GLC-T-OEM

1000BASE-T SFP (Small Form Pluggable) Copper Transceiver
3.3V, 1.25GBd Gigabit Ethernet

- Up to 1.25 GBd bi-directional data links
- Compliant with IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab compliant and SFP MSA
- Hot-pluggable SFP footprint
- Support 1000BASE-T full duplex default operating mode
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- RJ-45 connector
- Auto-sense MDI/MDIX
- Single power supply 3.3V
- RoHS Compliance
- Operating temperature range: 0°C to 70°C.

Product Overview

GLC-T-OEM Copper SFP transceivers are based on Gigabit Ethernet IEEE 802.3 standard and 1000BASE-T standard and provide a quick and reliable interface for the Gigabit Ethernet application. The 1000BASE-T physical layer PHY can be accessed via I^2C, allowing access to all PHY setting and features. In addition, they comply with the Small Form Factor Pluggable Multi Sourcing Agreement (MSA).

Product Protocols

- 1.25 GBd Gigabit Ethernet

Ordering Information

Part Number	Description
GLC-T-OEM	1000BASE-T SFP Copper RJ-45 Connector 100m Auto Negotiation Version

Contact

Host Compatible Selection

Part Number	Link Indicator on RX_LOS Pin	Compatible with 1000BASE-X auto-negotiation
GLC-T-OEMA	NO	YES
GLC-T-OEMF	YES	NO

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate[1]	DR	10		1000	Mb/sec	IEEE 802.3
Cable Length	CL			100	m	Category 5 UTP
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T_{op}	0		85	°C	Case temperature
Storage Temperature	T_{STO}	-40		85	°C	Ambient temperature
Supply Current	I_S		320	375	mA	For electrical power interface
Input Voltage	V_{CC}	3.13	3.3	3.47	V	Referenced to GND. For electrical power interface
Maximum Voltage	V_{MAX}			4	V	For electrical power interface
Surge Current	I_{surge}			30	mA	Hot Plug above steady state current. For electrical power interface

Note 1: 10/100/1000M operation requires the host system to have an SGMII interface with no clock. With a SERDES interface, this transceiver will operate at 1000M only.

High Speed Electrical Interface Host-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential Input Voltage	V_{INDIFF}	250		1200	mV	Differential peak-peak
Differential Output Voltage	$V_{OUTDIFF}$	350		800	mV	Differential peak-peak
Rise/Fall Time (20% – 80%)	T_{R-F}		175		psec	
Tx Input impedance	Z_{IN}		50		ohm	Single ended
Rx Output impedance	Z_{OUT}		50		ohm	Single ended

High Speed Electrical Interface Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Line Frequency	F_L		125		MHz	5-level encoding
Tx Output Impedance – Differential	Z_{OUT_T}		100		Ohm	Note 1
Rx Input Impedance – Differential	Z_{IN_RX}		100		Ohm	Note 1

Note 1: For all frequencies between 1MHz and 125MHz

Low Speed Electrical Signal

| Parameter	Symbol	Min	Typ	Max	Unit	Remarks
SFP Output Low	V_{OL}	0		0.5	V	External 4.7-10k ohm pull-up resistor required
SFP Output High	V_{OH}	Host_V_{CC}–0.5		Host_V_{CC}+0.3	V	External 4.7-10k ohm pull-up resistor required
SFP Input Low	V_{IL}	0		0.8	V	External 4.7-10k ohm pull-up resistor required
SFP Input High	V_{IH}	2		V_{CC} + 0.3	v	External 4.7-10k ohm pull-up resistor required

Dimensions
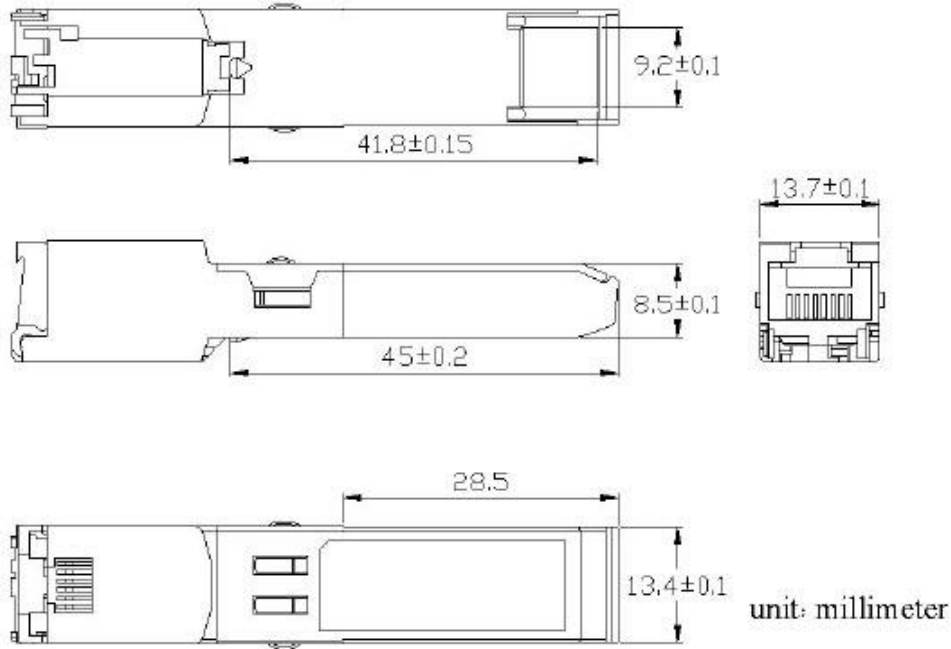
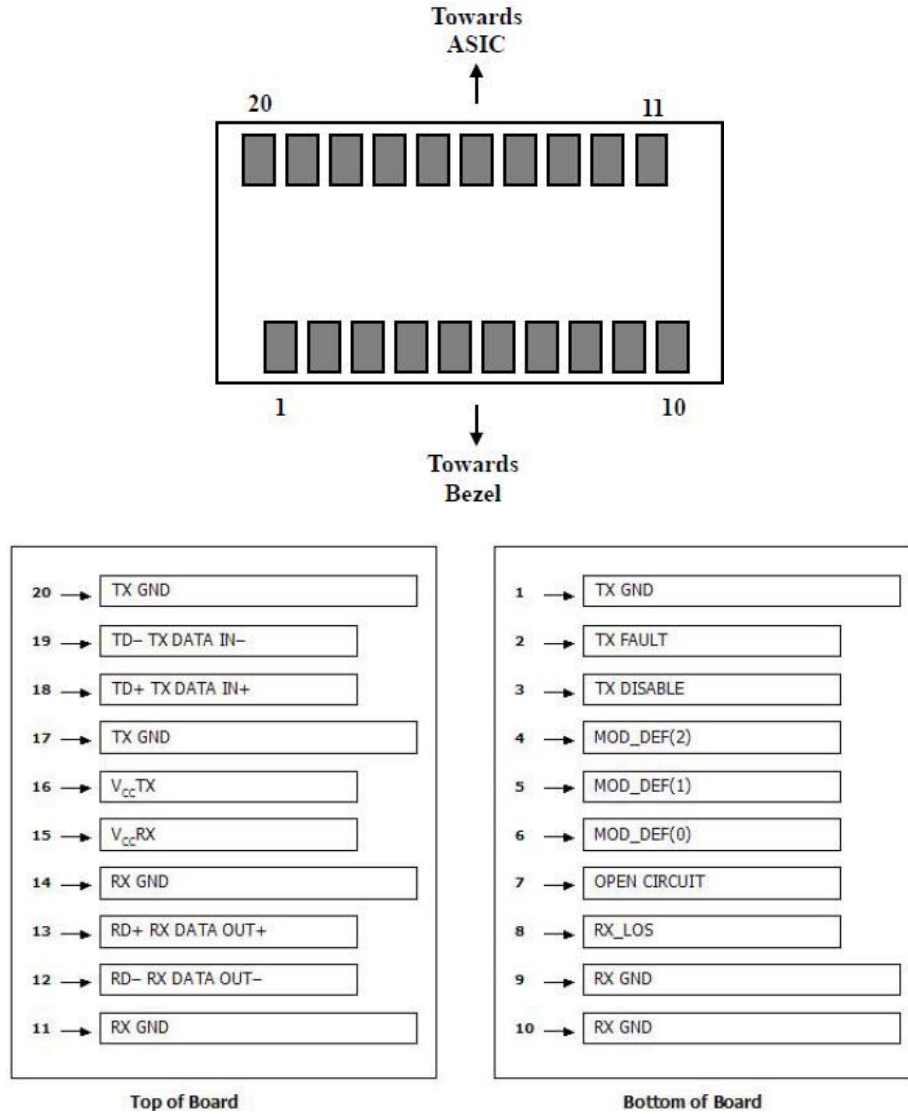**ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED UNIT: mm**

PCB Layout Recommendation

Detail X
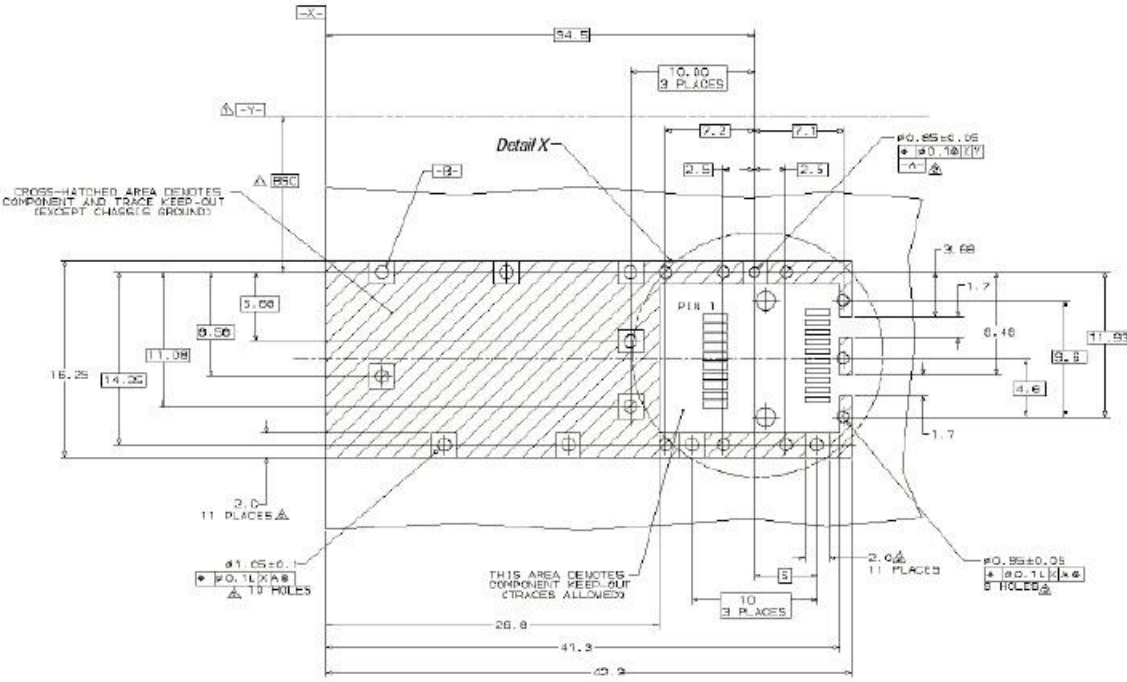
△ Datum and Basic Dimension Established by Customer
△ Pads and Vias are Chassis Ground, 11 Places
△ Through Holes are Unplated

Electrical Pad Layout

Top of Board

Bottom of Board
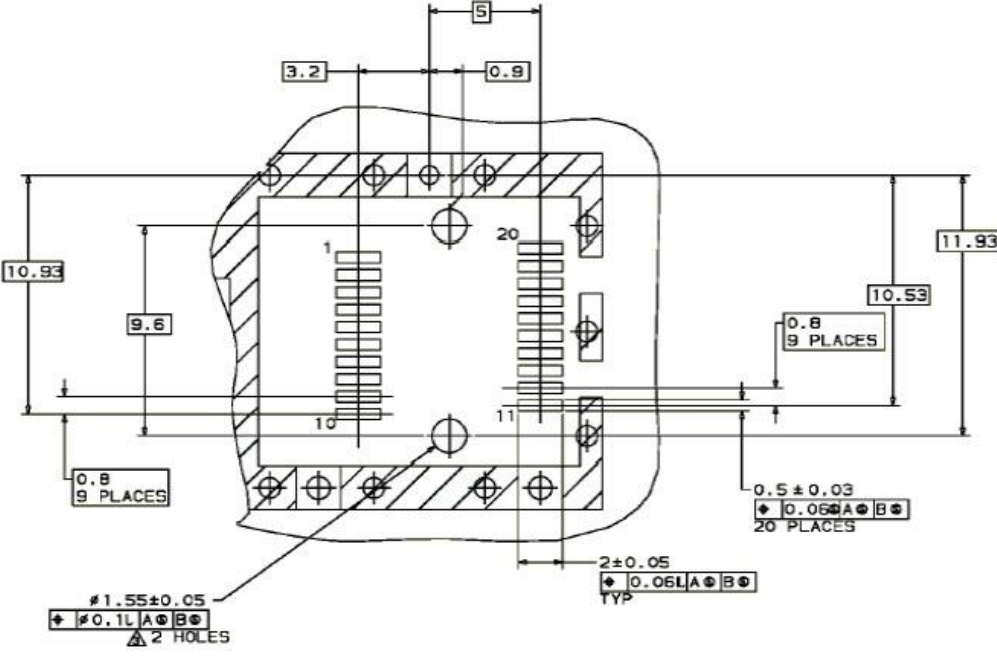
Pin Assignment

PIN #	Symbol	Description	Remarks
1	V_{EET}	Transmitter ground (common with receiver ground)	Circuit ground is connected to chassis ground
2	T_{FAULT}	Transmitter Fault. Not supported	
3	T_{DIS}	Transmitter Disable. PHY disabled on high or open	Disabled: T_{DIS} >2V or open
			Enabled: T_{DIS} <0.8V
4	MOD_DEF (2)	Module Definition 2. Data line for serial ID	Should Be pulled up with 4.7k – 10k ohm on
5	MOD_DEF (1)	Module Definition 1. Clock line for serial ID	

6	MOD_DEF (0)	Module Definition 0. Grounded within the module	host board to a voltage between 2V and 3.6V
7	Rate Select	No connection required	
8	LOS	Loss of Signal	Not supported on GLC-T-OEMA
9	V_{EER}	Receiver ground (common with transmitter ground)	Circuit ground is connected to chassis ground
10	V_{EER}	Receiver ground (common with transmitter ground)	
11	V_{EER}	Receiver ground (common with transmitter ground)	
12	RD–	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V_{EER}	Receiver ground (common with transmitter ground)	Circuit ground is connected to chassis ground
15	V_{CCR}	Receiver power supply	
16	V_{CCT}	Transmitter power supply	
17	V_{EET}	Transmitter ground (common with receiver ground)	Circuit ground is connected to chassis ground
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD–	Transmitter Inverted DATA in. AC coupled	
20	V_{EET}	Transmitter ground (common with receiver ground)	Circuit ground is connected to chassis ground

References

1. IEEE standard 802.3. IEEE Standard Department, 2002.

2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000.

3. Marvell Corporation – Alaska Ultra 88E1111 Integrated 10/100/1000 Gigabit Ethernet Transceiver.