

## ***DATASHEET***

### ***DESCRIPTION:***

PeakOptical®'s PGBIC-15215SF 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 Single-Mode fiber and operates at the wavelength of 1550nm. The transmitter section incorporates an advanced DFB for Single-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 1.25Gb/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:***

- 1550nm DFB, Single-Mode
- Single +5V Power Supply
- Duplex SC Connector, Hot-Pluggable
- Data Rate: 1.25Gb/s, NRZ
- Eye Safety, Designed to Meet Laser Class1, Compliant with IEC60825-1
- Compliant with Gigabit Interface Converter Specification Rev.5.5(1)
- Compliant with Specifications of IEEE-802.3
- Compliant with ANSI Specifications for Fiber Channel Applications at 1.06Gb/s
- RoHS Compliant Parts

### ***APPLICATIONS:***

- Gigabit Ethernet (1000Base-ZX) 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		Vcc	V
Tx_Fault Output Voltage - Low	$V_{OL}$	0		0.8	V
Tx_Fault Output Voltage - High	$V_{OH}$	2.0		Vcc	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		Vcc	V

**Transmitter Section:**

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	-	1250		Mb/s
Output Center Wavelength	$\lambda_{ce}$	1480	1550	1580	nm
Output Spectral Width	$\Delta\lambda(-20dB)$	-	-	1	nm
Average Optical Output Power	$P_o$	0	-	+5	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	$P_{min}$	-	-	-23	dBm
Maximum Input Power	$P_{max}$	-3	0	-	dBm
Signal Detect Thresholds	$P_{H-L}$	-34	-	-	dBm
	$P_{L-H}$	-	-	-24	dBm
Wavelength	$\lambda_C$	1100	-	1600	nm

**Absolute Maximum Ratings: ( $T_C=25^\circ$ )**

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	$T_{ST}$	-40	+85	$^\circ$ C
Operating Temperature	$T_{IP}$	0	+70	$^\circ$ 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	$^\circ$ C/S

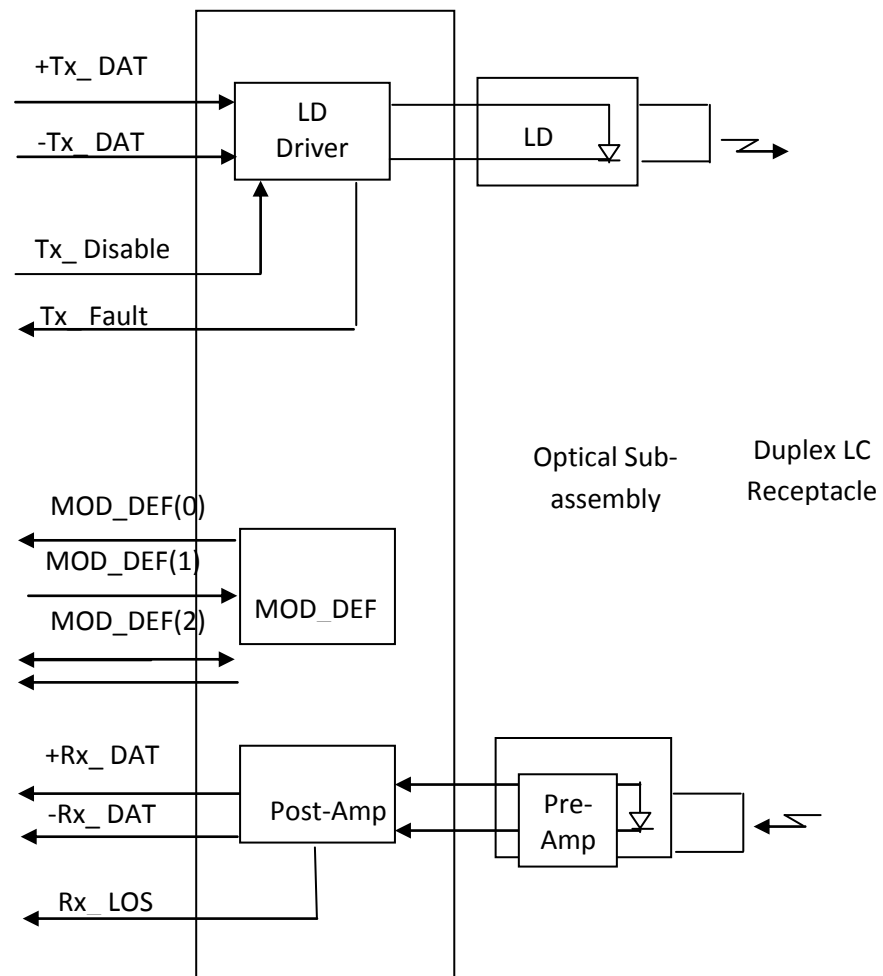
**Recommended Operating Environment:**

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	$V_{CC}$	+4.75	+5.25	V
Ambient Operating Temperature	$T_A$	0	+70	$^\circ$ C

**Timing Characteristics:**

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

**Block Diagram of Transceiver:**





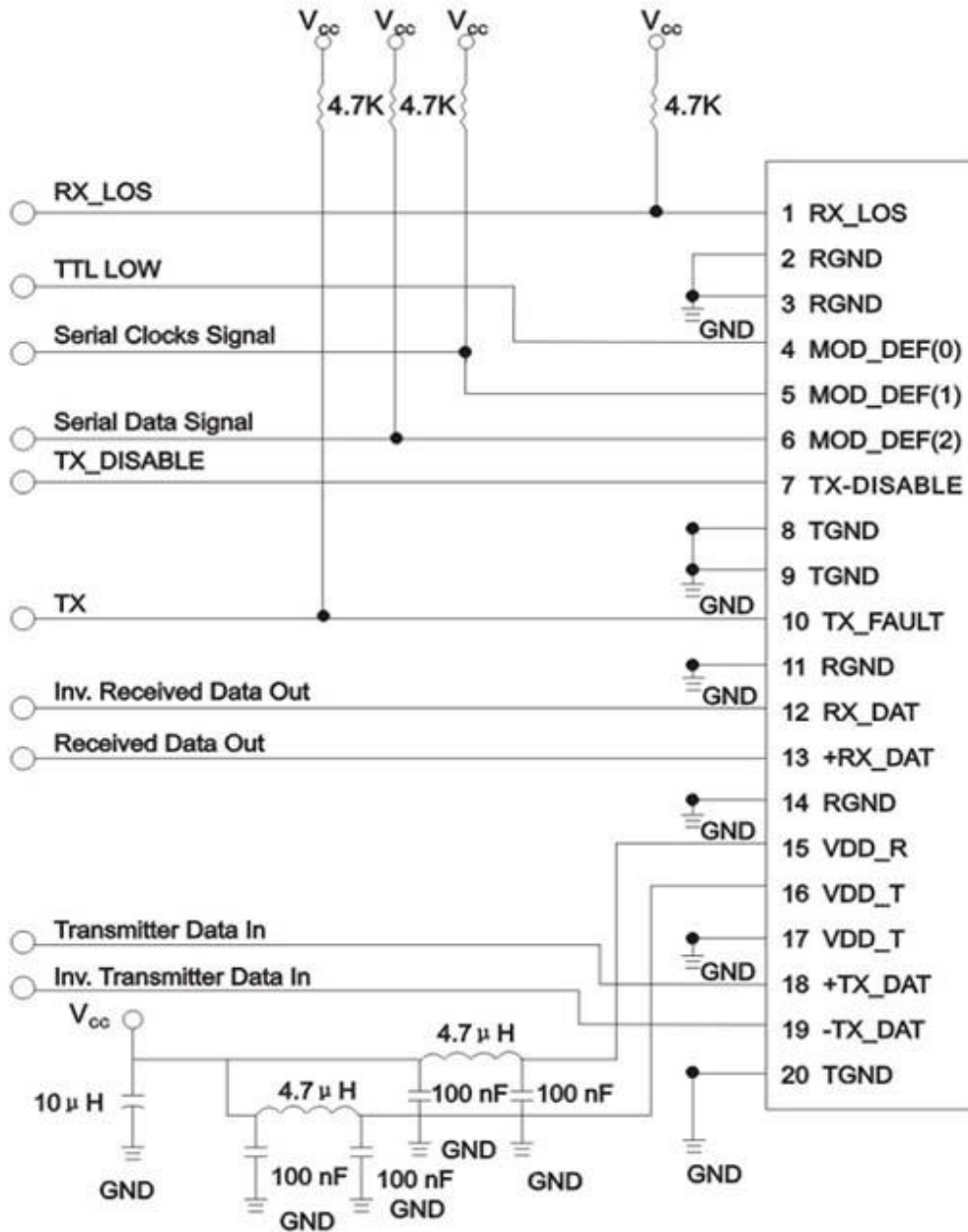
**Pinout Table:**

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 <sub>DD</sub> 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 <sub>DD</sub> 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 <sub>DD</sub> 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 <sub>DD</sub> 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
<b>Base ID Fields</b>			
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-ZX & 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
<b>Extended ID Fields</b>			
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)
<b>Vendor Specific ID Fields</b>			
96-127	32	Readable	PeakOptical® specific date, read only

**Recommended Circuit:**



All rights reserved, including intellectual property rights. Technical data subject to modifications and delivery subject to availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks and/or copyrights of the respective manufacturer, the use of which by third parties for their own purposes may infringe the rights of such owner.

**Mechanical Dimensions:**

