



### General

BC-BL5312-40 SFP-BIDI transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.0625Gbps and 40km transmission distance with SMF. The transceiver consists of three sections: a DFB laser transmitter, a PIN photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class 1 laser safety requirements. The transceivers are compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA.

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	Vcc	-0.5	4.0	V	
Storage Temperature		-40	85	°C	
Relative Humidity			85	%	

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

### General Operating Characteristics

Parameter	Symbol	Min.	Max.	Unit	Note
Data Rate				Gb/s	
Supply Voltage	Vcc	3.13	3.47	V	
Supply Current	Icc5		220	mA	
Operating Case Temperature	Tc	0	70	°C	

### Diagnostics Specification

Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70°C -40°C to + 85°C	°C	±3°C	Internal/ External
Voltage	3.0 to 3.6	V	±3%	Internal/ External
Bias Current	2 to 80	mA	±10%	Internal/ External
TX Power	-11°C to -1°C	dBm	±3dB	Internal/ External
RX Power	-25°C to -0°C	dBm	±3dB	Internal/ External

### Electrical Input/Output Characteristics

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
<b>Transmitter</b>						
Diff. input voltage swing			120	820	mVpp	1
Tx Disable input	H	VIH	2.0	Vcc+0.3	V	
	L	VIL	0	0.8		
Tx Fault output	H	VOH	2.0	Vcc+0.3	V	2
	L	VOL	0	0.8		
Input Diff. Impedance	Zin		100		Ω	
<b>Receiver</b>						
Diff. output voltage swing		340	650	800	mVpp	3
Tx Disable input	H	VOH	2.0	Vcc+0.3	mVpp	2
	L	VOL	0	0.8	V	

Note 1) TD+/- are internally AC coupled with 100Ω differential termination inside the module.  
 Note 2) Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7k to 10kΩ resistors on the host board. Pull up voltage between 2.0V and Vcc+0.3V.  
 Note 3) RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

### Optical Characteristics

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
<b>Transmitter</b>						
Operating Wavelength	λC	1500	1550	1570	nm	
Ave. output power (Enabled)	Po	-5		-3	dBm	1
Extinction Ratio	ER	9			dB	1
RMS spectral width	Δλ			4	nm	
Rise/Fall time (20%~80%)	Tr/Tf			0.26	ps	2
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					
<b>Receiver</b>						
Operating Wavelength		1270	1310	1360	nm	
Sensitivity	Psen			-22	dBm	
Min. overload	Pimax	-3			dBm	3
LOS Assert	Pa	-35			dBm	
LOS De-assert	Pd			-23	dBm	
LOS Hysteresis	Pd-Pa	0.5		6	dB	4

Note 1 Measure at 2<sup>23</sup>-1 NRZ PRBS pattern  
 Note 2 Transmitter eye mask definition  
 Note 3 Measured with Light source 1550nm(1310nm), ER=9dB; BER =<10<sup>-12</sup> @PRBS=2<sup>23</sup>-1 NRZ.  
 Note 4 When LOS de-asserted, the RX data+/- output is signal output.

### Product Features

- Dual data-rate of 1.25Gbps/1.063Gbps operation
- TX1550nm FP laser
- RX1310nm PIN photo detector for 40km transmission
- BIDI LC/UPC type pluggable optical interface
- Compliant with SFP MSA and SFF-8472 with simplex LC receptacle
- RoHS compliant and lead-free
- Single +3.3V power supply
- Support Digital Diagnostic Monitoring interface
- Case operating temperature Commercial: 0°C to +70°C Extended: -10°C to +80°C Industrial: -40°C to +85°C

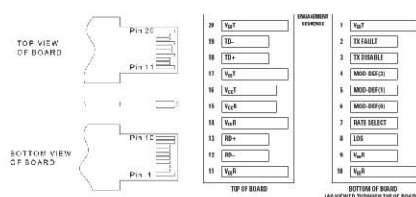
### Application

- Gigabit Ethernet
- Fiber Channel
- Switch to Switch interface
- Switched backplane applications
- Router/Server interface
- Other Optical Links

### Ordering Information

Part Number	Output Power	Rec. Sens	Data Rate	Wavelength	Distance
BC-BL5312-40	-5 ~ 0 db	-22db	1.25G	TX1550/RX1310nm	40km

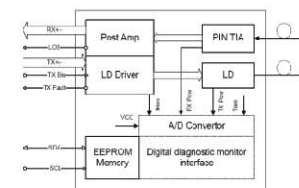
### Pin Definitions And Functions



PIN	Name	Function	Notes
1	VeeT	Tx ground	
2	Tx Fault	Tx fault indication, Open Collector Output, active "H"	Note 1
3	Tx Disable	LVTTL Input, internal pull-up, Tx disabled on "H"	Note 2
4	MOD-DEF2	2 wire serial interface data input/output (SDA)	Note 3
5	MOD-DEF1	2 wire serial interface clock input (SCL)	Note 3
6	MOD-DEF0	Model present indication	Note 3
7	Rate select	No connection	
8	LOS	Rx loss of signal, Open Collector Output, active "H"	Note 4
9	VeeR	Rx ground	
10	VeeR	Rx ground	
11	VeeR	Rx ground	
12	RD-	Inverse received data out	Note 5
13	RD+	Received data out	Note 5
14	VeeR	Rx ground	
15	VccR	Rx power supply	
16	VccT	Tx power supply	
17	VeeT	Tx ground	
18	TD+	Transmit data in	Note 6
19	TD-	Inverse transmit data in	Note 6
20	VeeT	Tx ground	

1. When high, this output indicates a laser fault of some kind. Low indicates normal operation. And should be pulled up with a 4.7 – 10KΩ resistor on the host board.
2. Tx disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 – 10KΩ resistor. Its states are: Low (0 – 0.8V): Transmitter on (>0.8, < 2.0V); Undefined High (2.0V-Vcc+0.3V): Transmitter Disabled Open: Transmitter Disabled
3. Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K – 10KΩ resistor on the host board. The pull-up voltage shall be between 2.0V-Vcc+0.3V. Mod-Def 0 has been grounded by the module to indicate that the module is present. Mod-Def 1 is the clock line of two wire serial interface for serial ID. Mod-Def 2 is the data line of two wire serial interface for serial ID.
4. When high, this output indicates loss of signal (LOS). Low indicates normal operation.
5. RD+/-: These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
6. TD+/-: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

### Functional Diagram



### Package Dimensions

