

## B-15/13-155-T(3)-SSC4



### Features

- Diplexer Single Mode, Single Fiber 1x9 SC Receptacle Connector
- Wavelength Tx 1530nm/Rx 1310 nm
- SONET OC-3 SDH STM-1 Compliant
- Single +5V Power Supply (B-15/13-155-T-SSC4)
- Single +3.3V Power Supply (B-15/13-155-T3-SSC4)
- PECL/LVPECL Differential Inputs and Outputs
- Wave Solderable and Aqueous washable
- LED Multisourced 1x9 Transceiver Interchangeable
- Class 1 laser Int. Safety Standard IEC 825 Compliant
- Uncooled Laser Diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Temperature Range: 0 to 70°C
- Optical Isolation > 30 dB
- Cross Talk < -33 dB

### Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	$V_{CC}$	0	6	V	B-15/13-155-T-SSC4
Power Supply Voltage	$V_{CC}$	0	3.6	V	B-15/13-155-T3-SSC4
Input Voltage	-	0	$V_{CC}$	V	
Output Current	$I_{out}$	-	30	mA	
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Storage Temperature	$T_{stg}$	-40	85	°C	

### Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	$V_{CC}$	4.75	5	5.25	V
Power Supply Voltage	$V_{CC}$	3.1	3.3	3.5	V
Operating Temperature	$T_{opr}$	0	-	70	°C
Data Rate	-	-	155	-	Mbps

### Transmitter Specifications, (0°C < $T_{opr}$ < 70°C, $V_{CC} \pm 5\%$ )

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Optical</b>						
Optical Transmit Power	$P_o$	-8	-	-3	dBm	Output power is coupled into a 9/125 $\mu$ m single mode fiber
Output center Wavelength	$\lambda$	1480	1530	1580	nm	
Output Spectrum Width	$\Delta\lambda$			3	nm	RMS( $\sigma$ )
Extinction Ratio	ER	8.5	-	-	dB	
Output Eye		Compliant with ITU-T recommendation G.957/STM1				
Optical Rise Time	$t_r$	-	-	2	ns	10% to 90% Values
Optical Fall Time	$t_f$	-	-	2	ns	10% to 90% Values
Optical Isolation		30	-	-	dB	Tx: 1530 nm/ Rx: 1310 nm
Relative Intensity Noise	RIN	-	-	-116	dB/Hz	
Total Jitter	TJ	-	-	1.2	ns	Measured with 2 <sup>23</sup> -1 PRBS with 72 ones and 72 zeros.

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### Transmitter Specifications, (0°C < T<sub>opr</sub> < 70°C, V<sub>CC</sub> ± 5%)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Electrical</b>						
Power Supply Current	I <sub>CC</sub>	-	-	140	mA	Maximum current is specified at V <sub>CC</sub> = Maximum @ maximum temperature
Data Input Current-Low	I <sub>IL</sub>	-350	-	-	μA	
Data Input Current-High	I <sub>IH</sub>	-	-	350	μA	
Differential Input Voltage	V <sub>IH</sub> -V <sub>IL</sub>	300	-	-	mV	
Data Input Voltage-Low	V <sub>IL</sub> -V <sub>CC</sub>	-2.0	-	-1.58	V	These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs
Data Input Voltage-High	V <sub>IH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	

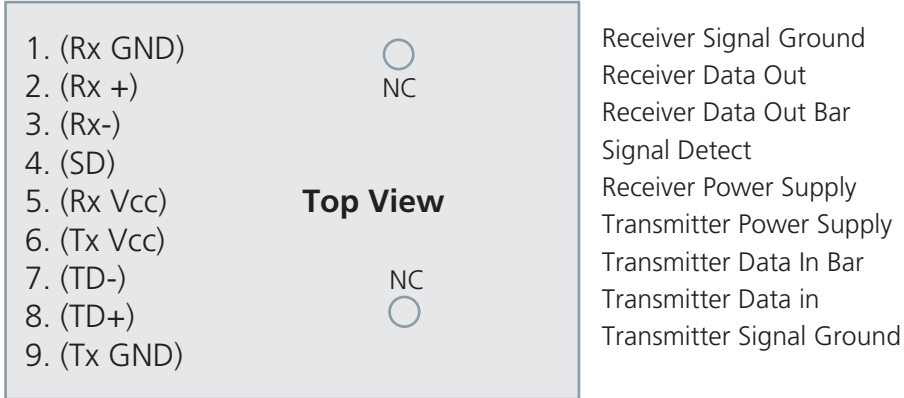
### Receiver Specifications, (0°C < T<sub>opr</sub> < 70°C, V<sub>CC</sub> ± 5%)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Optical</b>						
Sensitivity	-	-	-	-33	dBm	Measured with 2 <sup>23</sup> -1 PRBS, BER 10 <sup>-10</sup>
Maximum Input Power	P <sub>in</sub>	-3	-	-	dBm	
Signal Detect-Asserted	P <sub>a</sub>	-	-	-33	dBm	Measured on transition: low to high
Signal Detect-Deasserted	P <sub>d</sub>	-45	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1	-	4	dB	
Cross Talk	-	-	-	-33	dB	
Wavelength of Operation		1260	-	1360	nm	

### Receiver Specifications, (0°C < T<sub>opr</sub> < 70°C, V<sub>CC</sub> ± 5%)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Electrical</b>						
Power Supply Current	I <sub>CC</sub>	-	-	100	mA	The current excludes the output load current
Data Output Voltage-Low	V <sub>OL</sub> -V <sub>CC</sub>	-2	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs.
Data Input Voltage-High	V <sub>OH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V <sub>SDL</sub> -V <sub>CC</sub>	-2	-	-1.58	V	
Signal Detect Output Voltage-High	V <sub>SDH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	

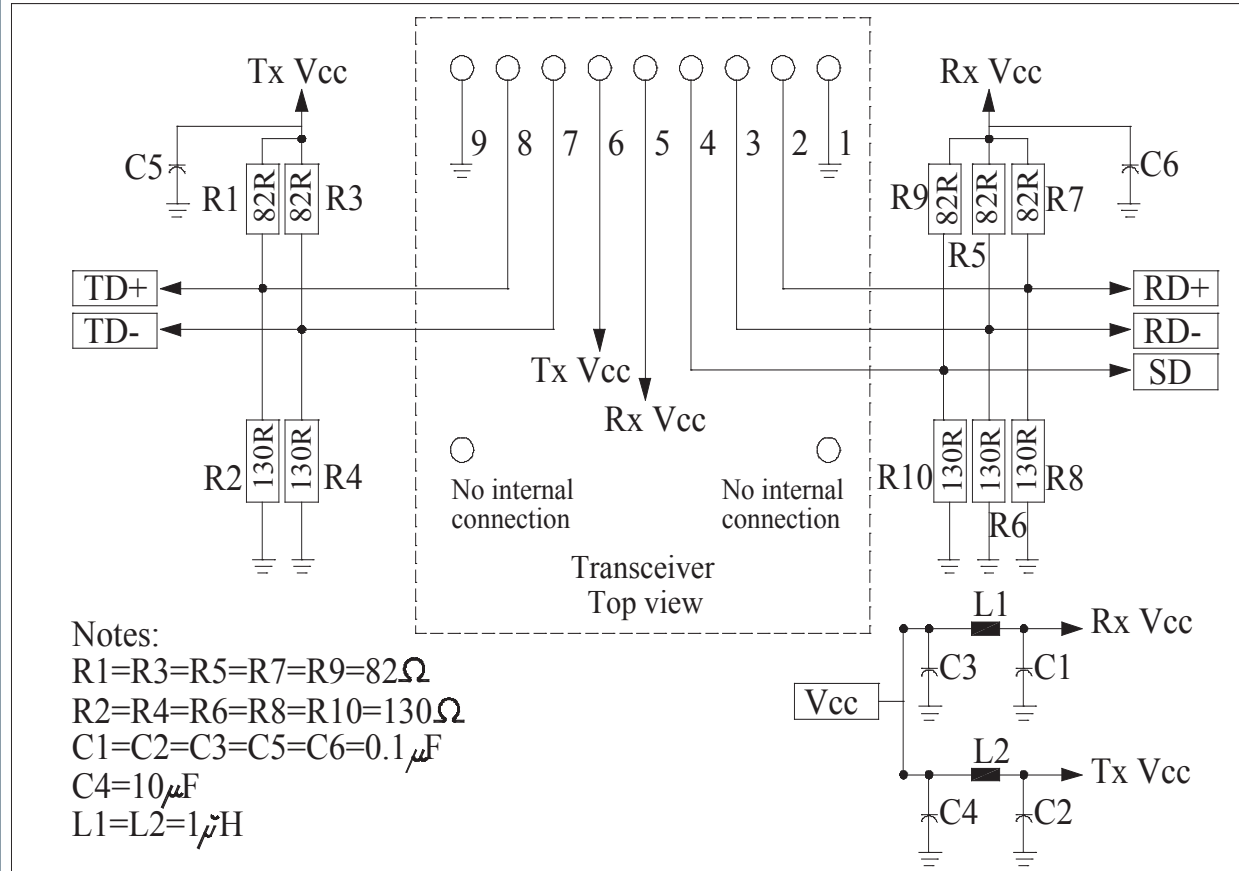
### Connection Diagram



PIN	Symbol	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	RxVcc	dc power for the receiver section
6	TxVcc	dc power for the transmitter section
7	TD-	See recommended circuit schematic
8	TD+	See recommended circuit schematic
9	TxGND	Directly connect this pin to the transmitter ground plane

Recommended Circuit Schematic

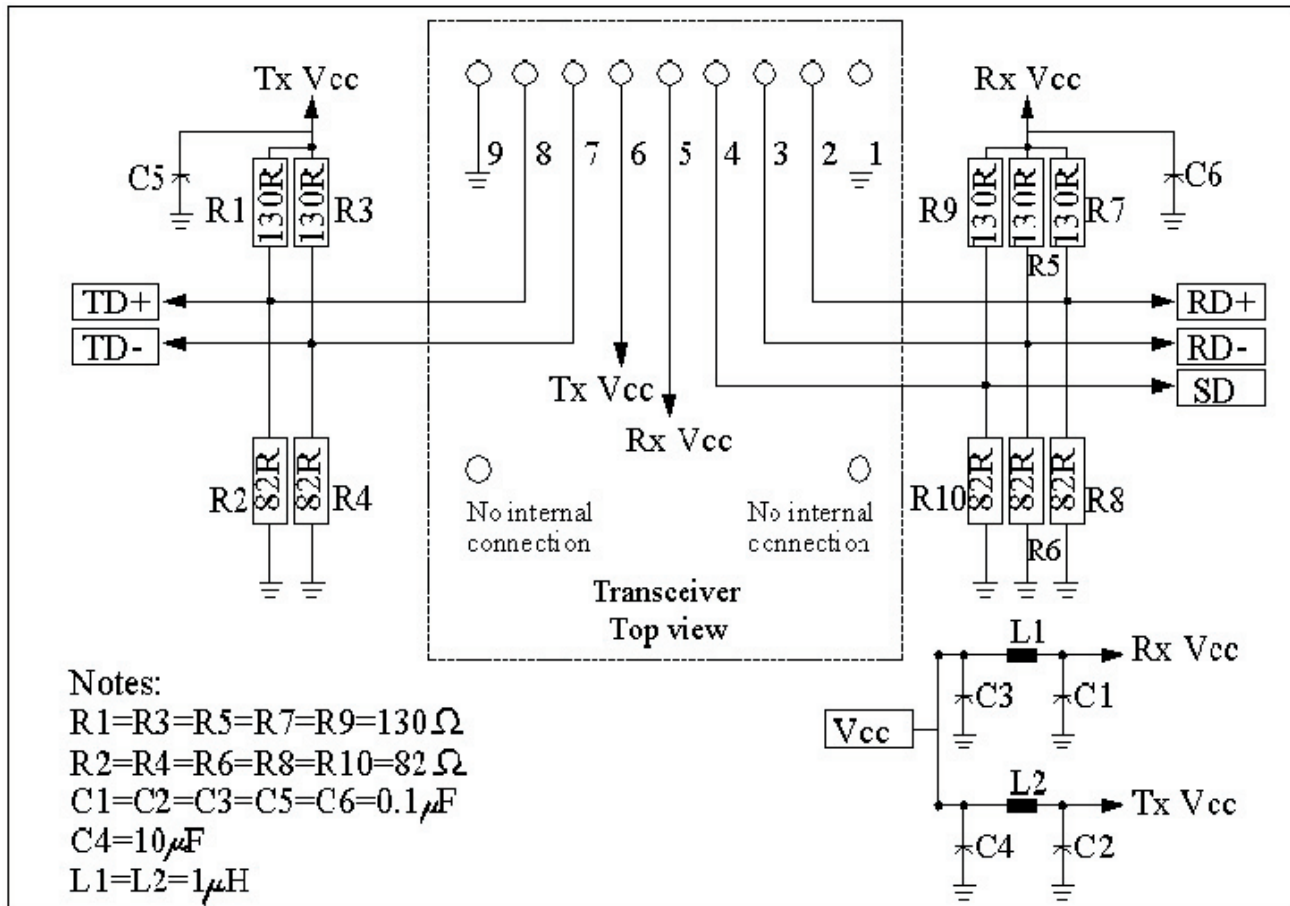
B-15/13-155-T -SSC4



The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals.  
The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc.  
A GND plane under the module is required for good EMI and sensitivity performance.

Recommended Circuit Schematic

B-15/13-155-T3-SSC4



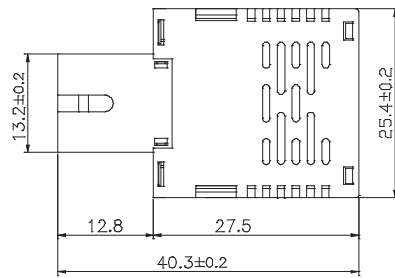
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Package Diagram

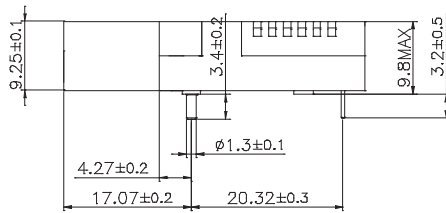
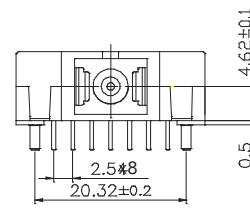
Units in mm(inch)

## Diplexer Transceiver Assembly (Receptacle Type)

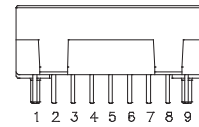
Top View



Front View



Side View



Rear View

### Ordering Information

**B -15/13 - 155 -T(3) - S SC 4**

• Tx Wavelength = 1530 nm  
Rx Wavelength = 1310 nm

• Communication protocol  
(155 Mbps)

• +5V /+ 3.3V Transceiver

• Single mode fiber

• Connector options

### Warnings

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

**Laser Safety:** Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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