GBIC-24SM31-10C

1.25Gbps GBIC Optical Transceiver, 10km Reach

Features

- Dual data-rate of 1.25Gbps/1.0625Gbps operation
- 1310nm FP laser and PIN photodetector for 10km transmission
- Duplex SC optical interface
- Standard serial ID information compatible with SFF-8053
- +3.3V/5Vsingle power supply
- RoHS Compliant
- Operating case temperature: 0 to +70℃

Applications

- Switch to Switch interface
- Switched backplane applications
- Router/Server interface
- Other optical transmission systems

Description

The GBIC transceiver is high performance, cost effective module supporting dual data-rate of 1.25Gbps/1.0625Gbps and from 10km transmission distance with SMF.

The transceiver consists of two sections: The transmitter section incorporates a FP laser. And the receiver section consists of a PIN photodiode integrated with a trans-impedance preamplifier (TIA). All modules satisfy class I laser safety requirements.

The optical output can be disabled by a TTL logic high-level input of Tx Disable. Tx Fault is provided to indicate degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver.

The standard serial ID information Compatible with GBIC MSA describes the transceiver's capabilities, standard interfaces, manufacturer and other information. The host equipment can access this information via the two-wire serial CMOS EEPROM protocol. For further information, please refer to SFF-8053

Absolute Maximum Ratings

Stress in excess of the maximum absolute ratings can cause permanent damage to the module.

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit
Maximum Supply Voltage	V_{CC}	0.5	-	4.5	V
Storage Temperature	T_S	-40	-	100	℃
Relative Humidity	R_H	0	-	+85	%

Recommended Operating Conditions

Table2 - Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	T_C	0	-	+70	℃
Power Supply Voltage		V_{CC}	3.1		5.5	V
Power Supply Current		I_{cc}			300	mA
Data Rate	Gigabit Ethernet			1.25		Gbps
	Fibre Channel			1.0625		

Optical and Electrical Characteristics

GBIC-24SM31-10C: (1310nm FP and PIN, 10~20km)

Table3 - Optical and Electrical Characteristics (Operating case temperature TC=25℃, VCC=3.3V)

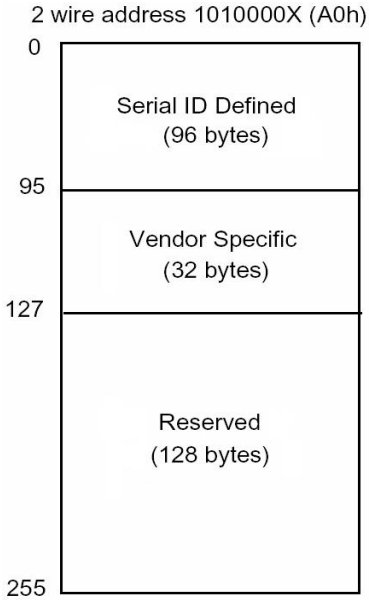
Parameter		Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter							
Centre Wavelength		λ_C	1260	1310	1360	nm	
Spectral Width (RMS)		σ			4	nm	
Average Output Power		P0ut	-9		-3	dBm	1
Extinction Ratio		ER	9			dB	
Output Optical Eye		IEEE 802.3z and ANSI Fibre Channel compatible					2
Data Input Swing Differential		VIN	300		1860	mV	3
Input Differential Impedance		ZIN	90	100	110	Ω	
TX Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc+0.3	V	
	Normal		0		0.8	V	
Receiver							
Centre Wavelength		λC	1260		1580	nm	
Receiver Sensitivity					-22	dBm	4

Receiver Overload		-3			dBm	4
Optical Path Penalty				1	dB	5
LOS De-Assert	LOSD			-23	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		1		4	dB	
Data Output Swing Differential	VOUT	370		1800	mV	6

Notes:
1. The optical power is launched into SMF.
2. Measured with a PRBS 2^7-1 test pattern @1250Mbps.
3. PECL input, internally AC coupled and terminated.
4. Measured with a PRBS 2^7-1 test pattern @1250Mbps, BER ≤1×10^{-12}.
5. Measured with a PRBS 2^7-1 test pattern @1250Mbps, over 20km G.652 SMF, BER ≤1×10^{-12}.
6. Internally AC coupled.

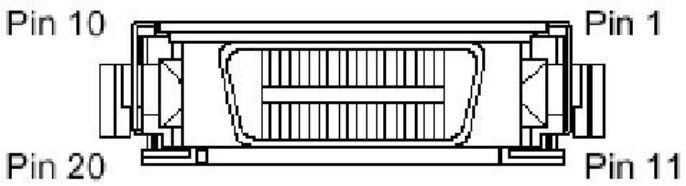
EEPROM Section

The SFF-8053 defines a 256-byte memory map in EEPROM describing the transceiver's capabilities, standard interfaces, manufacturer, and other information, which is accessible over a 2 wire serial interface at the 8-bit address 1010000X (A0h).



Pin Assignment

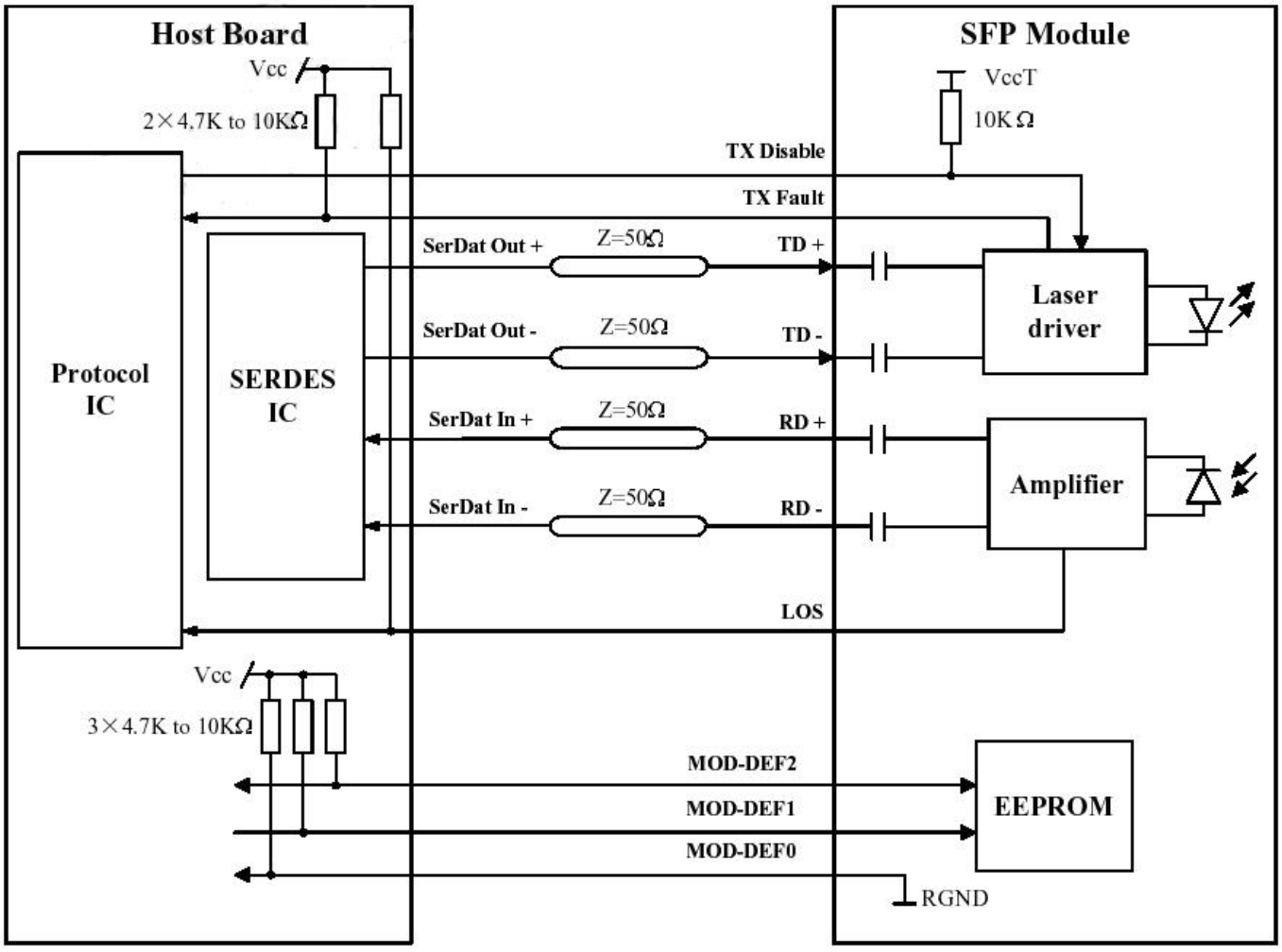
Pin Diagram



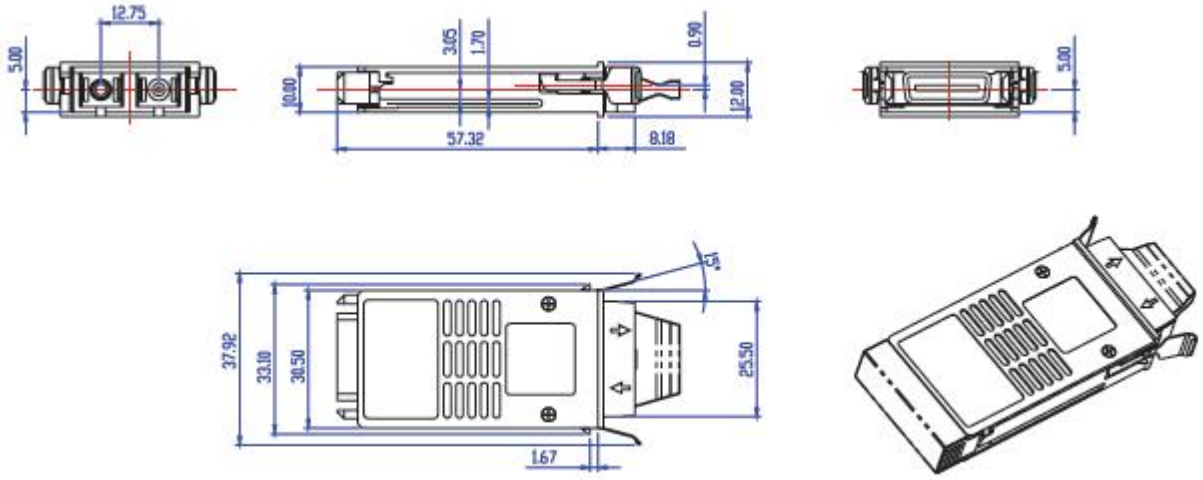
Pin Descriptions

Pin Name	Pin#	Name/Function	Signal Specification
Receiver signals			
RGND	2,3,11,14	Receiver Ground (may be connected sith TGND in GBIC)	Ground,to GBIC
VDDR	15	Receiver+3.3/5 volt (may be connected with VDDT in GBIC)	Power,to GBIC
-RX_DAT	12	Receive Data,Differential PECL	High speed serial.from GBIC
+RX_DAT	13	Receive Data,Differential PECL	High speed serial.from GBIC
RX_LOS	1	Receiver Loss of Signal,logic high,open collector compatible,4.7k to 10kΩ pull up to VDDT on host	Low speed,from GBIC
Transmitter signals			
TGND	8,9,17,20	Transmitter Ground (may be connected with RGND internally)	Ground,to GBIC
VDDT	16	Transmitter +3.3/5 volt (may be connected with VDDR in GBIC)	Power,to GBIC
-TX_DAT	18	Transmit Data,Differential PECL	High speed serial,to GBIC
+TX_DAT	19	Transmit Data,Differential PECL	High speed serial,to GBIC
TX_DISABLE	7	Transmitter Disable,logic high,open collector Compatible,4.7k to 10kΩ pull up to VDDT on GBIC	Low speed,to GBIC
TX_FAULT	10	Transmitter,Fault,logic high,open collector compatible,4.7k to 10kΩ pull up to VDDT on host	Low speed,from GBIC
Control signals			
MOD_DEF(0)	4	TTL low,output	Please reference SFF-8053,Annex D; Module definition”4”
MOD_DEF(1)	5	SCL serial clock signal,input	
MOD_DEF(2)	6	SDA serial data signal,input/output	

Block Diagram of Transceiver



Mechanical Dimensions



Ordering information

Table 5- Ordering information

Part Number	Product Description
GBIC-24SM31-10C	GBIC，1310nm, 1.25Gbps, 10km, 0°C~+70°C

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