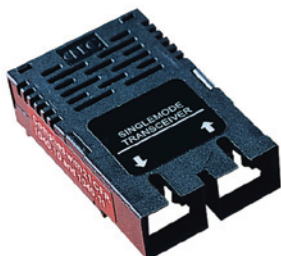


C-13-155(C)-T3-SXX3(5)



Features

- Duplex SC Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Intermediate Reach 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 Standard IEC 825 Compliant
- Uncooled Laser Diode with MQW Structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Temperature Range: 0 to 70°C
- C-13-155(C)-T3-SSC3(5) black case 10.4 mm
- SD LVPECL level C-13-155-T3-SXX3(5)
- SD LVTTTL level C-13-155C-T3-SXX3(5)
- ATM 155 Mbps Links Application
- SONET/SDH Equipment Interconnect Application

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	0	3.6	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< T_{opr} <70°C, 3.1V< V_{CC} <3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-15	-	-8	dBm	C-13-155(C)-T3-SXX3, output power is coupled into a 9/125 μ m single mode fiber
Optical Transmit Power	P_o	-5	-	0	dBm	C-13-155(C)-T3-SXX5, output power is coupled into a 9/125 μ m single mode fiber
Output Center Wavelength	λ	1261	1310	1360	nm	C-13-155(C)-T3-SXX3
Output Center Wavelength	λ	1263	1310	1360	nm	C-13-155(C)-T3-SXX5
Output Spectrum Width	$\Delta\lambda$	-	-	7.7	nm	RMS(σ), C-13-155(C)-T3-SXX3
Output Spectrum Width	$\Delta\lambda$			5	nm	RMS(σ), C-13-155(C)-T3-SXX5
Extinction Ratio	ER	8.2	-	-	dB	C-13-155(C)-T3-SXX3
Extinction Ratio	ER	10	-	-	dB	C-13-155(C)-T3-SXX5
Output Pulse Mask		Compliant with FDDI SMF-PMD1				
Output Eye		Compliant with ITU-T 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
Relative Intensity Noise	RIN	-	-	-116	dB/Hz	
Total Jitter	TJt	-	-	1.2	ns	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros.

C-13-155(C)-T3-SXX3(5)

Transmitter Specifications, ($0 < T_{opr} < 70^{\circ}\text{C}$, $3.1\text{V} < V_{CC} < 3.5\text{V}$)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I_{CC}	-	-	160	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, ($0 < T_{opr} < 70^{\circ}\text{C}$, $3.1\text{V} < V_{CC} < 3.5\text{V}$)

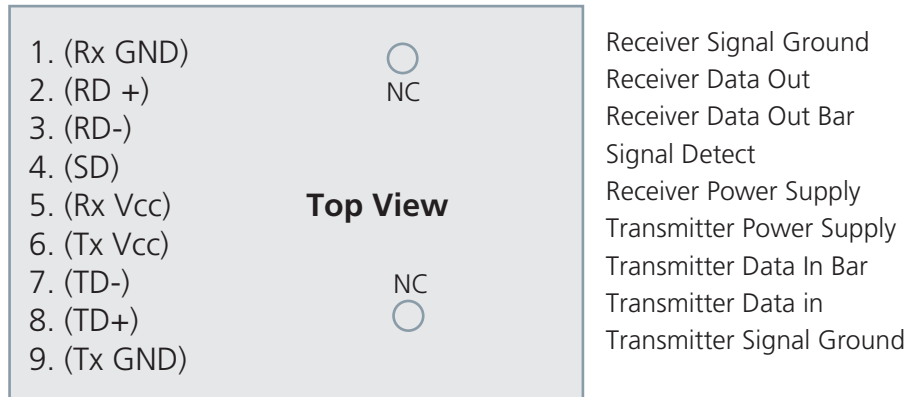
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-34	dBm	measured with 2^{23} -1 PRBS with 72 ones and 72 zeros. C-13-155-T3-SXX3
Sensitivity	-	-	-	-35	dBm	measured with 2^{23} -1 PRBS with 72 ones and 72 zeros. C-13-155(C)-T3-SXX5
Maximum Input Power	P_{in}	-7	-	-	dBm	C-13-155(C)-T3-SXX3
Maximum Input Power	P_{in}	0	-	-	dBm	C-13-155(C)-T3-SXX5
Signal Detect-Asserted	P_a	-	-	-34	dBm	C-13-155(C)-T3-SXX3, Measured on transition: low to high
Signal Detect-Asserted	P_a	-	-	-35	dBm	C-13-155(C)-T3-SXX5, Measured on transition: low to high
Signal Detect-Deasserted	P_d	-47	-	-	dBm	C-13-155-T3-SXX3(5) Measured on transition: high to low
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Wavelength of Operation		1100	-	1600	nm	

Receiver Specifications, ($0 < T_{opr} < 70^{\circ}\text{C}$, $3.1\text{V} < V_{CC} < 3.5\text{V}$)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
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	C-13-155-T3-SXX3(5) LVPECL SD Output
Signal Detect Output Voltage-High	$V_{SDH}-V_{CC}$	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V_{SDL}	-	-	0.5	V	C-13-155(C)-T3-SXX3(5) LVTTTL SD Output
Signal Detect Output Voltage-High	V_{SDH}	2.0	-	-	V	

C-13-155(C)-T3-SXX3(5)

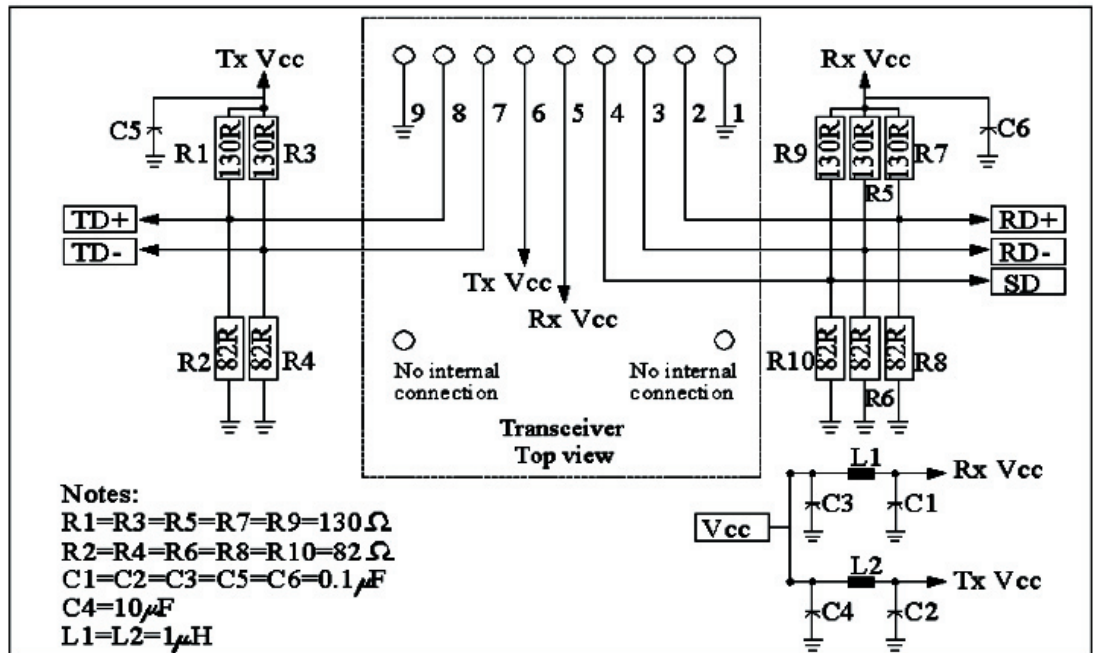
Connection Diagram



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	+3.3V 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

C-13-155(C)-T3-SXX3(5)

Recommended Circuit Schematic

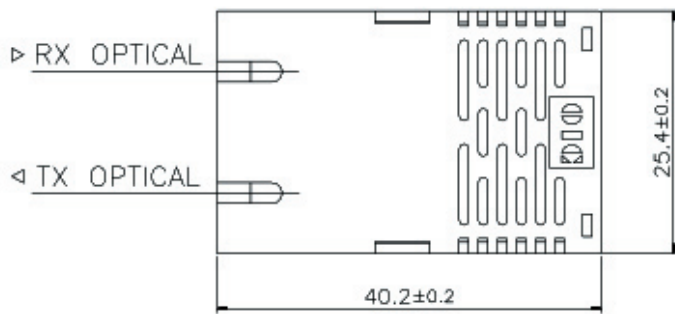


The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc. A GND plane under the module is required for good EMI and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

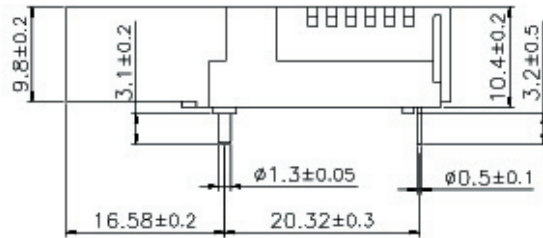
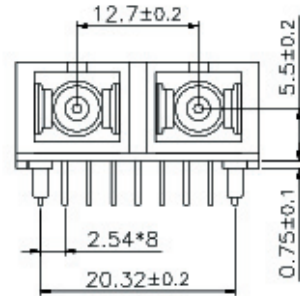
Package Diagram

SC Transceiver Assembly 10.4mm

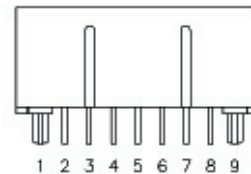
Top View



Front View



Side View

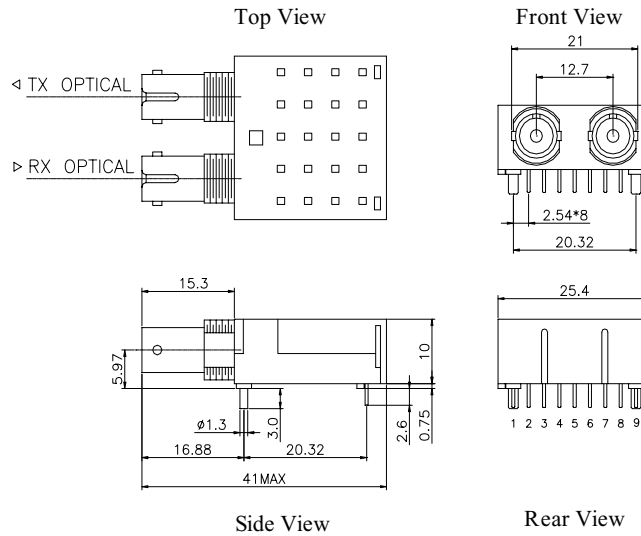


Rear View

C-13-155(C)-T3-SXX3(5)

Package Diagram

ST Transceiver Assembly



Qualification Information

The 155 Mbps SM Transceiver has passed the following qualification tests and meets the intent of Telcordia (Bellcore) GR-468-CORE.

Qualification Test	Condition	Sample Size	Reference
Mechanical Shock	500 g	11	MIL-STD-883
Vibration	20g, 20 Hz-2,000 Hz	11	MIL-STD-883D Method 2007
Solderability	-	11	MIL-STD-883E Method 2003.7
Thermal Shock	25°C	11	MIL-STD-883 Method 1011
Temperature Cycling	500 cycles	11	MIL-STD-883 Method 1010
Damp Heat	40°C, 95% RH, 1344 hrs	11	MIL-STD-202 Method 103
Cyclic Moisture Resistance	10 cycles	11	MIL-STD-883 Method 1004
ESD	± 500V	6	MIL-STD-883D Method 3015.7

C-13-155(C)-T(3)-SXX3(5)

Ordering Information

C - 13 - 155(C) - T(3) - SXX 3(5)

- Wavelength = 1310 nm
- Communication protocol (155 Mbps)
- +3.3V Transceiver
- Single mode fiber
- Connector options(SC/ST)
- Intermediate Reach

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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