

DATASHEET

DESCRIPTION:

PeakOptical®'s PGBIC-38315MF Transceiver is a high performance and cost effective module for serial optical data communication applications. The interface converters meet the GBIC Standard Rev.5.5. This module is designed for Multi-Mode fiber and operates at the wavelength of 850nm. The transmitter section incorporates an advanced VCSEL for Multi-Mode, with temperature compensation and automatic power control circuit (APC). The receiver section incorporates an efficient InGaAs/InP PIN photodiode, with AGC for wide dynamic range.

The family is a duplex SC transceiver designed for Gigabit Ethernet use and provides an IEEE-802.3 compliant link at 1.25 GB/s applications. The modules are hot-pluggable, the characterization is performed in accordance with Bellcore specification TA-NWT-000983. All of them are housed in a stainless package and the combination produces a component of high reliability.

FEATURES:

- Duplex SC Connector, Hot-Pluggable
- 850nm VCSEL Multi-Mode
- Single +5V Power Supply
- Data Rate: 1.25Gb/s, NRZ
- Compliant with Specifications of IEEE-802.3
- Eye Safety, Designed to Meet Laser Class1, Compliant with IEC60825-1
- Compliant with Gigabit Interface Converter Specification Rev.5.5(1)
- Compliant with ANSI Specifications for Fiber Channel Applications at 1.06Gb/s
- RoHS Compliant Products

APPLICATIONS:

- Gigabit Ethernet (1000Base-SX) Links at 1.25Gb/s
- Fiber Channel Links at 1.06Gb/s
- High Speed I/O for File Servers
- Switch to Switch Interface

SPECIFICATIONS:

Electrical and Optical Characteristics: (Condition: $T_a = T_{OP}$)

Electrical Characteristics:

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter Differential Input Voltage	+/-TX_DAT	650		2000	mV p-p
Supply Current	I_{CC}		200	250	mA
Tx_Disable Input Voltage - Low	V_{IL}	0		0.8	V
Tx_Disable Input Voltage - High	V_{IH}	2.0		V_{CC}	V
Tx_Fault Output Voltage - Low	V_{OL}	0		0.8	V
Tx_Fault Output Voltage - High	V_{OH}	2.0		V_{CC}	V
Receiver Differential Output Voltage	+/-RX_DAT	0.4		2000	mV p-p
Rx_LOS Output Voltage- Low	V_{OL}	0		0.8	V
Rx_LOS Output Voltage- High	V_{OH}	2.0		V_{CC}	V

Transmitter Section:

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	-	1250		Mb/s
Output Center Wavelength	λ_{ce}	830	850	860	nm
Output Spectral Width	$\Delta\lambda$	-	-	0.85	nm
Average Optical Output Power	P_o	-9.5	-	-4	dBm
Extinction Ratio	E.R.	9	-	-	dB
Max. P_{out} TX_DISABLE Asserted	P_{Off}	-	-	-35	dBm
Optical Rise / Fall Time	T_r / T_f	-	-	0.26	ns

Receiver Section:

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	-	1250	-	Mb/s
Receiver Sensitivity	P_{min}	-	-	-17	dBm
Maximum Input Power	P_{max}	-3	0	-	dBm
Signal Detect Thresholds	P_{H-L}	-30	-	-	dBm
	P_{L-H}	-	-	-18	dBm
Wavelength	λ_C	770	850	860	nm

Absolute Maximum Ratings: (T_C=25°)

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T _{ST}	-40	+85	°C
Operating Temperature	T _{IP}	0	+70	°C
Supply Voltage	V _{CC}	0	+6	V
Input Voltage	V _{IN}	0	V _{CC}	V
Output Current	I _O	0	30	mA
Soldering Temperature & Time	-		240/10	°/S

Recommended Operating Environment:

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V _{CC}	+4.75	+5.25	V
Ambient Operating Temperature	T _A	0	+70	°C

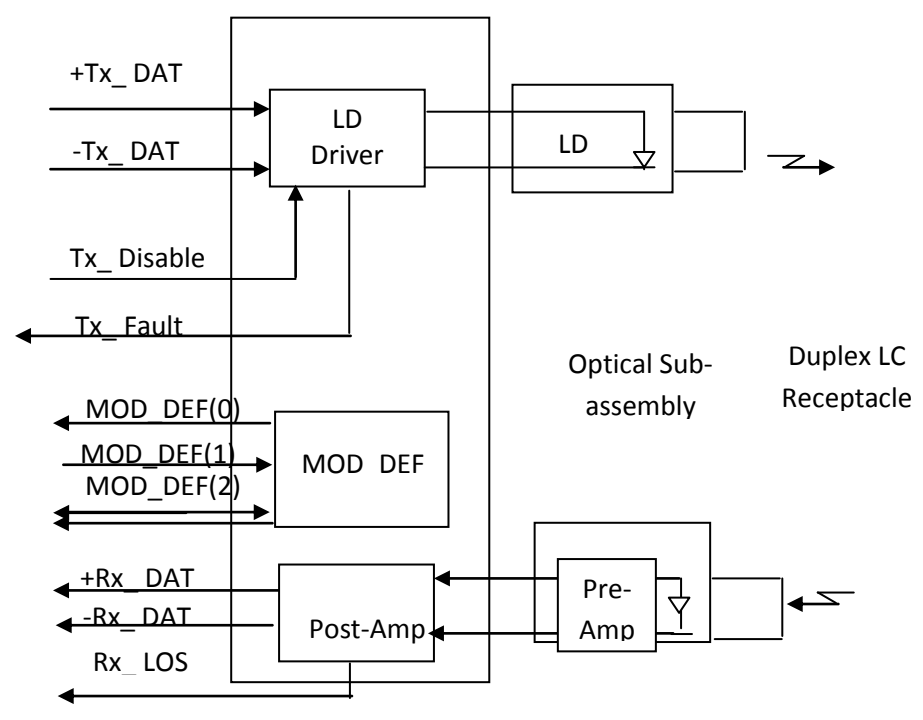
Timing Characteristics:

Parameter	Symbol	Min.	Typical	Max.	Unit
TX_DISABLE Assert Time	t _{off}	-	3	10	usec
TX_DISABLE Negate Time	t _{on}	-	0.5	1	msec
Time to Initialize Include Reset of TX_FAULT	t _{int}	-	30	300	msec
TX_FAULT from Fault to Assertion	t _{fault}	-	20	100	usec
TX_DISBEL Time to Start Reset	t _{reset}	10	-	-	usec
Receiver Loss of Signal Assert Time (Off to On)	T _{A,RX_LOS}	-	-	100	usec
Receiver Loss of Signal Assert Time (On to Off)	T _{d,RX_LOS}	-	-	100	usec



1.25Gb/s, Hot Pluggable, Duplex SC, +5V, 850nm VCSEL Multi-Mode Gigabit Interface Converters Transceiver PGBIC-38315MF

Block Diagram of Transceiver:



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Pinout Table:

Pin	Signal Name	I/O Type	Functional Description
1	RX_LOS	Output	Receiver Loss of Signal, Logic high, Open collector compatible 4.7K to 10K Ohm pulls up to V _{DD} T on host.
2	RGND		Receiver Ground
3	RGND		Receiver Ground
4	MOD_DEF(0)	Output	Module Definition 0 TTL Low
5	MOD_DEF(1)	Input	Module Definition 1 Two wire serial ID interface SCL, 4.7K to 10K Ohm pull up to V _{DD} T on host
6	MOD_DEF(2)	I/O	Module Definition 2 Two wire serial ID interface SDA, 4.7K to 10K Ohm pull up to V _{DD} T on host
7	TX_DISABLE	Input	Transmitter Disable – Module disable on high or open (No Used)
8	TGND		Transmitter Ground
9	TGND		Transmitter Ground
10	TX_FAULT	Output	Transmitter Fault Indication, Logic high, open collector Compatible , 4.7K to 10K Ohm pull up to V _{DD} T on host
11	RGND		Receiver Ground
12	-RX_DAT	Output	Inverse Received Data Out, Differential PECL, at AC couple
13	+RX_DAT	Output	Received Data Out, Differential PECL, at AC couple
14	RGND		Receiver Ground
15	VDDR	Input	Receiver Power
16	VDDT	Input	Transmitter Power
17	TGND		Transmitter Ground
18	+TX_DAT	Input	Transmitter Data In, Differential PECL, AC couple
19	-TX_DAT	Input	Inverse Transmitter Data In, Differential PECL, AC couple
20	TGND		Transmitter Ground

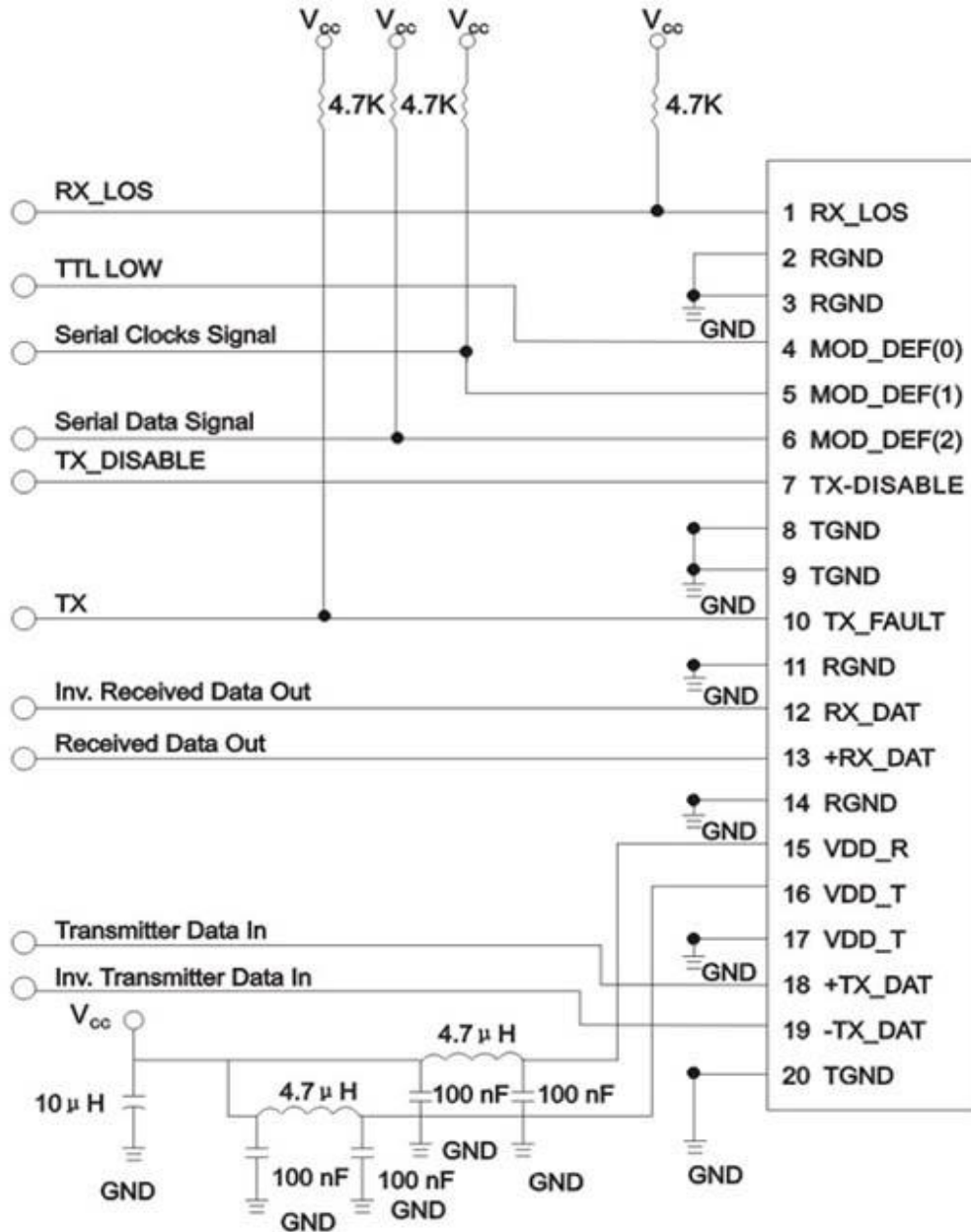


GBIC Serial ID Memory Contents:

Data Address	Length (Byte)	Name of Length	Description and Contents
Base ID Fields			
0	1	Identifier	Type of Serial transceiver (01h=GBIC)
1	1	Reserved	Extended identifier of type serial transceiver (06h)
2	1	Connector	Code of optical connector type (01=SC)
3-10	8	Transceiver	Gigabit Ethernet 1000Base-SX & Fiber Channel
11	1	Encoding	8B10B (01h)
12	1	BR,Nominal	Nominal baud rate, unit of 100Mbps
13-14	2	Reserved	(0000h)
15	1	Length(9um)	Link length supported for 9/125um fiber, units of 100m
16	1	Length(50um)	Link length supported for 50/125um fiber, units of 10m
17	1	Length(62.5um)	Link length supported for 62.5/125um fiber, units of 10m
18	1	Length(Copper)	Link length supported for copper, units of meters
19	1	Reserved	
20-35	16	Vendor Name	GBIC vendor name: PeakOptical®
36	1	Reserved	
37-39	3	Vendor OUI	GBIC transceiver vendor IEEE company ID
40-55	16	Vendor PN	Part Number: "PGBIC-xxxxxx" (ASCII)
56-59	4	Vendor rev	Revision level for part number
60-62	3	Reserved	
63	1	CCID	Least significant byte of sum of data in address 0-62
Extended ID Fields			
64-65	2	Option	Indicates which optical GBIC signals are implemented (001Ah = LOS, TX_FAULT, TX_DISABLE all supported)
66	1	BR, max	Upper bit rate margin, units of %
67	1	BR, min	Lower bit rate margin, units of %
68-83	16	Vendor SN	Serial number (ASCII)
84-91	8	Date code	PeakOptical®'s Manufacturing date code
92-94	3	Reserved	
95	1	CCEX	Check code for the extended ID Fields (addresses 64 to 94)
Vendor Specific ID Fields			
96-127	32	Readable	PeakOptical® specific date, read only

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Recommended Circuit:



Mechanical Dimensions:

