1000BASE-T Copper GBIC Transceiver
GE-GB-G3RC

Features:

- Hot-pluggable GBIC footprint
- Extended case temperature range (0°C to +70°C)
- Low power dissipation (1.05 W typical)
- Compact RJ-45 connector assembly
- Access to physical layer IC via 2-wire serial bus
- 1000 BASE-T operation in host systems with SERDES interface

Applications:

- 1.25 Gigabit Ethernet over Cat 5 cable

Description:

GE-GB-G3RC 1000BASE-T Copper GBIC transceivers are based on the GBIC Multi Source Agreement (MSA). They are compatible with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE Std 802.32. The 1000BASE-T physical layer IC (PHY) can be accessed via I2C, allowing access to all PHY settings and features. The GE-GB-G uses the GBIC's RX_LOS pin for link indication, and 1000BASE-X auto-negotiation should be disabled on the host system. The GE-GB-G is compatible with 1000BASE-X auto-negotiation, but does not have a link indication feature(RX_LOS is internally grounded).

+5V Volt Electrical Power Interface

The GE-GB-G3RC has an input voltage range of +5V +/- 5%. The 5.5V maximum voltage is not allowed for continuous operation.

Parameter	Symbol	Min	Typ	Max	Units	Notes/Conditions
Supply Current	Is		220	260	mA	1.2W max power over full range of voltage and temperature. See caution note below
Input Voltage	Vcc	4.7	5	5.3	V	Referenced to GND
Maximum Voltage	Vmax			5.5	V	
Surge Current	Isurge			30	mA	Hot plug above steady state current. See caution note below

Caution: Power consumption and surge current are higher than the specified values in the GBIC MSA

Low-Speed Signals

MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals (see section VII, “Serial Communication Protocol”). Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc.

Parameter	Symbol	Min	Max	Units	Notes/Conditions
GBIC Output LOW	VOL	0	0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
GBIC Output HIGH	VOH	host_Vcc - 0.5	host_Vcc + 0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
GBIC Input LOW	VIL	0	0.8	V	4.7k to 10k pull-up to Vcc, measured at GBIC side of connector
GBIC Input HIGH	VIH	2	Vcc + 0.3	V	4.7k to 10k pull-up to Vcc, measured at GBIC side of connector

High-Speed Electrical Interface

All high-speed signals are AC-coupled internally.

Parameter	Symbol	Min	Typ	Max	Units	Notes/Conditions
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3
Tx Output Impedance	Zout,TX		100		Ohm	Differential, for all Frequencies between 1MHz and 125MHz
Rx Input Impedance	Zin,RX		100		Ohm	Differential, for all Frequencies between 1MHz and 125MHz

High-speed electrical interface, host-GBIC

High-Speed Electrical Interface, Host-GBIC						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes/Conditions**
Single ended data input swing	Vinsing	250		1200	mV	Single ended
Single ended data output swing	Voutsing	350		800	mV	Single ended
Rise/Fall Time	Tr,Tf		175		psec	20%-80%
Tx Input Impedance	Zin		50		Ohm	Single ended
Rx Output Impedance	Zout		50		Ohm	Single ended

General Specifications

General						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes/Conditions**
Data Rate	BR	10		1,000	Mb/sec	IEEE 802.3 compatible. See Notes 2 through 4 below
Cable Length	L			100	m	Category 5 UTP. BER <10-12

Notes:
1. Clock tolerance is +/- 50 ppm
2. By default, the GE-GB-G is a full duplex device in preferred master mode
3. Automatic crossover detection is enabled. External crossover cable is not required
4. 1000 BASE-T operation requires the host system to have an SGMII interface with no clocks, and the module PHY to be configured per Application Note AN-2036. With a SERDES that does not support SGMII, the module will operate at 1000BASE-T only.

Environmental Specifications

Environmental Specifications						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes/Conditions**
Operating Temperature	Top	0		70	°C	Case temperature
Storage Temperature	Tsto	-40		85	°C	Ambient temperature

Ordering information

Part number	Operating Case temperature
GE-GB-G3RC	1000Mbps only, SERDES interface, Copper GBIC with spring latch

References

1. Gigabit Interface Converter (GBIC) Transceiver Multi-Source Agreement (MSA),
2. IEEE Std 802.3, 2002 Edition. IEEE Standards Department, 2002.
3. “AT24C01A/02/04/08/16 2-Wire Serial CMOS E2PROM”, Atmel Corporation.
4. “Alaska Ultra 88E1111 Integrated 10/100/1000 Gigabit Ethernet Transceiver”,Marvell Corporation.

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Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by GIGALIGHT before they become applicable to any particular order or contract. In accordance with the GIGALIGHT policy of continuous improvement specifications may change without notice.

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