

Product Specification

*Single SC 155Mb/s 15Km 1550nm Tx/1310nm Rx
BIDI 1X9 Transceiver*

EBD9155-5531AR1S

ePHOTON

Ver A

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Single SC 155Mb/s 15Km 1550nm Tx/1310nm Rx
BIDI 1X9 Transceiver

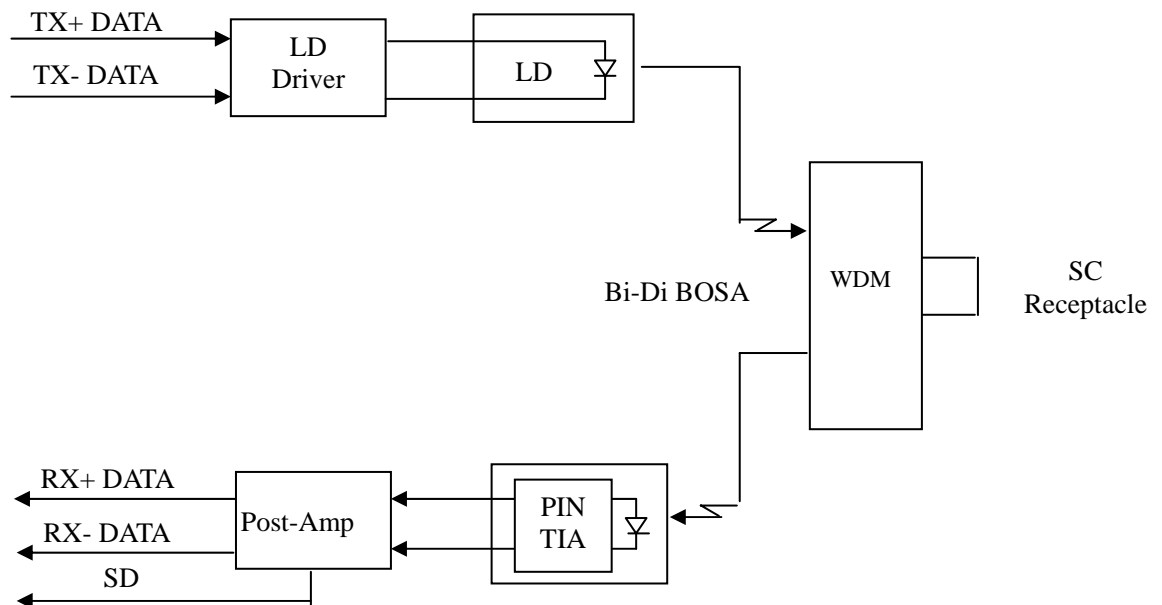
1 Features

- 1.1 Single SC receptacle optical interface compliant
- 1.2 +3.3V Single power supply
- 1.3 Operate data rate from 50Mb/s to 200Mb/s
- 1.4 International Class 1 laser safety certified
- 1.5 AC Coupling of PECL signals
- 1.6 LVPECL logic level single detector
- 1.7 Links of 15 km with 9/125 μ m single mode fiber (SMF) of maximum interconnect distances
- 1.8 Complies with RoHS directive (2002/95/EC)
- 1.9 0~70°C Case Operate Temperature Range

2 Applications

- 2.1 SDH/SONET
- 2.2 ATM
- 2.3 Fast Ethernet

3 General



3.1 Transmitter Section

Transmitter is designed for single mode fiber and operates at a nominal wavelength of 1550nm. The transmitter module uses a FP laser diode and full IEC825 and CDRH class 1 eye safety. It contains APC function, temperature compensation circuit, PECL data inputs.

3.2 Receiver Section

The receiver section uses a hermetic packaged front end receiver (InGaAs PIN and preamplifier). The post amplifier is ac coupled to preamplifier through a capacitor and a low pass filter. The capacitor and LPF are enough to pass the signal from 10Mb/s to 155Mb/s without significant distortion or performance penalty. The LPF limits the preamplifier bandwidth to improve receiver sensitivity. As the input optical is decreased, SD will switch from high to low. As the input optical power is increased from very low levels, LOS will switch back from low to high.

4 Performance Specifications

4.1 Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature (Non-Operating)	Tstg	-40	+85	°C
Case Temperature (Operating)	Tc	0	+70	°C
Input Voltage	-	GND	Vcc	V
Power Supply Voltage	Vcc-Vee	-0.5	+3.6	V

4.2 Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage	Vcc	+3.1	+3.3	+3.5	V	-
Power Supply Current	Icc	-	200	300	mA	-
Case Temperature (Operating)	Tc	0	-	70	°C	-
Data Rate	-	-	155	-	Mb/s	-

4.3 Transmitter E-O characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λ	1480	1550	1580	nm	-
Spectral Width (RMS)	$\Delta \lambda$	-	-	3	nm	-
Average Optical Output Power	Po	-15	-	-8	dBm	-
Extinction Ratio	Er	10	-	-	dB	-
Single Ended Data Input Swing	V _{INPP}	250	-	1200	mV	-
Output Eye Diagram	Compliant with ITU recommendation G.957					

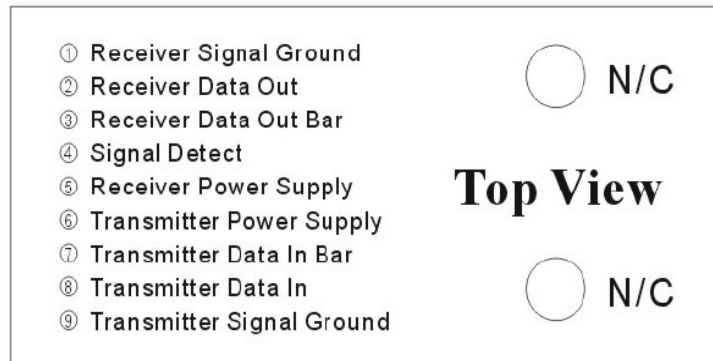
4.4 Receiver O-E Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operate Wavelength	-	1260	-	1360	nm	-
Sensitivity	Sen	-	-	-31	dBm	1
Saturation	Psal	-3	-	-	dBm	1
SD De-Asserted	-	-43	-	-	dBm	High Level: Alarm
SD Asserted	-	-	-	-32	dBm	
SD Hysteresis	-	0.5	3	-	dB	
Single Ended Data Output Swing	Voutpp	185	-	1000	mV	-

Notes: Minimum sensitivity and saturation levels for a 2²³-1 PRBS with 72 ones and 72 zeros inserted (ITU recommendation G958)

5 Pin Definitions

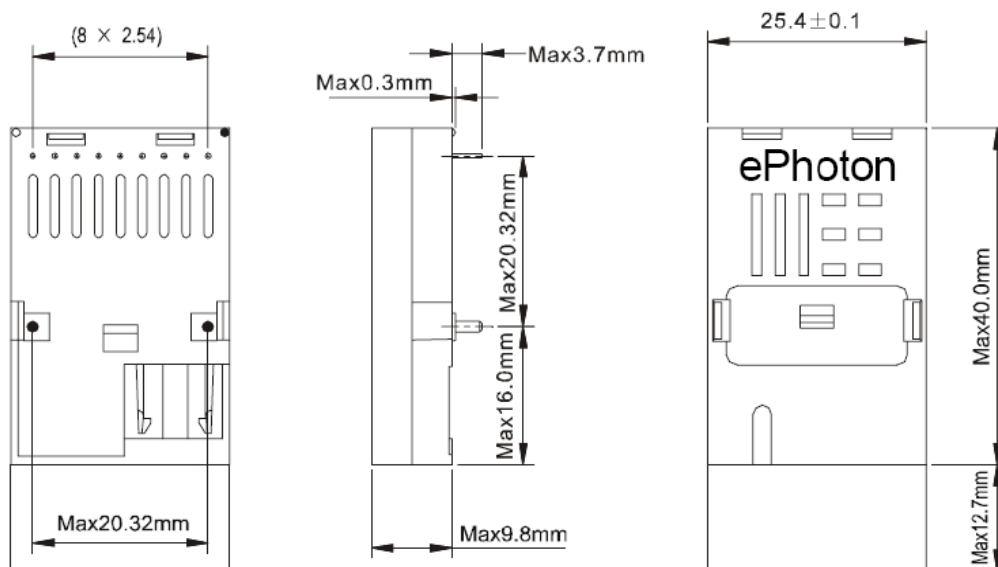
5.1 Pin Diagram



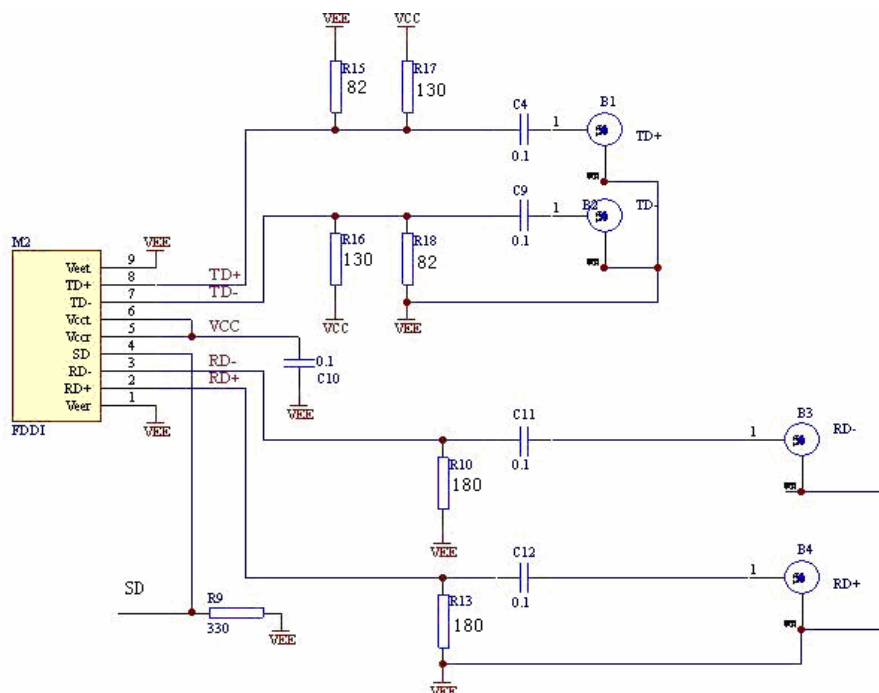
5.2 Pin Descriptions

Pin#	Name	Function
1	Vee	Negative power of receiver section, normally grounded
2	RD+	LVPECL, Data output of receiver section
3	RD-	LVPECL, Reverse data output of receiver section
4	SD	Optical alarm of receiver section, High level when normal, Low level when no light.
5	V _{CC}	Positive power of receiver section, normally +3.3V
6	V _{CC}	Positive power of transmitter section, normally +3.3V
7	TD-	LVPECL, Reverse data input of transmitter section
8	TD+	LVPECL, Data input of transmitter section
9	Vee	Negative power of transmitter section, normally grounded

6 Package Information



7 Recommended Circuit



8 Ordering Information

Part Number	Description
EBD9155-5531AR1S	Single SC BIDI 1X9, 155Mb/s, 1550nm Tx, 1310nm Rx, 15Km, 0~70°C

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