

**Gigabit Ethernet / 1x Fiber Channel
1310 nm LHX SFP Transceiver
RoHS, SFF-8472 Compliant
Specification: MOD-MGLHX40-D**

Product Overview

The MOD-MGLHX40-D of Small Form Factor Pluggable (SFP) transceiver module is specifically designed for high performance integrated duplex data link over single mode optical fiber. The high-speed laser diode 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 External Calibrated
- Operation Temperature: 0~70°C
- 1310nm uncooled DFB LD
- 40Km link distance_(indicative only)
- Hot pluggable
- Metal enclosure, low EMI
- Single 3.3V power supply
- Low Power Dissipation

Applications

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

Ordering information

Product Code	Description/Clasp Color
<u>MOD-MGLHX40-D</u>	1310nm, Blue

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T _S	-40		85	°C	
Supply Voltage	V _{CC} T V _{CC} R	0		5.5	V	
Relative Humidity	RH	0		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Temperature	T _{OP}	0		70	°C	
Supply Voltage	V _{CC} T,R	3.1	3.3	3.5	V	
Supply Current	I _{TX} +I _{RX}		200	300	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 +/-	400		2000	mVp-p	A
Optical Output Power	P _O	-2		+3	dBm	A
Optical Extinction Ratio	E _R	9			dB	A
Center Wavelength	λ _C	1280	1310	1355	nm	A
Spectral Width	Δλ			<1	nm	A
Side Mode Suppression Ratio	SMSR			30	dB	A
Optical Rise / Fall Time	t _r / t _f			0.25	nsec	A,B
Tx_Fault - High	V _{Fault_H}	2		V_{CC}	V	A
Tx_Fault - Low	V _{Fault_L}	V_{ee}		V_{ee}+0.5	V	A
Tx_Disable - High	V _{Disable_H}	2		V_{CC}	V	A
Tx_Disable - Low	V _{Disable_L}	V_{ee}		V_{ee}+0.8	V	A

Notes:

A. All of data is measured at 1250Mbps , PRBS 2⁷-1 ,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 +/-	600	800		mV _{p-p}	
Receiver Overload	P _{IN} MAX	-3			dBm	A,B
Receiver Sensitivity	P _{IN} MIN			-24	dBm	A,B
Operating Center Wavelength	λ _c	1270		1620	nm	
Receiver LOS Assert Level	P _{RX_LOS A}	-35			dBm	B
Receiver LOS Deassert Level	P _{RX_LOS D}			-24.5	dBm	B
Receiver Loss of Signal Hysteresis		0.5	2		dB	B

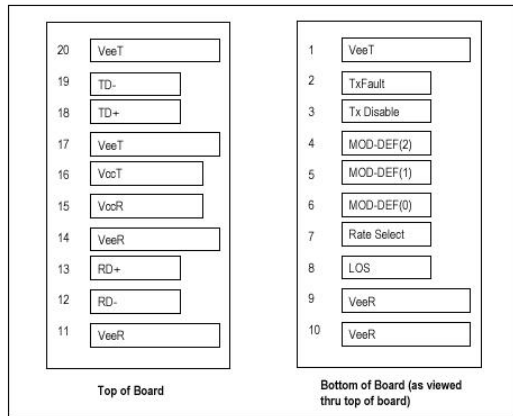
Notes:

A. With BER better than or equal to 1×10^{-12}

B. measured in the center of the eye opening with 2⁷ -1 PRBS, NRZ

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Pin Description



SFP Transceiver Electric Pad Layout

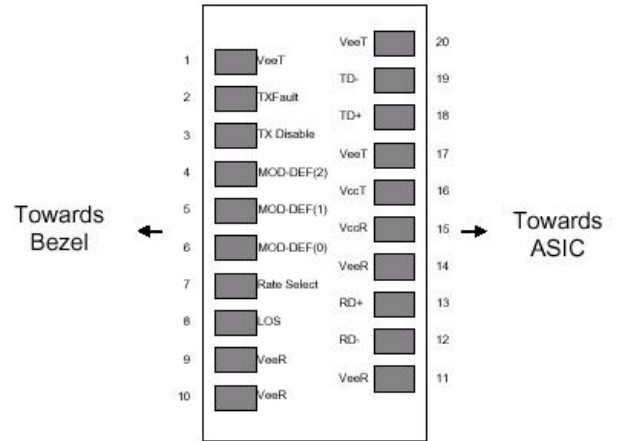


Diagram of Host Board Connector Block Pin Numbers and Names

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Pin No.	Pin Name	Function	Plug Seq.	Notes
1	V _{cc} 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 _{cc} R	Receiver Ground	1	1
10	V _{cc} R	Receiver Ground	1	1
11	V _{cc} R	Receiver Ground	1	1
12	RD -	Inv. Receiver Data Out	3	
13	RD +	Receiver Data Out	3	
14	V _{cc} R	Receiver Ground	1	1
15	V _{cc} R	Receiver Power	2	
16	V _{cc} T	Transmitter Power	2	
17	V _{cc} T	Transmitter Ground	1	1
18	TD +	Transmitter Data In	3	
19	TD -	Inv. Transmitter Data In	3	
20	V _{cc} T	Transmitter Ground	1	1

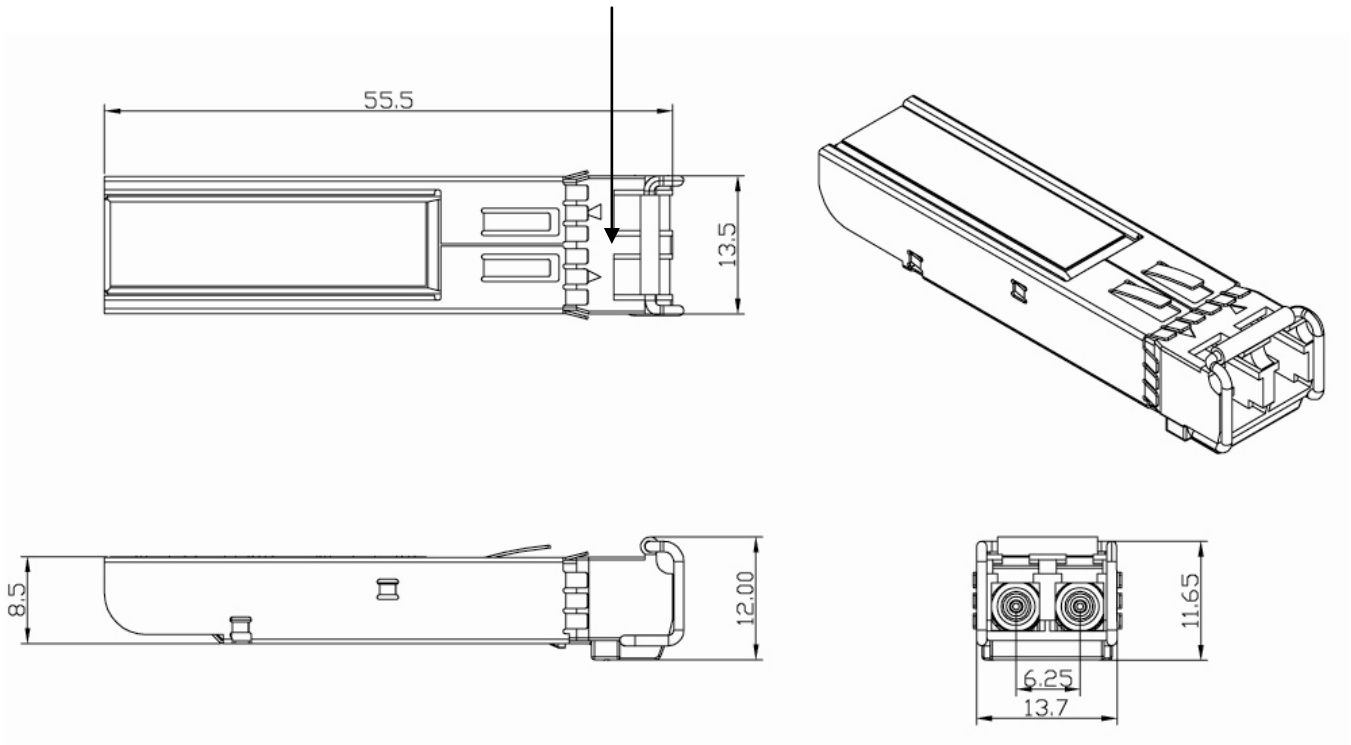
Note:

- 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, No connection required
- 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

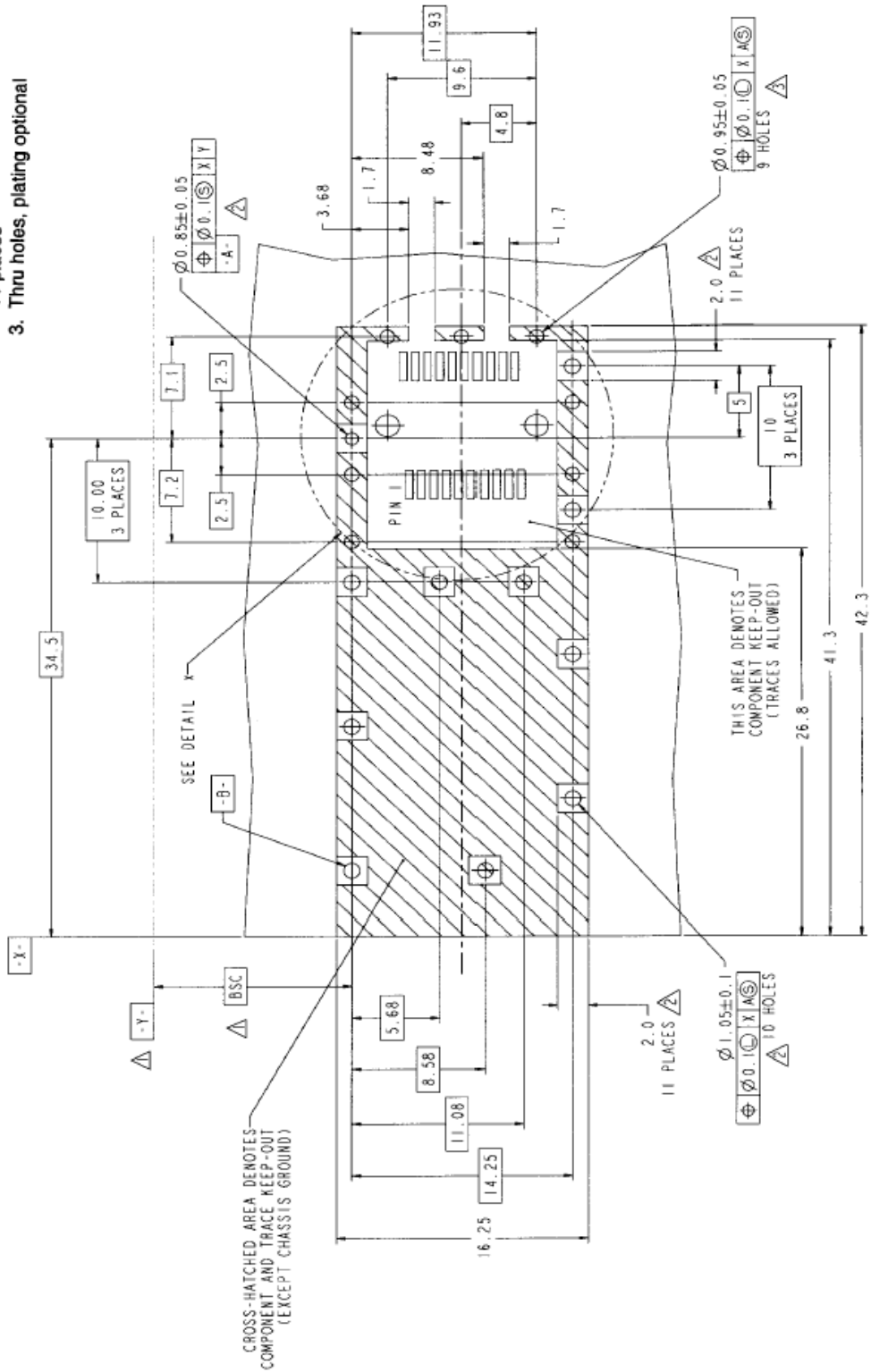


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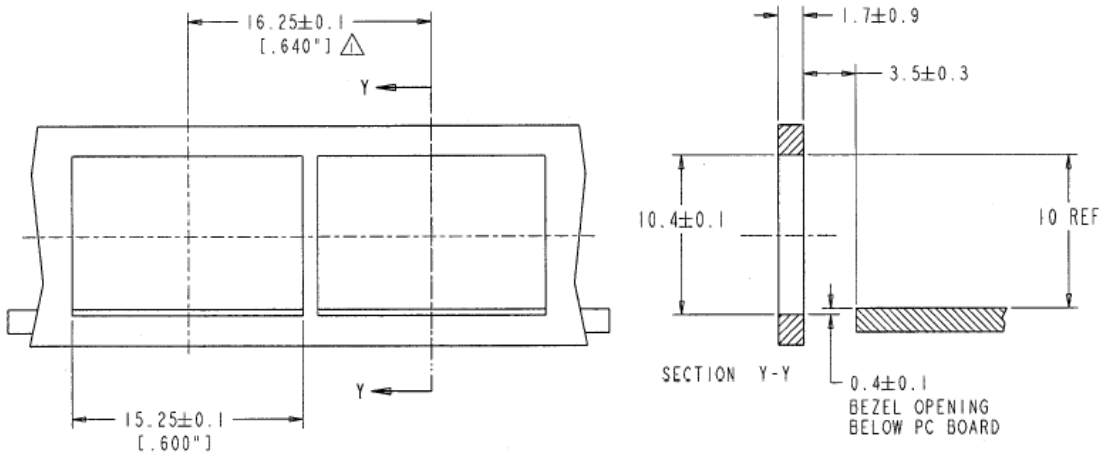
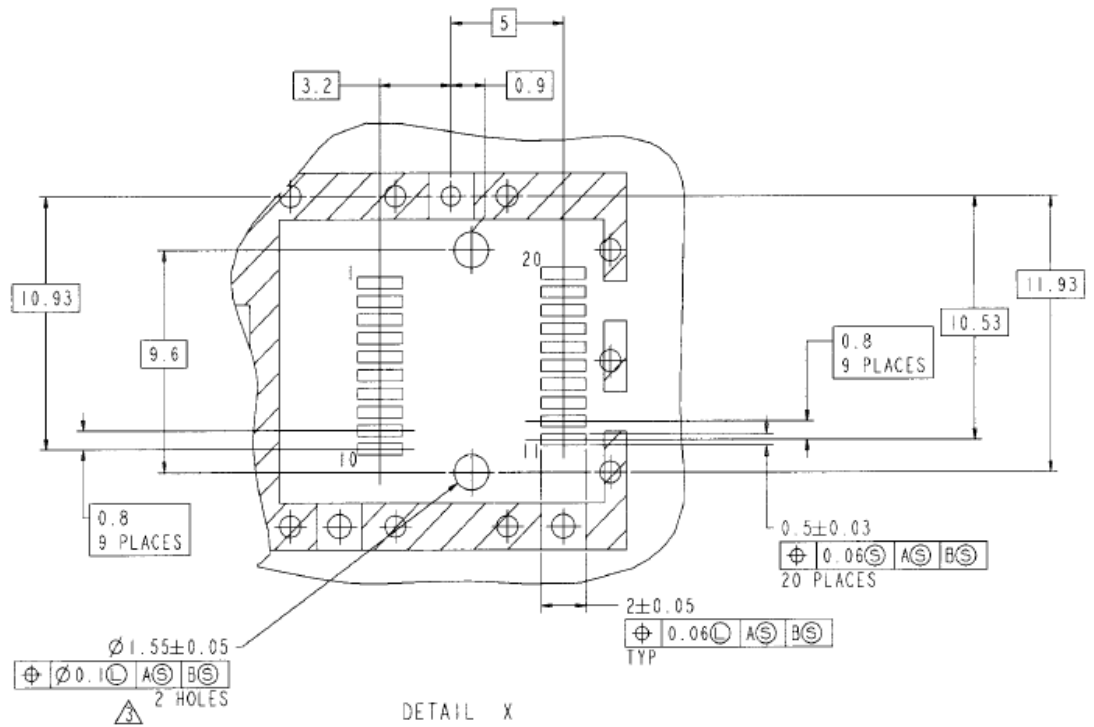
References (From SFP MSA September 14, 2000 page 11, 12, 13, and 23)

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



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- NOTES:
- MINIMUM PITCH ILLUSTRATED, ENGLISH DIMENSIONS ARE FOR REFERENCE ONLY
 - NOT RECOMMENDED FOR PCI EXPANSION CARD APPLICATIONS

2.Application Circuit

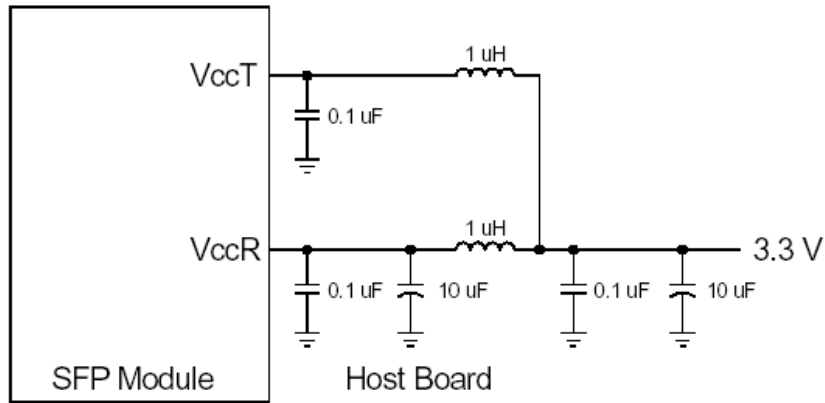


Figure 2A. Recommended Host Board Supply Filtering Network

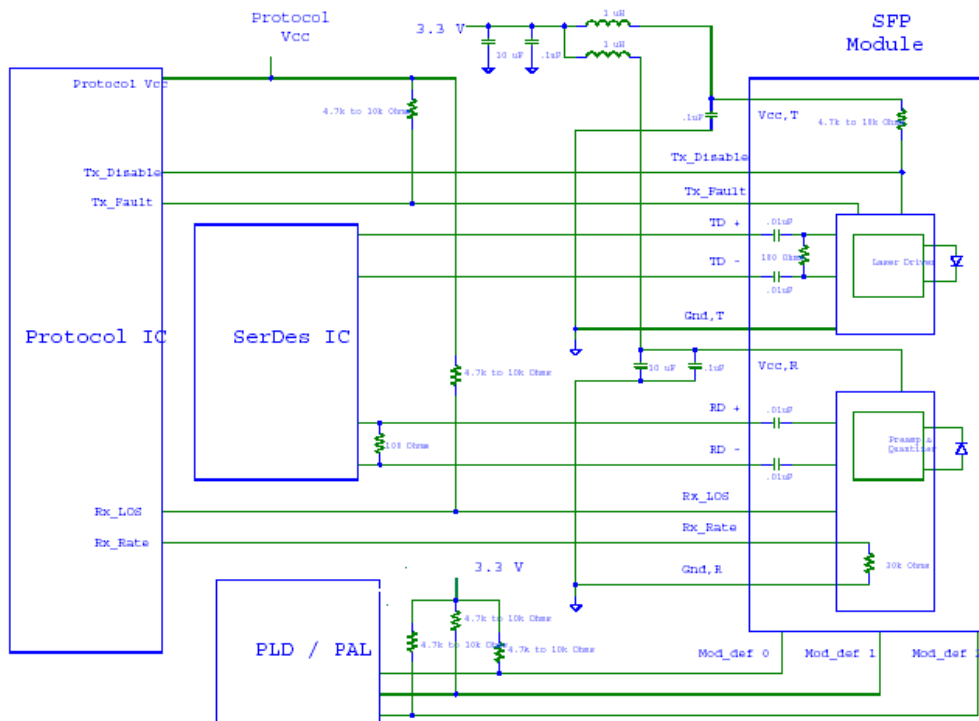


Figure 2B. Example SFP Host Board Schematic