

Product Specification

MGB-TSX

SFP-Port 1000Base-SX mini-GBIC Module - 550m

MGB-TLX

SFP-Port 1000Base-LX mini-GBIC Module – 10km

MGB-TL30

SFP-Port 1000Base-LX mini-GBIC Module – 30km

MGB-TL70

SFP-Port 1000Base-LX mini-GBIC Module – 70km

Version 1.0

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Change History:

Revision:	Date:	Author:	Change List
Version 3.0	2010/6/18	Marc Liao	Initial Release

Author:	Marc Liao	Editor:	Marc Liao
Reviewed By:	Kent Kang	Approved By:	Tom Shih

1. PRODUCT DESCRIPTION

The MGB-T family consists of Small Form Factor Pluggable (SFP) transceiver modules that are specifically designed for high performance integrated duplex data link over single mode optical fiber. These transceiver modules are compliant with the SFP Multisource Agreement (MSA) and hot pluggable. These modules offer an easy way to be installed in SFP MSA compliant ports at any time without the interruption of the host equipments operation.

The MGB-T family: SFP Mini-GBIC Gigabit Ethernet modules can be installed in PLANET Industrial Switch / Gigabit Media Converter products with SFP Mini-GBIC interface. The deployment distance can be extended from 550 meters (Multi-Mode, LC), up to 70 kilometers (Single-Mode, LC).

To fill the increase demand of Industrial Ethernet fiber solution, the MGB-T family: SFP Mini-GBIC Gigabit Ethernet modules that can operate reliably in electrically harsh, climatically demanding, and wide temperature range (-40°C to 75°C) environment. The MGB-T series 1000Base-SX / LX transceivers provide easy and fast 1000Base-SX / LX connection for Planet wide temperature Industrial equipments.

The PLANET MGB-T family comes with one of the following models.

MGB-TSX	SFP-Port 1000Base-SX mini-GBIC module - 550m (-40~75°C)
MGB-TLX	SFP-Port 1000Base-LX mini-GBIC module - 10km (-40~75°C)
MGB-TL30	SFP-Port 1000Base-LX mini-GBIC module - 30km (-40~75°C)
MGB-TL70	SFP-Port 1000Base-LX mini-GBIC module - 70km (-40~75°C)

2. PRODUCT FEATURES

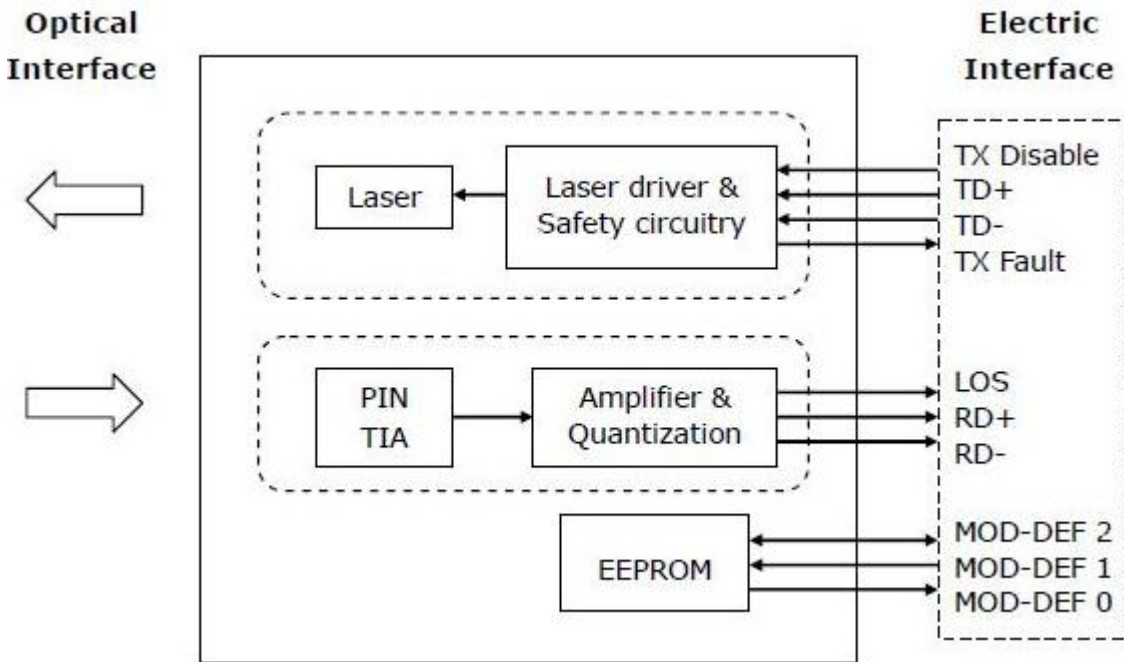
- Comply with the IEEE 802.3z Gigabit Ethernet standard
- 1 X 1000Mbps LC fiber port
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential PECL inputs and outputs
- Single power supply 3.3V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1
- Plug and Play Installation
- -40 to 75 Degree C operation temperature

3. PRODUCT SPECIFICATION

3.1 MAIN COMPONENT

The transceiver is fundamentally consisted by two parts: transmitter and receiver. The transmitter features a TTL logic level Disable signal and a Fault indicator. The receiver features a TTL logic Loss of Signal (LOS) detection. For the access of serial identification information, an EEPROM is used to store the required data via the 2-wire serial CMOS EEPROM protocol. The detailed signal descriptions are listed in the following sections.

■ Block Diagram of Transceiver



3.2 FUNCTION SPECIFICATION

MGB-TSX	
PHY Type	IEEE 802.3z 1000Base-SX
Fiber Type	Multi-Mode
Connector	LC
Wavelength	850nm
Maximum Distance	220m & 550m
Operating Temperature	-40 ~ 75 Degree C
MGB-TLX	
PHY Type	IEEE 802.3z 1000Base-LX
Fiber Type	Single Mode
Connector	LC
Wavelength	1310nm
Maximum Distance	10km
Operating Temperature	-40 ~ 75 Degree C
MGB-TL30	
PHY Type	IEEE 802.3z 1000Base-LX
Fiber Type	Single Mode
Connector	LC
Wavelength	1310nm
Maximum Distance	30km
Operating Temperature	-40 ~ 75 Degree C
MGB-TL70	
PHY Type	IEEE 802.3z 1000Base-ZX
Fiber Type	Single Mode
Connector	LC
Wavelength	1550nm
Maximum Distance	70km
Operating Temperature	-40 ~ 75 Degree C

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	T _s	-40	+85	°C	
Supply Voltage	V _{ccT} V _{ccR}	-3.135	3.465	V	
Storage Relative Humidity	RH	5	95	%	
Data Rate GbE	DR		1250	Mbps	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	T _c	-40		85	°C	
Supply Voltage	V _{cc}	3.1	3.3	3.5	V	
Supply Current	MGB-TSX		160	300	mA	
	MGB-TLX	I _{TX} + I _{RX}		300		
	MGB-TL30			300		
	MGB-TL70			300		

Transmitter Electro-Optical Interface (over Case Operating Temperature)

 V_{cc} = 3.1 V to 3.5 V, T_A = -40 °C to 75 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter Differential Input Voltage	TD +/-	250		1200	mV	
Optical Output Power	MGB-TSX	P _o	-9.5	-	-4	dBm
	MGB-TLX		-9	-5	-3	
	MGB-TL30		-7	-4	0	
	MGB-TL70		0	2	5	
Optical Extinction Ratio	MGB-TSX	E _R	9	-	-	dB
	MGB-TLX		9	-	-	
	MGB-TL30		9	-	-	
	MGB-TL70		9	-	-	
Center Wavelength	MGB-TSX	λ _c	830	850	860	nm
	MGB-TLX		1270	1310	1355	
	MGB-TL30		1270	1310	1355	
	MGB-TL70		1535	1550	1565	
Spectral Width (20dB/RMS)	MGB-TSX	Δλ	-	-	0.85	nm
	MGB-TLX		-	-	3.5	

	MGB-TL30	-	-	3.5	
	MGB-TL70	-	-	1	
Optical Rise / Fall Time	t_r / t_f	-	-	260	ps
Total Jitter	TJ	-	-	200	ps
Tx_Fault - High	V _{Fault_H}	2	-	V _{CC}	V
Tx_Fault - Low	V _{Fault_L}	V _{EE}	-	V _{EE} +0.5	V
Tx_Disable - High	V _{Disable_H}	2	-	V _{CC}	V
Tx_Disable - Low	V _{Disable_L}	V _{EE}	-	V _{EE} +0.8	V

Receiver Electro-Optical Characteristics (over Case Operating Temperature)
V_{CC} = 3.1 V to 3.5 V, T_A = -40 °C to 75 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
	MGB-TSX	RD +/-	400	-	2000	mV
Receiver Differential	MGBT-LX					
Output Voltage	MGB-TL30	RD +/-	185	-	800	mV
	MGB-TL70					
Receiver Overload (Maximum)	MGB-TSX		-3	-	-	
	MGB-TLX		-3	-	-	
	MGB-TL30	P _{INMAX}	-3	-	-	dBm
	MGB-TL70		-3	-	-	
Receiver Sensitivity (Minimum)	MGB-TSX		-	-	-17	
	MGB-TLX		-	-24	-22	
	MGB-TL30	P _{INMIN}	-	-26	-24	dBm
	MGB-TL70		-	-26	-24	
Operating Center Wavelength	MGB-TSX		770	-	860	
	MGB-TLX	λ_c	1270	1310	1355	nm
	MGB-TL30		1270	1310	1355	
	MGB-TL70		1535	1550	1565	
Receiver Loss of Signal -TTL Low (Assert)	MGB-TSX		-35	-	-	
	MGB-TLX		-32	-	-	
	MGB-TL30	P _{RX_LOS A}	-38	-	-	dBm
	MGB-TL70		-38	-	-	
Receiver Loss of	MGB-TLX	P _{RX_LOS D}	-	-	-17.5	dBm

Signal -TTL High	MGB-TLX	-	-	-22
(De-assert)	MGB-TL30	-	-	-24
	MGB-TL70	-	-	-24
	MGB-TSX	0.5	-	-
Receiver Loss of	MGB-TLX	0.5		
Signal Hysteresis	MGB-TL30	0.5	-	-
	MGB-TL70	0.5	-	-

dB

3.3 PHYSICAL SPECIFICATIONS:

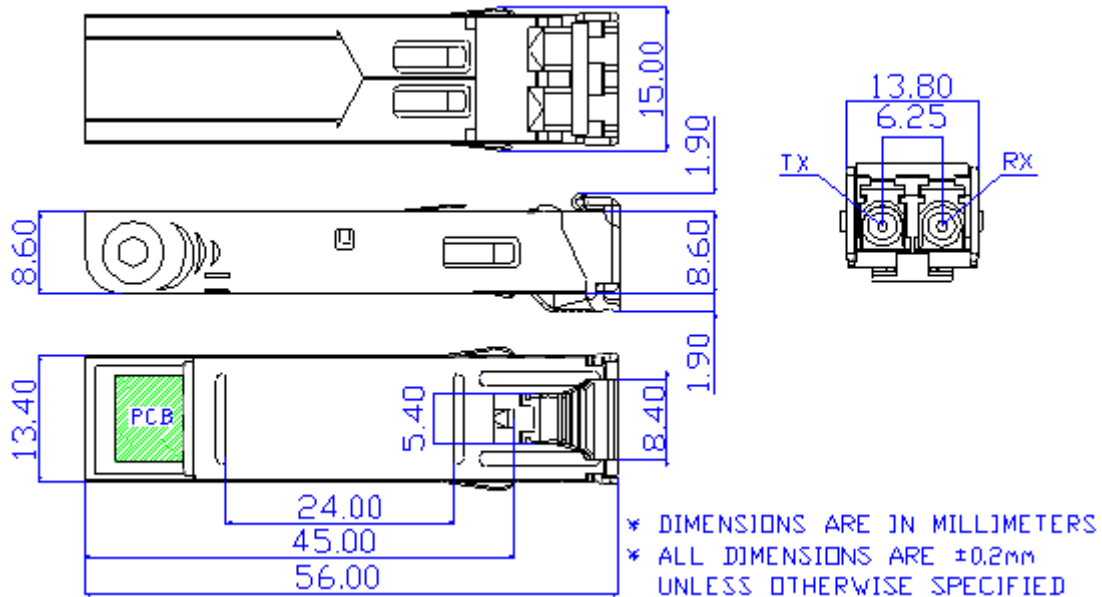
Dimensions:

56 x 15 x 13.4mm (W x D x H)

Weight:

16g

■ **Diagrams:**



3.4 ENVIRONMENTAL SPECIFICATION

Operating:

- Temperature:** -40°C ~ 75 Degree C
- Relative Humidity:** 5% ~ 90% (non-condensing)

Storage:

- Temperature:** -40°C ~ 75 Degree C
- Relative Humidity:** 5% ~ 90% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Input Voltage: 3.3V DC

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7 REALIABILITY

MTBF > 50,000 hrs @ 25 Degree C

3.8 BASIC PACKAGING

- The MGB-T family SFP Mini-GBIC Gigabit Ethernet Module x1
- This User's Manual x1

3.9 PACKING DIMENSION

Dimension: 143mm x 100mm x 46mm (W x D x H)

Weight: 76g (Gross Weight)

Unit per carton: 38pcs in one carton