



GBIC Transceiver

MGB-243S

Features:

- Operating temperature range 0°C to +70°C
- Operating bit rate 1250Mbps
- Hot-pluggable capability.
- Low power dissipation
- 1310 nm FP laser
- SCA-2 electrical interface
- Single 3.3V/5V power supply
- Differential PECL input and output
- TTL signal detect indicator
- Duplex SC optical interface
- Detailed product information in E²PROM

Applications:

- Gigabit Ethernet
- Switch to Switch interface
- Router/server interface
- Other optical transmission systems

Description:

MGB-243S is compliant with Gigabit Interface Converter (GBIC) specification Rev5.5. It meets the requirements of IEEE 802.3 Gigabit Ethernet standard and ANSI specifications for fiber channel. It can be inserted in or removed from host chassis without shutting power of the host system.

MGB-243S Operating Wavelength is 1310nm, it enables cost-effective data transmission over optical fibers at a distance of 10 km. The operating voltage is +3.3V or +5V.

Specifications:

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V _{CC}	-0.5		6	V
Ambient Operating Temperature	T _C	0		70	°C
Storage Temperature	T _{stg}	-40		85	°C
Relative Humidity	RH	5		95	%
Data Input Voltage	TX-DAT	-0.5		VDDT	V
Transmitter Differential Input Voltage	±TX-DAT			2000	mVp-p
Operating Current	I _{op}	—		300	mA

Transceiver Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Surge Current	I _{SURGE}			30	mA	
Power Dissipation	P _{DISS}		0.5	1.0	W	3.3V
			0.8	1.5	W	5V

Transmitter Electro-optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Output Optical Power 9/125um SMF	P _O	-9.5	7	-3	dBm avg	
Optical Extinction Ratio		9			dB	
Center Wavelength	λ _C	1280	1310	1340	nm	
Spectral Width				2.8	nm rms	
Optical Rise /Fall Time	t _r /t _f			0.26	ns	
Total Contributed Jitter	T _J			227	ps p-p	
Max. Pout TX-DISABLE Asserted	P _{OFF}			-35	dBm	
Output Eye	Compliant with IEEE802.3z					
Differential Input Voltage	V _{DIFF}	0.65		2.0	V	
Transmit Fault Output-Low	TX-FAULTL	0		0.5	V	
Transmit Fault Output-High	TX-FAULTH	2.4		VCC	V	
TX-DISABLE Assert Time	t-off			10	us	
TX-DISABLE Negate Time	t-on			1	ms	
Time to initialize, includes reset of TX-FAULT	t-init			300	ms	
TX-FAULT from fault to assertion	t-fault			100	us	
TX-DISABLE time to start reset	t-reset	10			us	

Receiver Electro-optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input Optical Power	P _{in}	-23	7	-3	dBm	2 ⁷ -1 PRBS BER<10 ⁻¹²
Operating Center Wavelength	λ _C	1200		1660	nm	
Return Loss	ORL	12			dB	
Receiver Loss of Signal-TTL low	PRX-LOS A			-23	dBm	
Receiver Loss of Signal-TTL high	PRX-LOS D	-31			dBm	
Receiver Differential Output Voltage	±RX_DAT	370		2000	mV-p	
Receiver Output Rise Time	Tr _{RX_DAT}		0.25	0.35	ns	
Receiver Output Fall Time	Tf _{RX_DAT}		0.25	0.35	ns	
Receiver Loss of Light Load	RX-LOSLoad	4.7		10	K Ω	
Receiver Loss of Signal Output Voltage -low	RX-LOSL	0.0		0.5	V	
Receiver Loss of Signal Output Voltage -high	RX-LOSH	VCC-0.5		VCC+0.3	V	

Receiver Loss of Signal Assert Time _Logic low to high	tA, RX-LOS			100	us	
Receiver Loss of Signal Assert Time _Logic high to low	tD, RX-LOS			100	us	

Pin Figure:

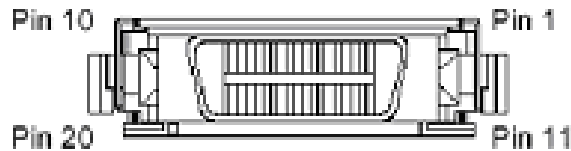


Figure 1

Pin Definitions:

Pin	Signal Name	Description
1	RX-LOS	Receiver Loss of Signal, TTL high, open collector
2	RGND	Receiver Ground
3	RGND	Receiver Ground
4	MOD_DEF(0)	TTL Low
5	MOD_DEF(1)	SCL Serial Clock Signal
6	MOD_DEF(2)	SDA Serial Data Signal
7	TX-DISABLE	Transmitter Disable
8	TGND	Transmitter Ground
9	TGND	Transmitter Ground
10	TX-FAULT	Transmit Fault
11	RGND	Receiver Ground
12	-RX_DAT	Receiver Data, Differential PECL, AC coupled
13	+RX_DAT	Receiver Data, Differential PECL, AC coupled
14	RGND	Receiver Ground
15	VDDR	Receiver supply
16	VDDT	Transmitter supply
17	TGND	Transmitter Ground
18	+TX_DAT	Transmitter Data, Differential PECL, AC coupled
19	-TX_DAT	Transmitter Data, Differential PECL, AC coupled
20	TGND	Transmitter Ground

Functions Description:

The laser is driven by a LD driver IC which converts differential input LVPECL (3.3V) or PECL (5V) logic signals into an analog laser driving current.

MGB-243X complies with Module Definition 4. It features an EEPROM that contains the detailed product

information stored for retrieval by host equipment. This information is accessed via the 2-wire serial CMOS EEPROM protocol of ATMEL AT24C01A.

TX_Fault

When sensing an improper power level in the laser driver, the GBIC set this signal high and turns off the Laser. TX_FAULT can be reset with the TX_DISABLE line. The signal is in TTL level.

TX_Disable

The TX_DISABLE signal is high (TTL logic "1") to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic "0").

Receive Loss (RX_LOS)

The RX_LOS is high (logic "1") when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Figure 2 shows the internal frame of GBIC, Figure3、 4 show the typical eye diagrams of this product.

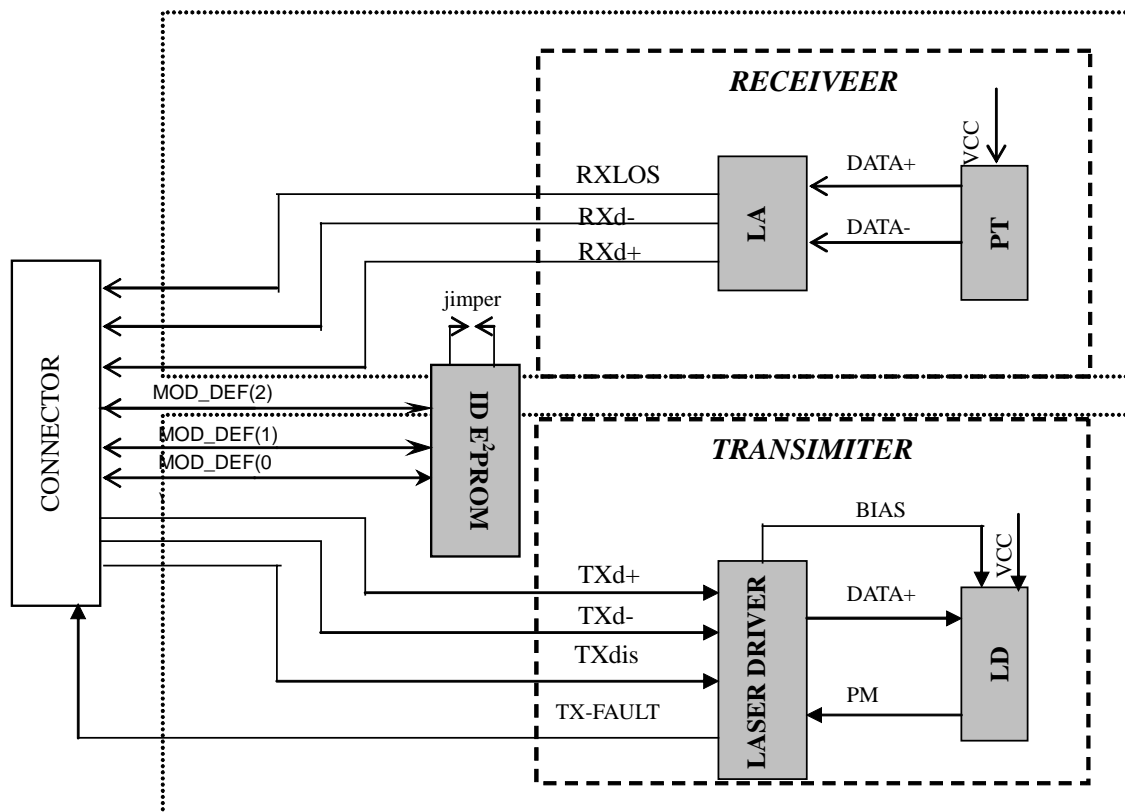
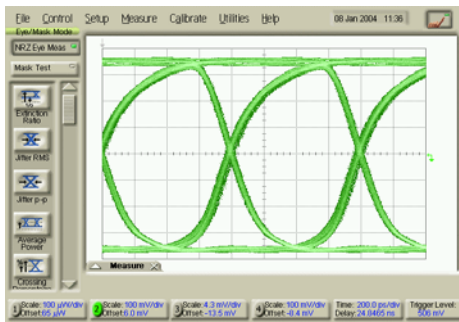
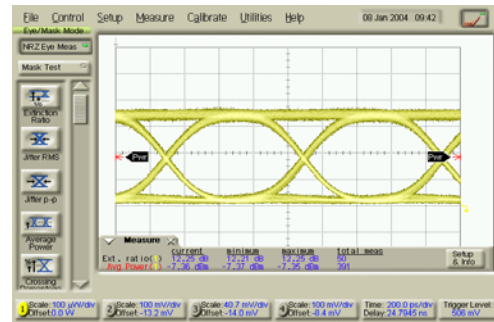


Figure 2: Internal Frame


Figure 3: Receiver Eye Diagram

Figure 4: Transmitter Eye Diagram

Note: measured with a 2⁷-1 PRBS test pattern @ 1.25Gbps

Interface Circuit

Figure 5 shows the recommended interface circuit for GBIC application.

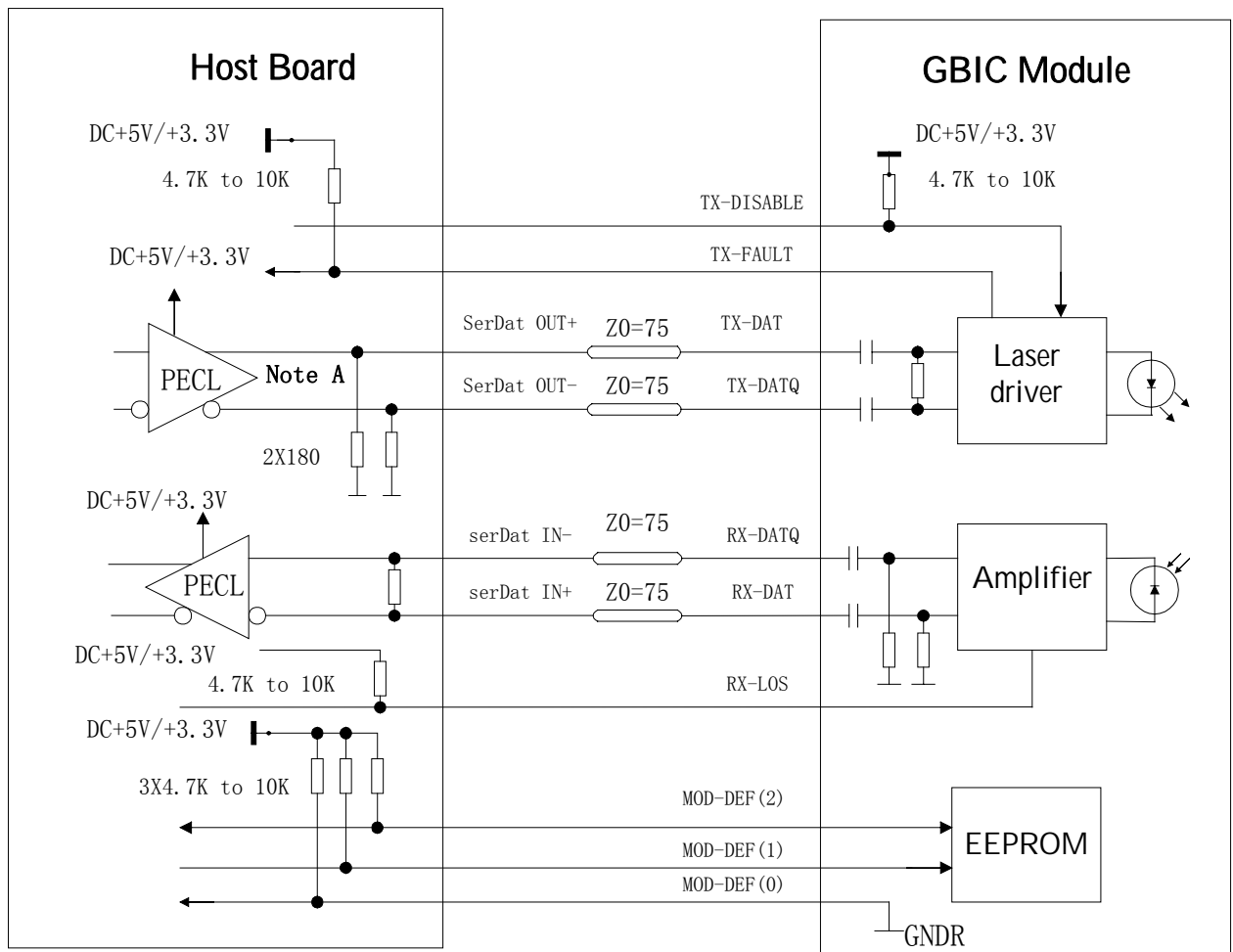
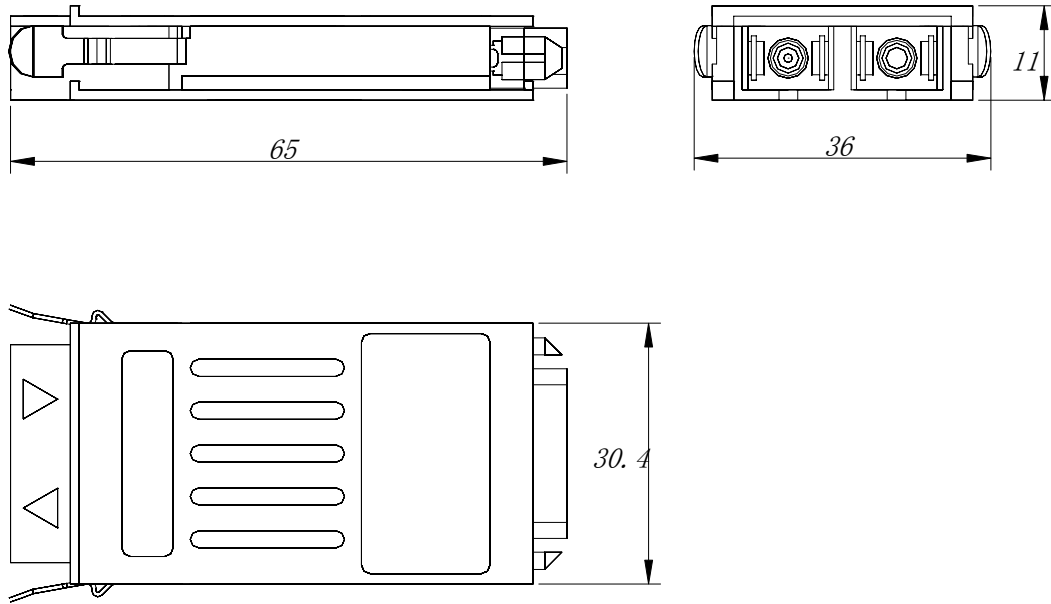
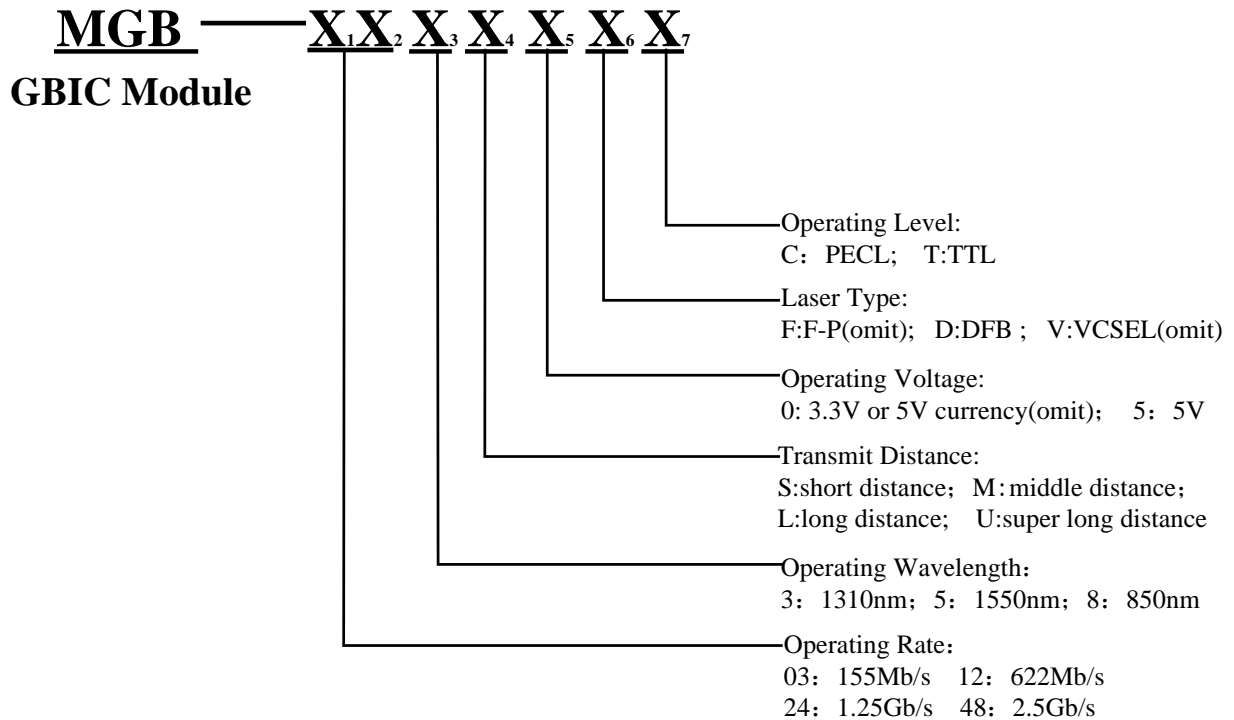

Figure 5: Interface Circuit

Figure Dimension: (Unit: mm)



Ordering Information:

Digital Transceiver Module


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