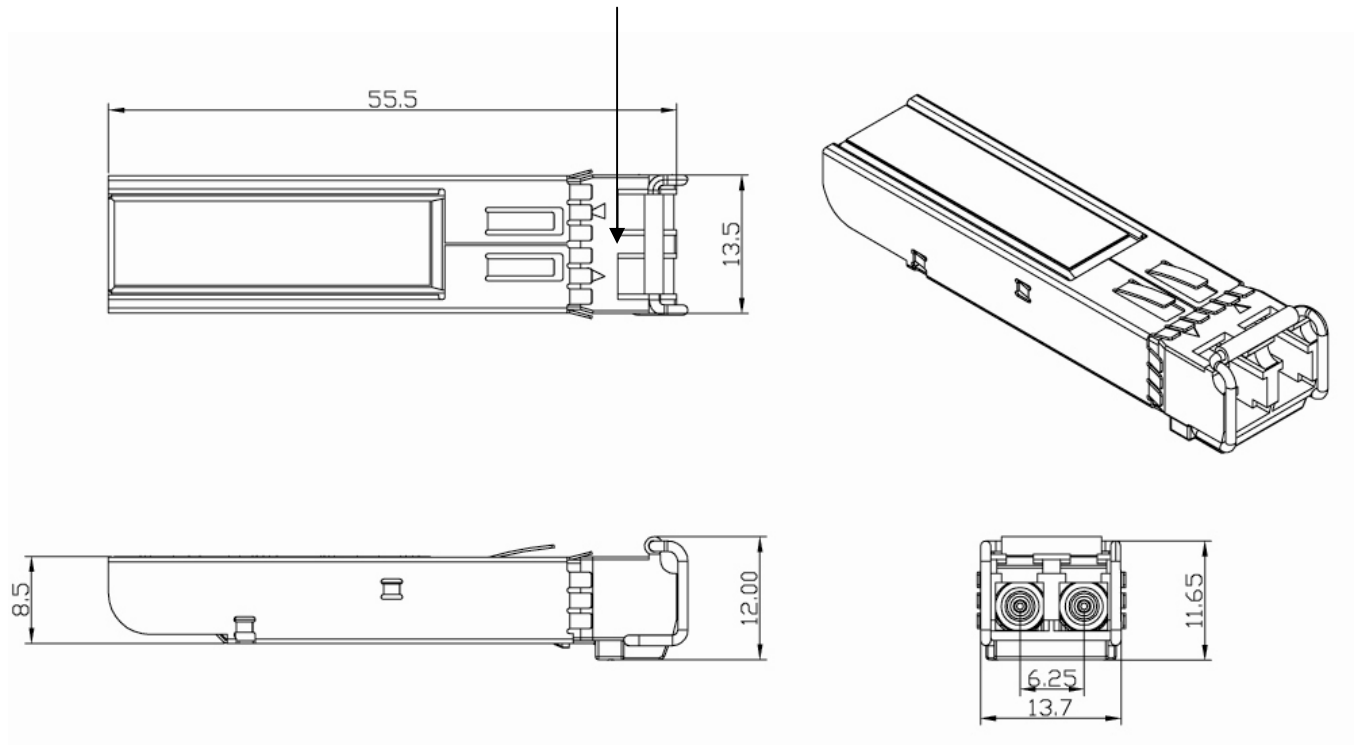
Note:

- 1, Circuit ground is internally isolated from chassis ground
- 2, Open-Collector outputs, asserted when LD and/or APC function fail.
- 3, Disable when high voltage (>2.0V or Open)
- 4, Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 5.5V. MOD\_DEF(0) pulls line low to indicate module is plugged in.
- 5, Low=1.25G/1.0625G, High= 2.125G
- 6, LOS is open collector output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 5.5V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

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**Mechanical Dimensions** (Units in mm)

Tc measurement point

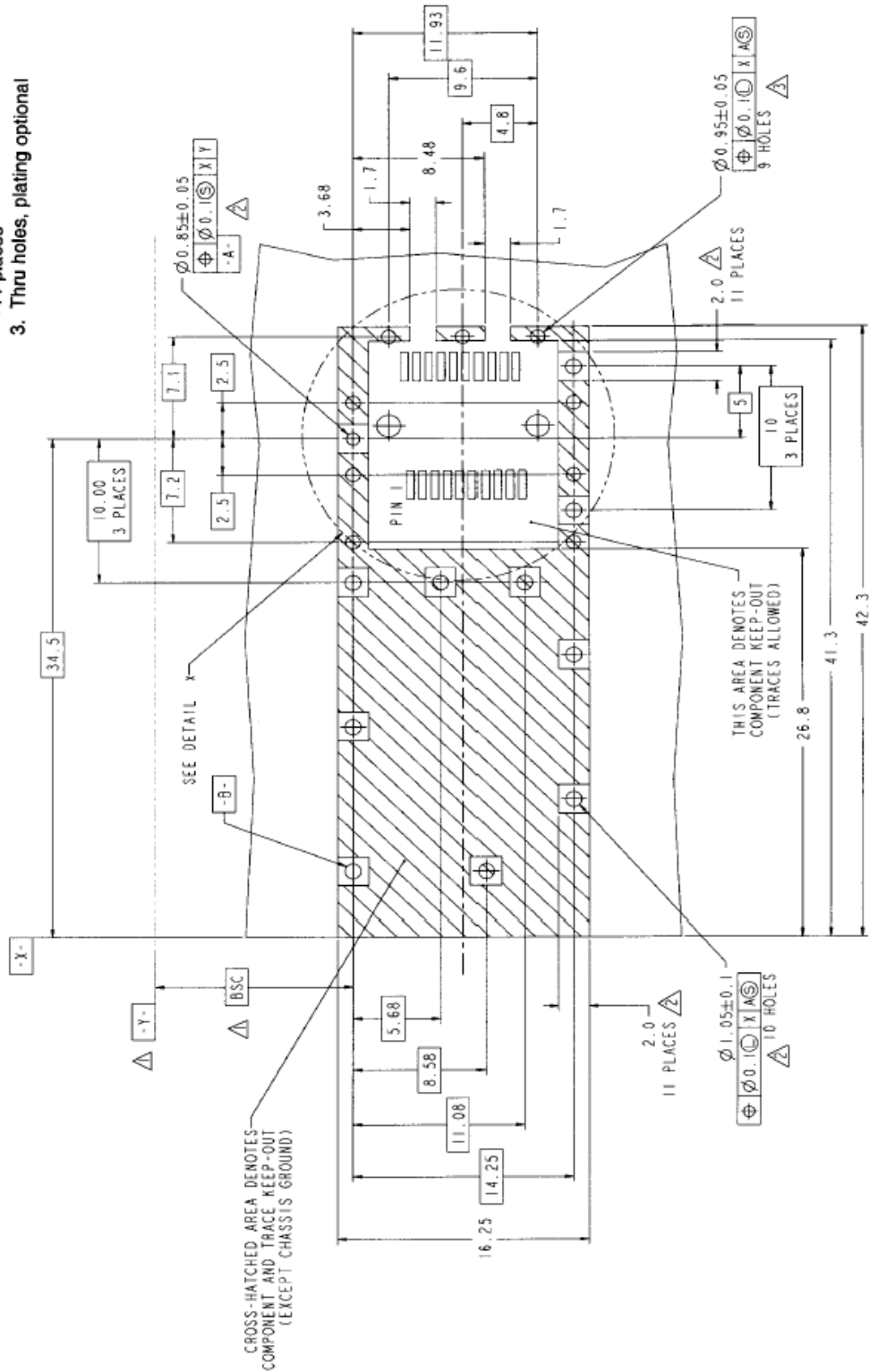


**2/1x Fiber Channel / Gigabit Ethernet  
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References (From SFP MSA September 14, 2000 page 11, 12, 13, and 23)

1. SFP Host PCB layout

- Notes:
1. Datum and basic dimensions established by customer
  2. Pads and vias are chassis ground, 11 places
  3. Thru holes, plating optional







2.Application Circuit

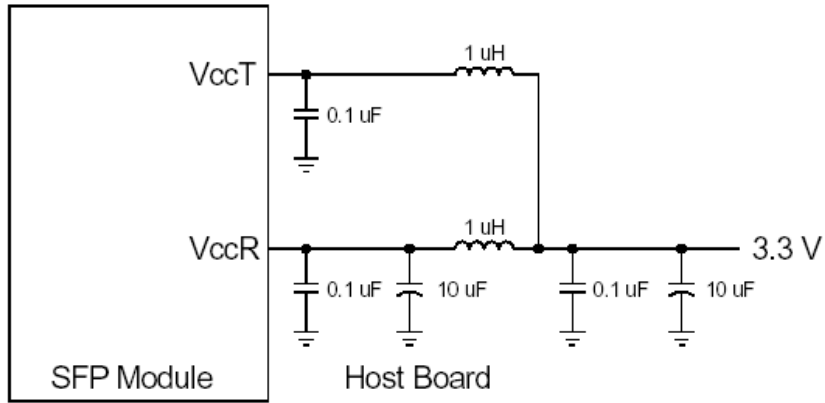


Figure 2A. Recommended Host Board Supply Filtering Network

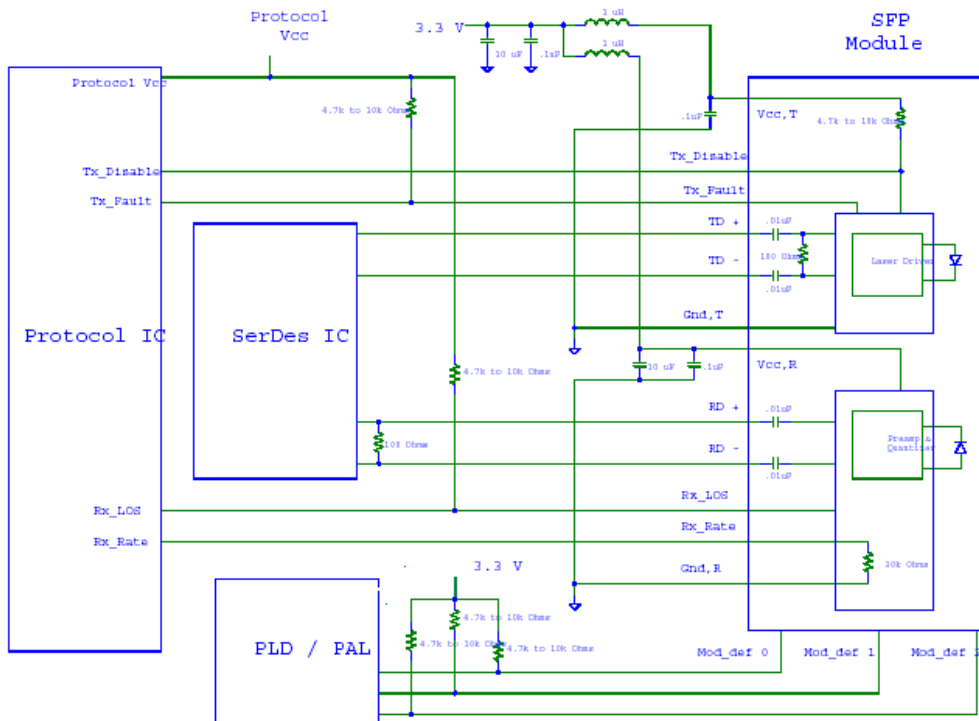


Figure 2B. Example SFP Host Board Schematic