

B-15/13-155-TPM3-Sxx3-60



Features

- Coaxial single mode single fiber package with optional SC/FC/ST/MU connector
- Wavelength Tx 1530nm/ Rx 1310nm
- SONET OC-3 SDH STM-1 Compliant
- Single +3.3V Power Supply
- LVPECL Differential Inputs and Outputs
- Wave Solderable and Aqueous washable
- LED Multisourced 1x9 Transceiver Interchangeable
- Class 1 Laser Int. Safety Standad 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
- Optical Return Loss > 14dB

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{cc}	0	3.6	V	
Input Voltage	-	GND	V_{cc}	V	
Output Current	I_{out}	0	30	mA	
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Operating Temperature	T_{opr}	0	70	°C	
Storage Temperature	T_{stg}	-40	85	°C	

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
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, 3.1V< V_{cc} <3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-14	-	-8	dBm	Output power is coupled into a 9/125 μ m single mode fiber
Output center Wavelength	λ	1480	1530	1580	nm	
Output Spectrum Width	$\Delta\lambda$	-	-	3	nm	RMS (σ)
Extinction Ratio	ER	8.2	-	-	dB	
Output Pulse Mask		Compliant with FDDI SMF-PMD1				
Output Eye		Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957				
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
Optical Return Loss	-	14	-	-	dB	
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, (0°C<T_{opr}<70°C, 3.1V<V_{CC}<3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I _{CC}	-	-	140	mA	Maximum current is specified at V _{CC} = Maximum @ maximum temperature
Data Input Current-Low	I _{IL}	-350	-	-	μA	
Data Input Current-High	I _{IH}	-	-	350	μA	
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	

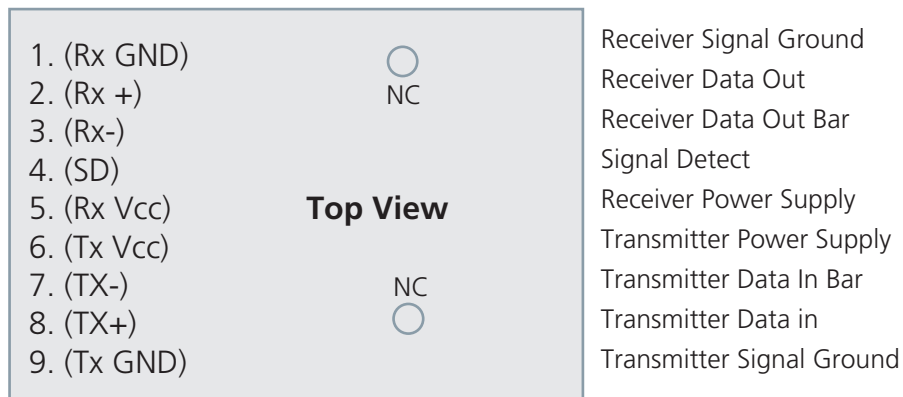
Receiver Specifications, (0°C<T_{opr}<70°C, 3.1V<V_{CC}<3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-33	dBm	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros.t
Maximum Input Power	P _{in}	-3	-	-	dBm	
Signal Detect-Asserted	P _a	-	-	-33	dBm	Measured on transition: low to high
Signal Detect-Deasserted	P _d	-41	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Cross Talk	-	-	-	-33	dB	
Wavelength of Operation		1260	-	1360	nm	

Receiver Specifications, (0°C<T_{opr}<70°C, 3.1V<V_{CC}<3.5V)

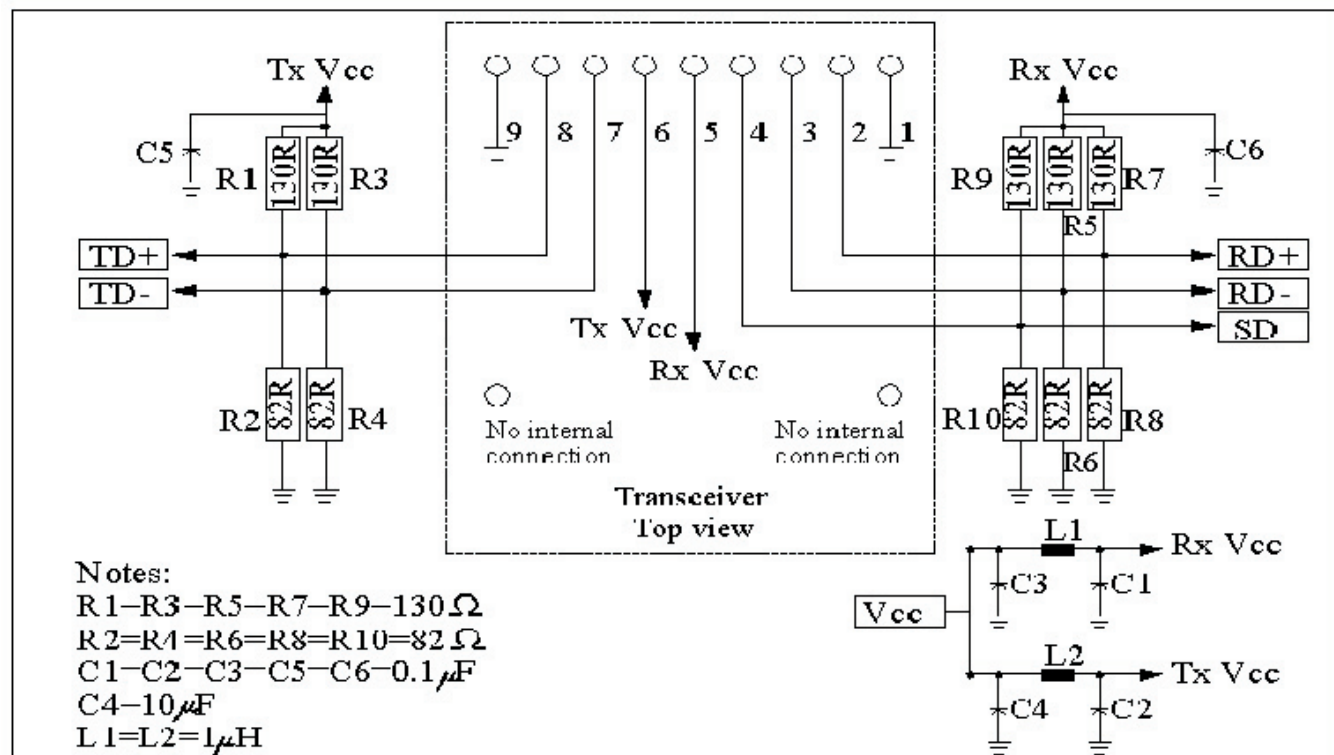
Parameter	Symbol	Min	Typical	Max	Unit	Note
Electrical						
Power Supply Current	I _{CC}	-	-	100	mA	The current excludes the output load current
Data Output Voltage-Low	V _{OL} -V _{CC}	-2	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs
Data Output Voltage-High	V _{OH} -V _{CC}	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V _{SDL} -V _{CC}	-2	-	-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	+3.3V dc power for the receiver section
6	TxVcc	+3.3 V 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



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.

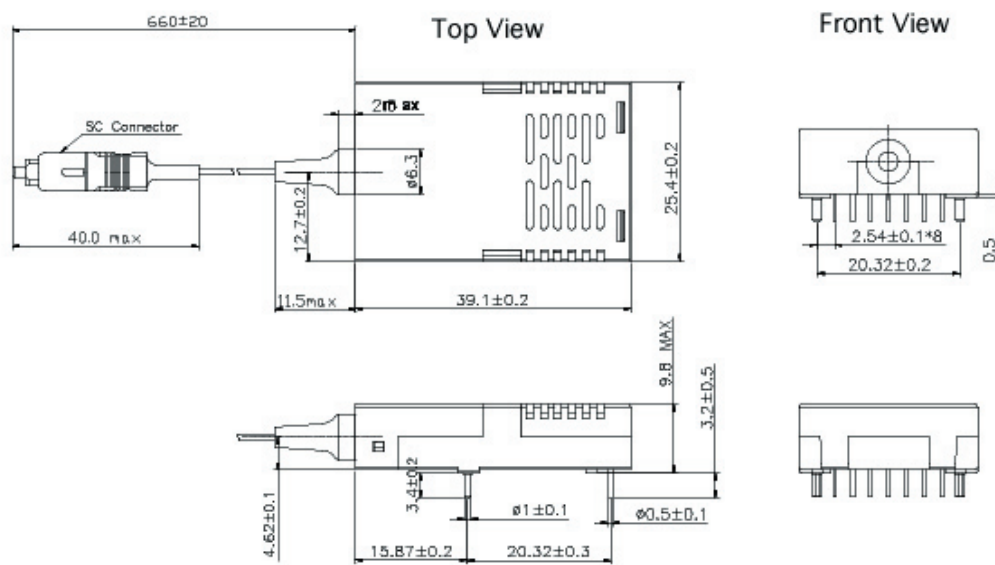
B-15/13-155-TPM3-Sxx3-60

Package Diagram

B-15/13-155-TPM3-SSC3-60

Units in mm (inch)

Diplexer Transceiver Assembly

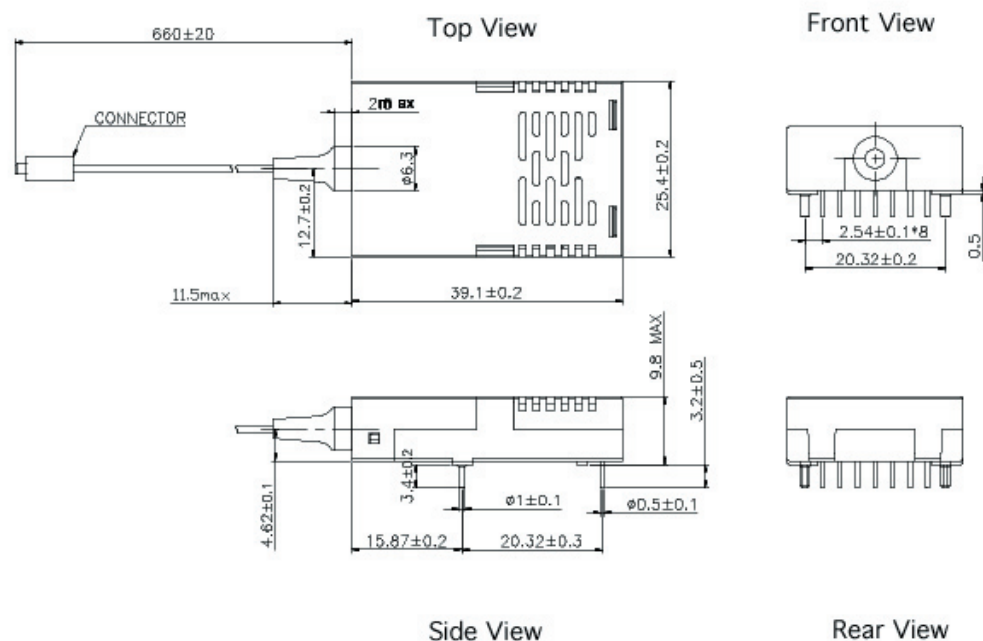


Package Diagram

B-15/13-155-TPM3-SFC (ST/MU) 60

Units in mm (inch)

Diplexer Transceiver Assembly



Ordering Information

B - 15/13 -155 - TPM3 - S xx3-60

- **Wavelength**
Tx Wavelength=1530nm
Rx Wavelength = 1310nm

- **Communication protocol**
(155 Mbps)

- **+3.3 V 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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