

B-15/13-155(C)-TDFB(3)-Sxx5(7)



Features

- Diplexer Single Mode Single Fiber 1x9 SC/FC/ST Receptacle Connector
- Wavelength Tx 1550 nm/Rx 1310 nm
- SONET OC-3 SDH STM-1 Compliant
- Single +5V power Supply
- Single +3.3V power Supply
- PECL/LVPECL Differential Inputs and Outputs [B-15/13-155-TDFB(3)-Sxx5(7)]
- TTL/LVTTL Differential Inputs and Outputs [B-15/13-155C-TDFB(3)-Sxx5(7)]
- 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 DFB Laser
- Complies with Telcordia (Bellcore) GR-468-CORE
- RoHS compliant

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	0	6	V	B-15/13-155-TDFB-Sxx5(7)
Power Supply Voltage	V_{CC}	0	3.6	V	B-15/13-155-TDFB3-Sxx5(7)
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 (Case)	T_{opr}	0	-	70	°C
Data Rate	-	-	155	-	Mbps

Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-5	-	0	dBm	Output power is coupled into a 9/125 μ m single mode fiber (B-15/13-155-TDFB(3)-Sxx5)
Optical Transmit Power	P_o	-3	-	+2	dBm	Output power is coupled into a 9/125 μ m single mode fiber (B-15/13-155-TDFB(3)-Sxx7)
Output center Wavelength	λ	1480	1550	1580	nm	
Output Spectrum Width	$\Delta\lambda$	-	-	1	nm	-20dB width
Side Mode Suppression Ratio	S_r	30	35	-	dB	CW
Extinction Ratio	ER	10	-	-	dB	
Output Eye	Compliant with ITU-T recommendation G.957/STM-1					
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	Isolation potential between 1480-1580nm at least 30dB
Relative Intensity Noise	RIN	-	-	-116	dB/Hz	
Total Jitter	TJ	-	-	1.2	ns	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros.

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Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I_{CC}	-	-	200	mA	Maximum current is specified at V_{CC} = Maximum @ maximum temperature
Data Input Current-Low	I_{IL}	-350	-	-	μ A	
Data Input Current-High	I_{IH}	-	-	350	μ A	
Differential Input Voltage	$V_{IH}-V_{IL}$	300	-	-	mV	
Data Input Voltage-Low	$V_{IL}-V_{CC}$	-2.0	-	-1.58	V	These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs
Data Input Voltage-High	$V_{IH}-V_{CC}$	-1.1	-	-0.74	V	

Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-33	dBm	Measured with 2 ²³ -1 PRBS, BER = 10 ⁻¹⁰ , B-15/13-155-TDFB(3)-SSC5 Measured with 2 ²³ -1 PRBS, BER = 10 ⁻¹⁰ , B-15/13-155-TDFB(3)-SSC7
Sensitivity	-	-	-	-35	dBm	
Maximum Input Power	P_{in}	-3	-	-	dBm	
Signal Detect-Asserted (Note 1)	P_a	-	-	-33	dBm	MEasured on transition : low to high B-15/13-155-TDFB(3)-SSC5
Signal Detect-Asserted (Note 2)	P_a	-	-	-35	dBm	MEasured on transition : low to high B-15/13-155-TDFB(3)-SSC7
Signal Detect-Deasserted	P_d	-45	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Wavelength of Operation		1260	-	1360	nm	

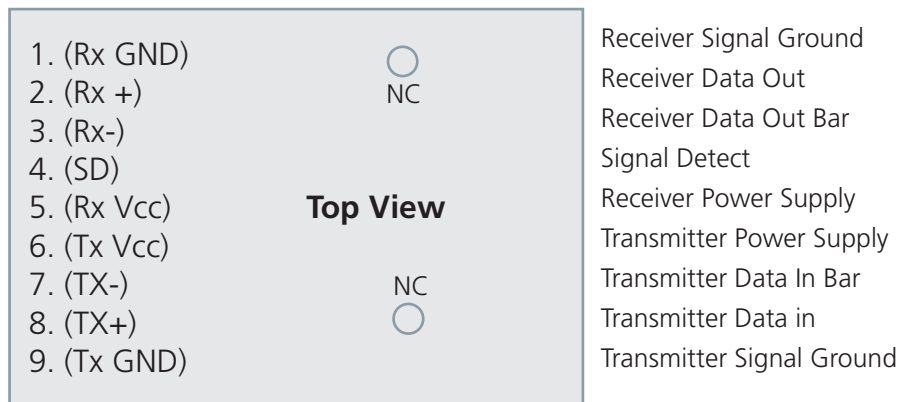
Note 1: Regardless of whether the Tx is on or not, SD should be asserted at less than -33 dBm of input power level.

Note 2: Regardless of whether the Tx is on or not, SD should be asserted at less than -35 dBm of input power level.

Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Note
Electrical						
Power Supply Current	I_{CC}	-	-	100	mA	The current excludes the output load current
Data Output Voltage-Low	$V_{OL}-V_{CC}$	-2.0	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and PECL outputs
Data Output Voltage-High	$V_{OH}-V_{CC}$	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	$V_{SDL}-V_{CC}$	-2.0	-	-1.58	V	
Signal Detect Output Voltage-High	$V_{SDH}-V_{CC}$	-1.1	-	-0.74	V	

Connection Diagram

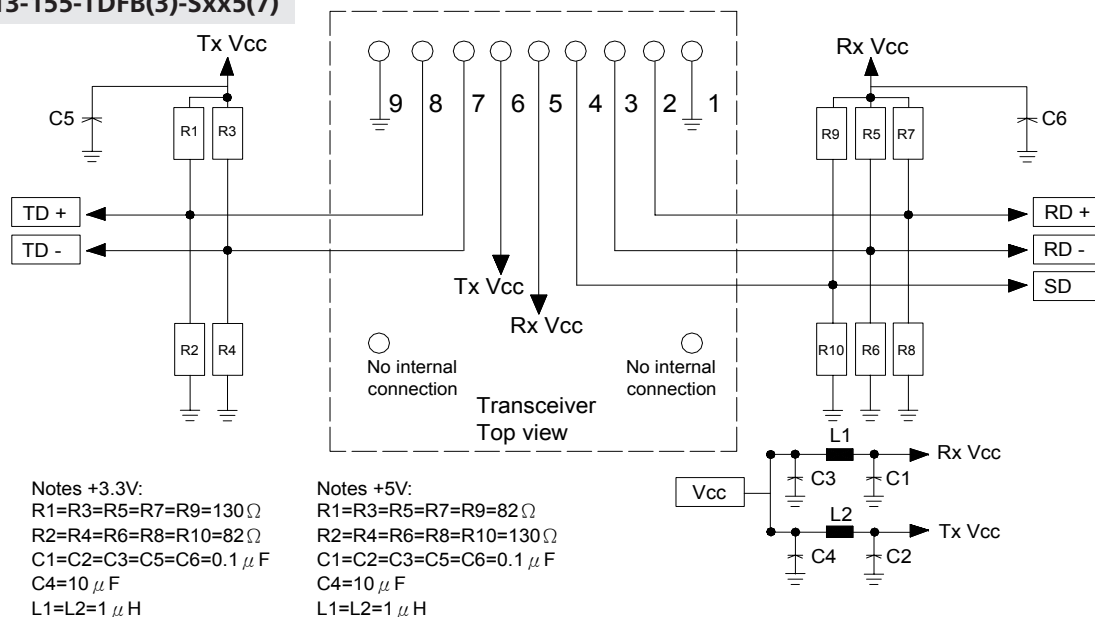


PIN	Symbol	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	RxVcc	DC power for the receiver section
6	TxVcc	DC power for the transmitter section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

B-15/13-155(C)-TDFB(3)-Sxx5(7)

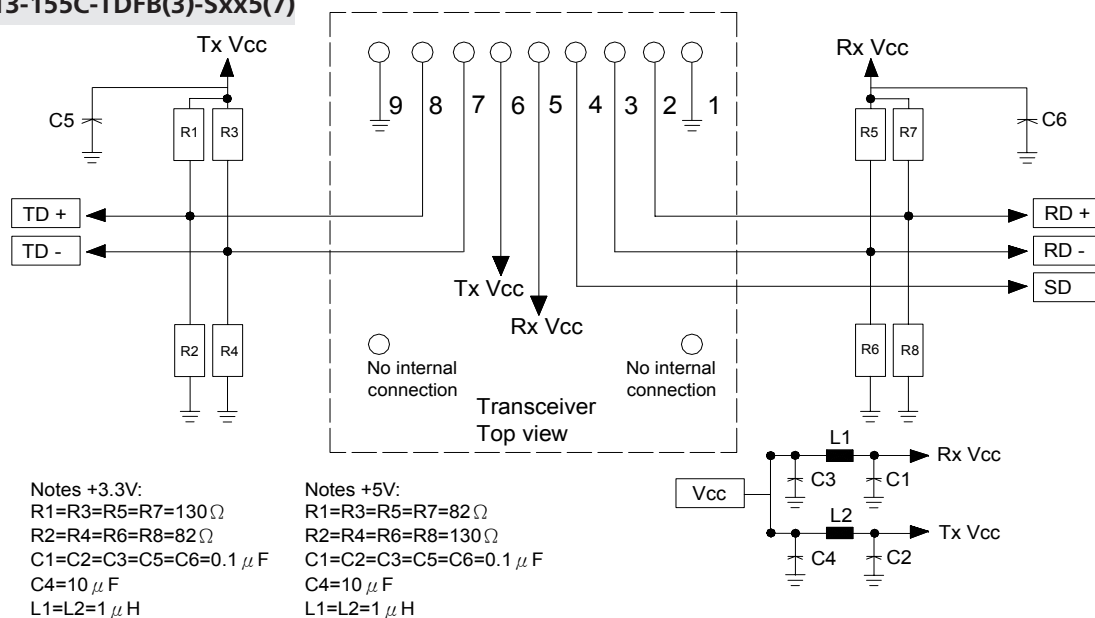
Recommended Circuit Schematic (3.3V/5V)

B-15/13-155-TDFB(3)-Sxx5(7)



Recommended Circuit Schematic (3.3V/5V)

B-15/13-155C-TDFB(3)-Sxx5(7)



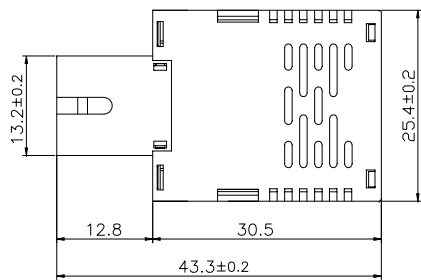
The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc. A GND plane under the module is required for good EMI and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

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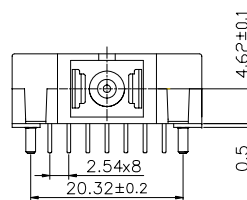
Package Diagram

B-15/13-155-TDFB(3)-SSC5(7)

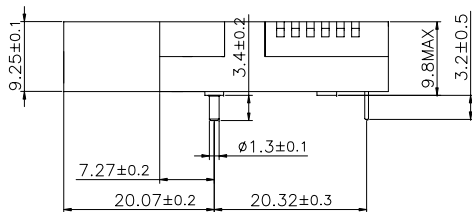
Top View



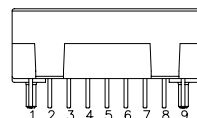
Front View



Side View



Rear View

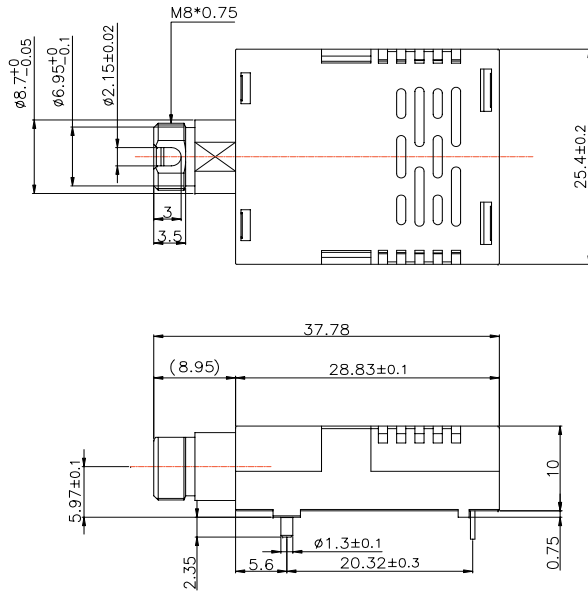


B-15/13-155(C)-TDFB(3)-Sxx5(7)

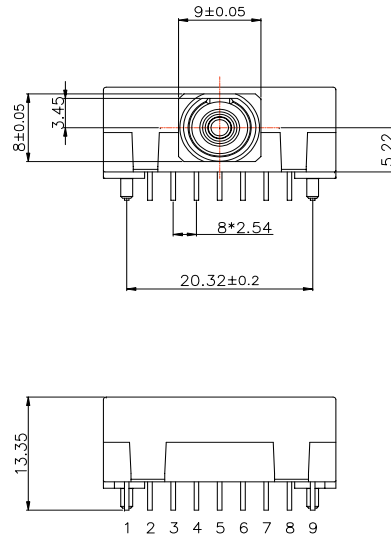
Package Diagram

B-15/13-155-TDFB(3)-SFC5(7)

Top View



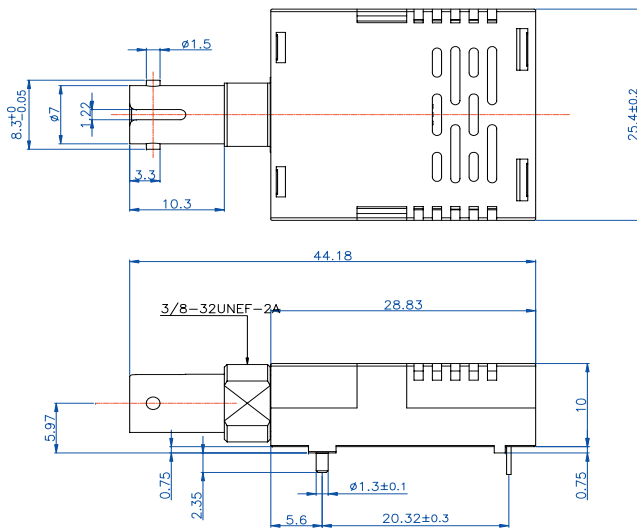
Front View



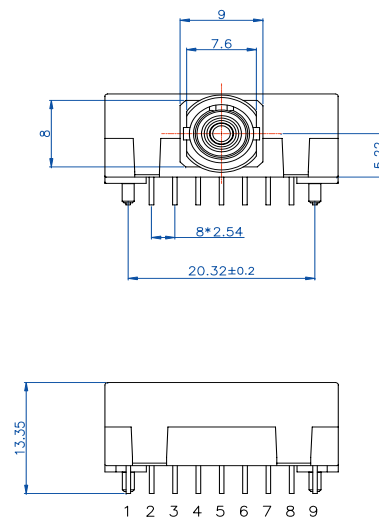
Package Diagram

B-15/13-155-TDFB(3)-SST5(7)

Top View



Front View



Ordering Information

Available Options:

- B-15/13-155(C)-TDFB-SSC5(7) B-15/13-155(C)-TDFB-SSC5(7)-G5
- B-15/13-155(C)-TDFB-SFC5(7) B-15/13-155(C)-TDFB-SFC5(7)-G5
- B-15/13-155(C)-TDFB-SST5(7) B-15/13-155(C)-TDFB-SST5(7)-G5
- B-15/13-155(C)-TDFB3-SSC5(7) B-15/13-155(C)-TDFB3-SSC5(7)-G5
- B-15/13-155(C)-TDFB3-SFC5(7) B-15/13-155(C)-TDFB3-SFC5(7)-G5
- B-15/13-155(C)-TDFB3-SST5(7) B-15/13-155(C)-TDFB3-SST5(7)-G5

Part Numbering Definitions:

B - 15/13 - 155 - TDFB(3) - S XX Tx Power -RoHS

- **Wavelength**
Tx Wavelength=1550nm
Rx Wavelength=1310nm
- **Communication protocol**
155 = LVPECL SD output
155C = LVTTTL SD output
- **TDFB = +5V Transceiver**
• **TDFB3 = +3.3V Transceiver**
- **Single mode fiber**
- **Connector options**
SC/ST/FC
- **Tx Power**
5 = -5 to 0 dBm
7 = -3 to +2 dBm
- **RoHS**
Blank = RoHS non-compliant product
G5 = RoHS compliant

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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