GLC-10/100/100BASE-T SFP Transceiver RoHS 6 Compliant

ASF-GE-T

Features

- Operating data rate up to 1.25Gbps
- Maximum link length of 100m
- Single 3.3V Power supply
- Support 1000BASE-T full duplex default operating mode
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- RJ-45 connector
- Fully metallic enclosure for low EMI
- Auto-sense MDI/MDIX
- Operating Case Temperature Standard: 0℃~+70℃
- Hot Pluggable
- Compliant with SFP MSA
- Compliant with IEEE 802.3z, IEEE 802.3ab Gigabit Ethernet

Applications

- 1.25 Gigabit Ethernet

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic Discharge To the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards
Component Recognition	UL and CUL EN60950-1:2006	Compliant with standards
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards note1

Note1: For update of the equipments and strict control of raw materials, 10Gtek has the ability to supply the customized products since Jan 1st, 2007, which meets the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for 10Gtek's transceivers, because 10Gtek's transceivers use glass, which may contain Pb, for components such as lenses, isolators, and other electronic components.

Product Description

ASF-GE-T 10/100/1000BASE-T Copper Small Form Pluggable (SFP) are based on the SFP Multi Source Agreement (MSA). It is compatible with the Gigabit Ethernet and 10/100/1000BASE-T standards as specified in IEEE Std 802.3.

Absolute Maximum Ratings note2

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Operating Case Temperature	T_{case}	0	70	°C
Supply Voltage	V_{CC}	0	3.6	V

Note2: Exceeding any one of these values may destroy the device permanently.

Recommended Operating Conditions

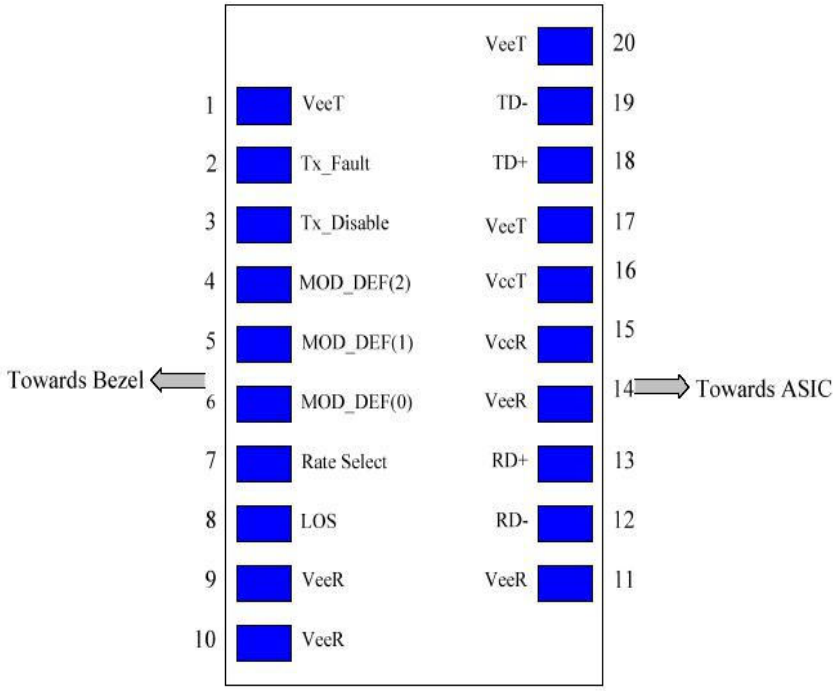
Parameter	Symbol	Min.	Typical	Max.	Unit	Remarks
Operating Case Temperature	TA	0		+70	°C	Case temperature
Power Supply Voltage	VCC	3.15	3.3	3.45	V	Referenced to GND. For electrical power interface
Power Supply Current	ICC			350	mA	For electrical power interface
Baud Rate			1000		Mb/sec	IEEE 802.3
Bit Error Rate	BER		10^{-}			
Cable Length	CL			100	m	Category 5 UTP

Performance Specifications - Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Remarks
High Speed Electrical Interface Host-SFP						
Differential Input Voltage	VINDIFF	250		1200	mv	Differential peak-peak
Differential Output Voltage	VOUTDIFF	350		800	mv	Differential peak-peak
Rise/Fall Time (20%−80%)	TR-F		175		psec	
Tx Input impedance	ZIN		50		ohm	Single ended
Rx Output impedance	ZOUT		50		ohm	Single ended
High Speed Electrical Interface Transmission Line-SFP						
Line Frequency	FL		125		MHz	5-level encoding
Tx Output Impedance−Differential	ZOUT_T		100		Ohm	For all frequencies between 1MHz and 125MHz.
Rx Input Impedance−Differential	ZIN_RX		100		Ohm	For all frequencies between 1MHz and 125MHz.
Low Speed Electrical Signal						
GBIC Output Low	VOL	0		0.5	v	External 4.7k-10k ohm pull-up to host_VCC.

GBIC Output High	V_{OH}	Host_VCC–0.5		Host_ VCC + 0.3	v	External 4.7k-10k ohm pull-up to host_VCC.
GBIC Input Low	V_{IL}	0		0.8	v	External 4.7k-10k ohm pull-up to host_VCC.
GBIC Input High	V_{IH}	2		VCC + 0.3	v	External 4.7k-10k ohm pull-up to
						host_VCC.

SFP Transceiver Electrical Pad Layout



Pin Function Descriptions

Pin#	Name	Function	Notes
1	VeeT	Transmitter Ground(common with receiver ground)	
2	TX Fault	Transmitter Fault. Not supported	Note3
3	TX Disable	Transmitter Disable. PHY disabled on high or open	Note4
4	MOD-DEF2	Module Definition 2. Data line for Serial ID.	Note5
5	MOD-DEF1	Module Definition 1. Clock line for Serial ID.	Note5
6	MOD-DEF0	Module Definition 0. Grounded within the module.	Note5
7	Rate Select	No connection required	

8	LOS	Loss of Signal - High Indicates Loss of Signal	Note6
9	VeeR	Receiver Ground (common with transmitter ground)	
10	VeeR	Receiver Ground (common with transmitter ground)	
11	VeeR	Receiver Ground (common with transmitter ground)	
12	RD-	Receiver Inverted DATA out. AC Coupled	Note7
13	RD+	Receiver Non-inverted DATA out. AC Coupled	Note7
14	VeeR	Receiver Ground (common with transmitter ground)	
15	VccR	Receiver Power Supply	Note8
16	VccT	Transmitter Power Supply	Note8
17	VeeT	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	Note9
19	TD-	Transmitter Inverted DATA in. AC Coupled.	Note9
20	VeeT	Transmitter Ground(common with receiver ground)	

Notes:

3. TX Fault is not used and is always tied to ground through a 100 ohmresistor.

4. TX Disable as described in the MSA is not applicable to the 1000BASE-T module, but is used for convenience as an input to reset the internal ASIC. This pin is pulled up within the module with a 4.7KW resistor.

Low (0 – 0.8 V): Transceiver on

Between (0.8 V and 2.0 V): Undefined

High (2.0 – 3.465 V): Transceiver in reset state

Open: Transceiver in reset state

5. Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7-10KW resistor on the host board to a supply less than VCCT+0.3V orVCCR+0.3V.

Mod Def 0 is tied to ground through a 100 ohm resistor to indicate that the module is present.

Mod-Def 1 is clock line of two wire serial interface for optional serial ID

Mod-Def 2 is data line of two wire serial interface for optional serial ID

6. LVTTL compatible with a maximum voltage of 2.5V. Not supported on HTSFP-24-111X

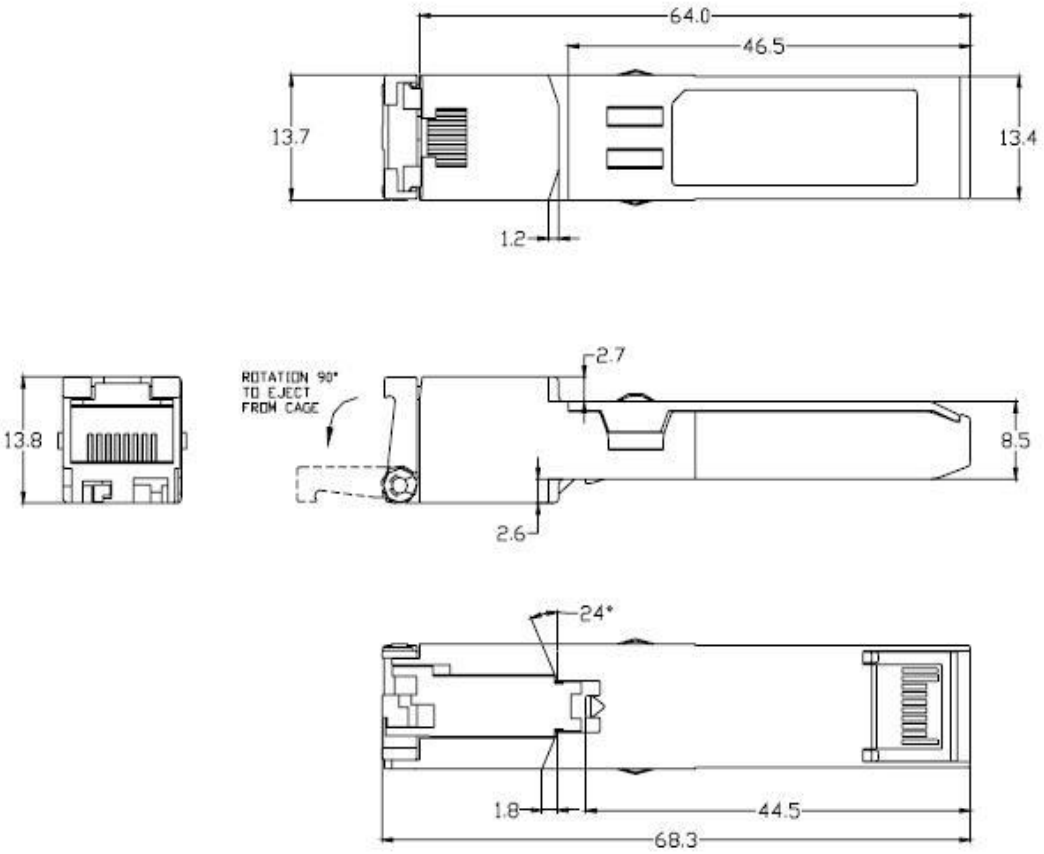
7. RD-/+: These are the differential receiver outputs. They are ac coupled 100 ohm differential lines which should be terminated with 100 ohm differential at the user SerDes. The ac coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 370 and 2000 mV differential (185 – 1000 mV single ended) when properly terminated. These levels are compatible with CML and LVPECL voltage swings.

8. VCCR and VCCT are the receiver and transmitter power supplies. They are defined as 3.3 V ± 5% at the SFP connector pin. The maximum supply current is about 300mA and the associated in-rush current will typically be no more than 30 mA above steady state after 500nanoseconds.

9. TD-/+: These are the differential transmitter inputs. They are ac coupled differential lines with 100W differential termination inside the module. The ac coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 500 – 2400 mV (250 –1200 Mv single ended), though it is recommended that values between 500 and 1200 mV differential (250 – 600 mV single ended) be used for best EMI performance. These levels are compatible with CML and LVPECL voltage swings.

Package outline (Unit: mm)

Copper SFP transceivers are compliant with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



Revision History

Revision	Initiated	Approved	content	Release Date
Ver1.0	Jacky	Nicky	Released	Dec/2011
Ver2.0	Jacky	Nicky	Released	May/2014

Further Information

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