

WS-G587-LEG
CISCO 1000BASE-LX GBIC SMF
1550NM 80KM REACH SC DOM



WS-G587-LEG

1.25Gbps GBIC Transceiver



Features

- Dual data-rate of 1.25Gbps/1.0625Gbps operation
- 1550nm DFB laser and PIN photodetector for 80km transmission
- Duplex SC optical interface
- Standard serial ID information compatible with SFF-8053
- +3.3V/5V single power supply
- RoHS Compliant
- Operating case temperature: 0 to +70°C

Applications

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

Product Description

Legrand's WS-G5487-LEG Gigabit Interface Converter (GBIC) transceivers are compatible with the GBIC Specification Rev. 5.5. The GBIC transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.06Gbps and support distance up to 80km with SMF.

Legrand's GBIC transceivers are RoHS compliant and lead-free.

Regulatory Compliance

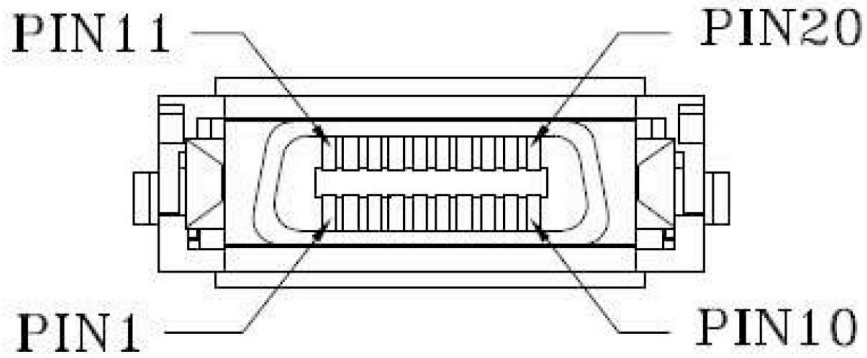
- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2.
- Immunity compatible with IEC 61000-4-3.
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2.
- RoHS compliant with 2002/95/EC 4.1&4.2 2005/747/EC.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	RX_LOS	Receiver Loss of Signal, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on host	2
2	RGND	Receiver Ground (may be connected with TGND in GBIC)	2
3	RGND	Receiver Ground (may be connected with TGND in GBIC)	2
4	MOD_DEF (0)	GBIC module definition and presence, bit 0, 4.7K to 10K Ohm pullup to VDDT on host	2
5	MOD_DEF (1)	GBIC module definition and presence, bit 1, 4.7K to 10K Ohm pullup to VDDT on host	2
6	MOD_DEF (2)	GBIC module definition and presence, bit 2, 4.7K to 10K Ohm pullup to VDDT on host	2
7	TX_DISABLE	Transmitter Disable, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on GBIC	2
8	TGND	Transmitter Ground (maybe connected with RGND internally)	2
9	TGND	Transmitter Ground (maybe connected with RGND internally)	2
10	TX_FAULT	Transmitter Fault, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on host	2
11	RGND	Receiver Ground (may be connected with TGND in GBIC)	1
12	-RX_DAT	Receive Data, Differential PECL	1
13	+RX_DAT	Receive Data, Differential PECL	1
14	RGND	Receiver Ground (may be connected with TGND in GBIC)	1
15	VDDR	Receiver +5 volt (maybe connected with VDDT in GBIC)	2
16	VDDT	Transmitter +5 volt (maybe connected with VDDR in GBIC)	2
17	TGND	Transmitter Ground (maybe connected with RGND internally)	1
18	+TX_DAT	Transmit Data, Differential PECL	1
19	-TX_DAT	Transmit Data, Differential PECL	1
20	TGND	Transmitter Ground (maybe connected with RGND internally)	1

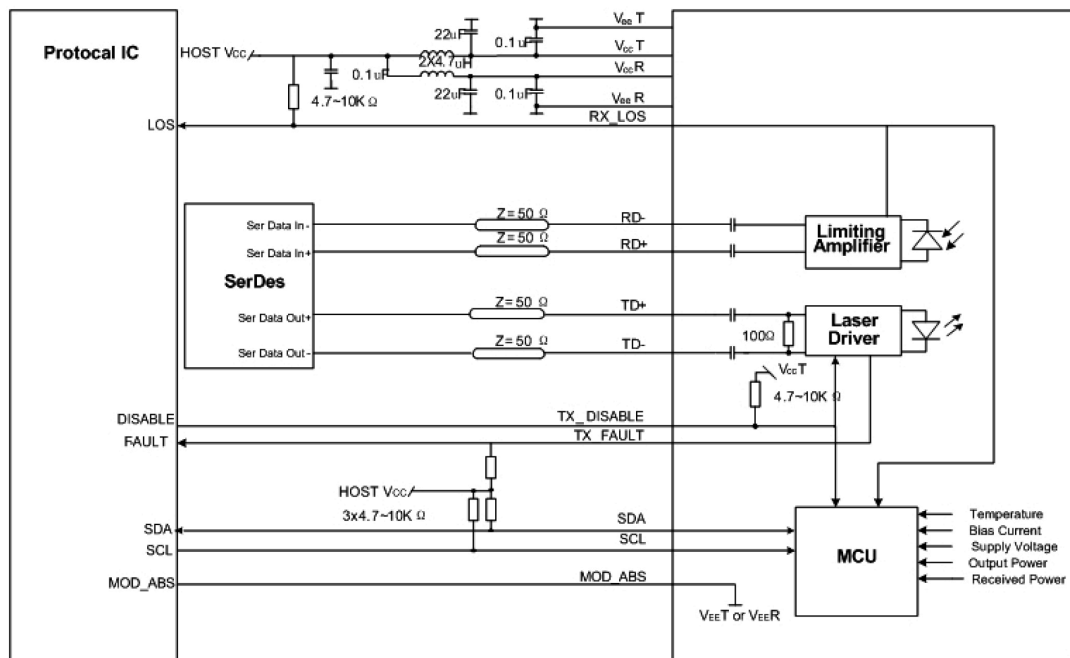
Notes:

1. TX Fault is open collector/drain output, which should be pulled up externally with a 4.7K – 10K Ω resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to <0.8V.
2. TX Disable input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7-10K resistor. Low (0V-0.8V): Transmitter on between (0.8V and 2V): Undefined High (2.0-VccT): Transmitter Disabled Open: Transmitter Disabled.



Pin-out of connector Block on Host board

Recommend Circuit Schematic



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C

Operating Humidity	RH	5	95	%
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Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	Vcc	3.13	3.30	3.47	V
Power Supply Current	Icc			250	mA
Case Operating Temperature – Commercial	Tc	0		70	°C
Case Operating Temperature – Industrial	Ti	-40		85	°C
Data Rate (Gigabit Ethernet)			1.25		Gbps
Data Rate (Fibre Channel)			1.063		Gbps
9/125µm SMF	L			10	km

Electrical Characteristics (TOP=25°C, Vcc=3.3V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Input differential impedance	Rin	85	100	115	Ω	1
Single ended data input swing	Vin, pp	250		1200	mV	
TX Disable-High		2		3.45	V	
TX Disable-Low		0		0.8	V	
TX Fault-High		2		Vcc+0.3	V	
TX Fault-Low		0		0.5	V	
Receiver						
Single ended data output swing	Vout, pp	300	400	800	mV	2
Data output rise time	tr			175	ps	3
Data output fall time	tf			175	ps	3
LOS-High		2		Vcc+0.3	V	
LOS-Low		0		0.8	V	

Notes:

1. AC coupled.
2. Into 100 ohm differential termination.
3. 20% - 80%

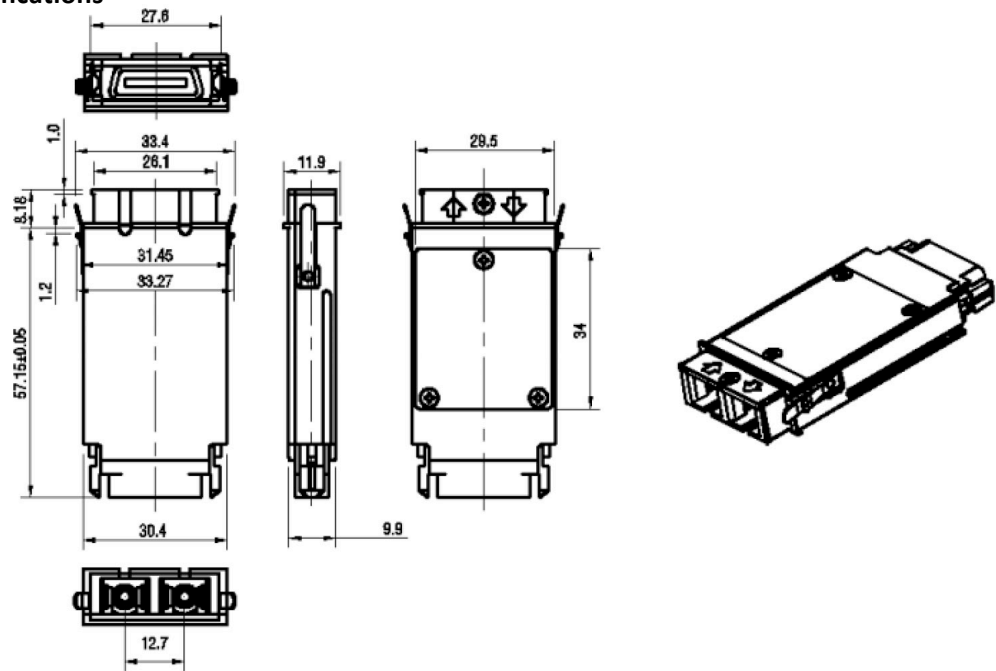
Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Average Output Power	PO	-9		-3	dBm	1
Optical Wavelength	λ	1260	1310	1360	nm	
Spectral Width	σ			4	nm	
Optical Rise/Fall Time	tr/tf			260	ps	2
Total Jitter	TJ			56.5	ps	
Optical Extinction Ratio	ER	9			dB	
Receiver						
Receiver Sensitivity	RSENS			-20	dBm	3,4
Maximum Received Power	RX _{MAX}	0			dBm	
Centre Wavelength	λ_C	1270		1600	nm	
LOS De-Assert	LOSD			-21	dBm	
LOS Assert	LOSA	-42			dBm	
LOS Hysteresis		0.5		5	dB	

Notes:

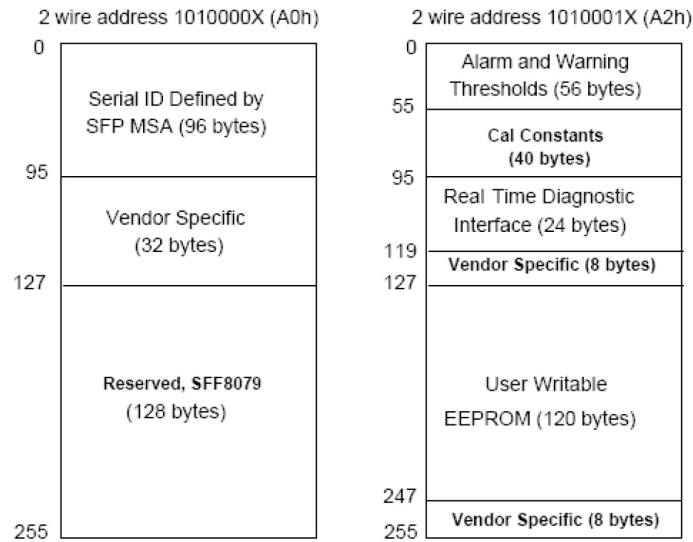
- 1. Class 1 Laser Safety.
- 2. Unfiltered, 20%-80%. Complies with GE and 1x FC eye masks when filtered.
- 3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
- 4. Measured with PRBS 2⁷-1 at 10⁻¹⁰ BER.

Mechanical Specifications



EEPROM Information

EEPROM memory map specific data field description is as below:



Digital Diagnostic Monitoring Interface

Five transceiver parameter values are monitored. The following table defines the monitored parameter's accuracy.

Parameter	Range	Accuracy	Calibration
Temperature	0°C to 70°C (C)	±3°C	Internal
	-40°C to 85°C (I)		
Voltage	2.97V to 3.63V	±3%	Internal
Bias Current	0mA to 100mA	±10%	Internal
TX Power	-9dBm to -3dBm	±3dB	Internal
RX Power	-20dBm to 0dBm	±3dB	Internal



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