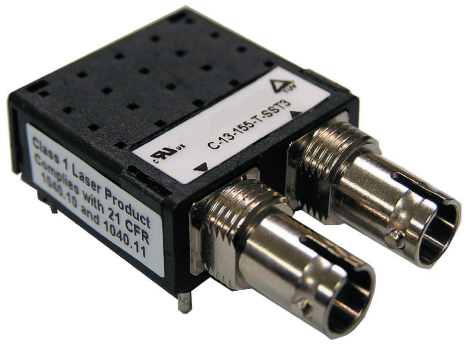
C-13-155-T3-SST3A-14-G5



Features

- Duplex ST Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Intermediate Reach SONET OC-3 SDH STM-1 Compliant
- Single +3.3V Power Supply
- 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: -40 to 85°C
- SD PECL/LVPECL level
- ATM 155 Mbps Links Application
- SONET/SDH Equipment Interconnect Application
- Receiver squelch function
- RoHS compliance available

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
Storage Temperature	T_{stg}	-40	85	°C	

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage[1]	V_{cc}	3.1	3.3	3.5	V
Operating Temperature[1] (Case)	T_{opr}	-40	-	85	°C
Data Rate		-	155	-	Mbps

Note 1 : Please refer to ordering information

Transmitter Specifications,

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-15	-	-8	dBm	output power is coupled into a 9/125 µm single mode fiber
Output Center Wavelength	λ	1261	1310	1360	nm	
Output Spectrum Width	Δλ	-	-	7.7	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-T recommendation G.957				
Optical Rise Time	tr	-	-	2	ns	10% to 90% Values
Optical Fall Time	tf	-	-	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.

Transmitter Specifications,

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I_{CC}	-	-	160	mA	Maximum current is specified at Vcc= 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	

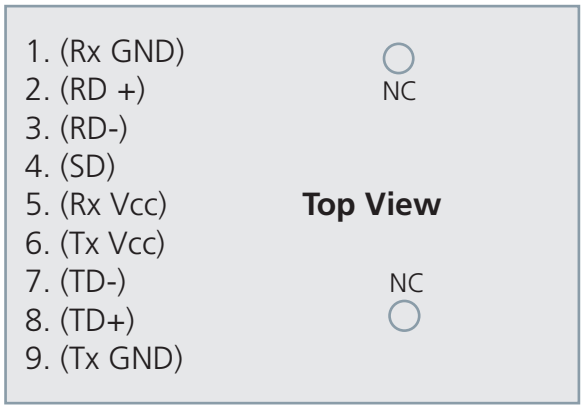
Receiver Specifications,

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-34	dBm	measured with 2^{23}-1 PRBS with 72 ones and 72 zeros.
Maximum Input Power	P_{in}	-7	-	-	dBm	
Signal Detect-Asserted	Pa	-	-	-34	dBm	Measured on transition: low to high
Signal Detect-Deasserted	Pd	-47	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Wavelength of Operation		1100	-	1600	nm	

Receiver Specifications,

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 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	-	-1.58	V	C-13-155-T3-SST3A-14-G5
Signal Detect Output Voltage-High	V_{SDH}- V_{cc}	-1.1	-	-0.74	V	

Connection Diagram

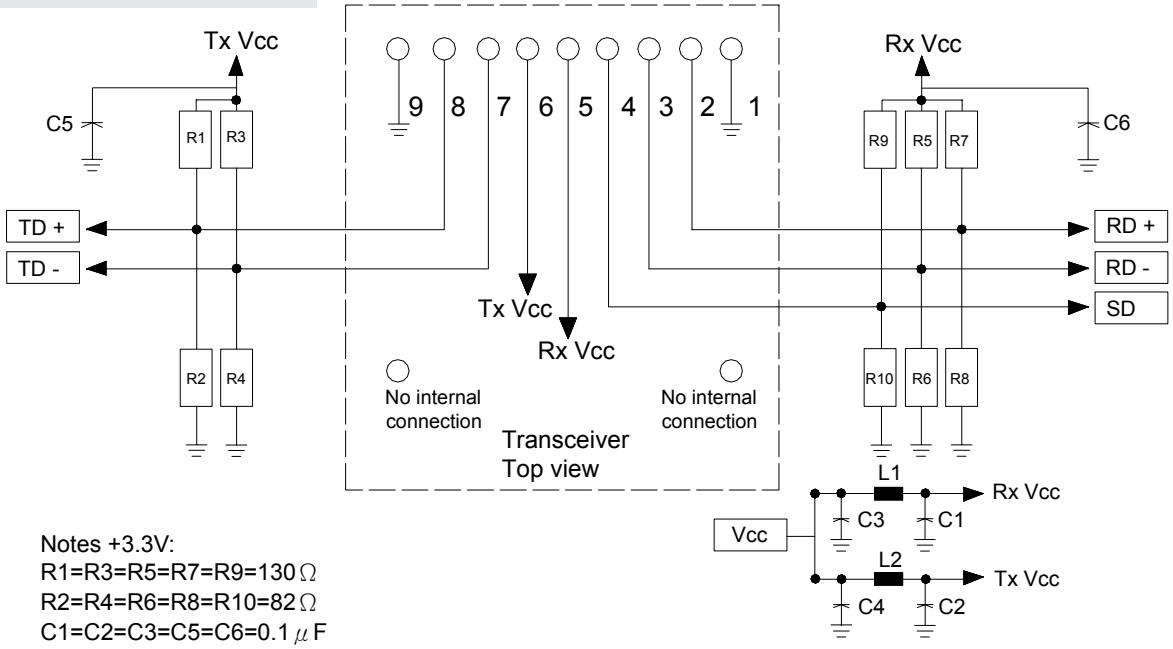


Receiver Signal Ground
Receiver Data Out
Receiver Data Out Bar
Signal Detect
Receiver Power Supply
Transmitter Power Supply
Transmitter Data In Bar
Transmitter Data in
Transmitter Signal Ground

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

C-13-155-T3-SST3A-14-G5



Notes +3.3V:
R1=R3=R5=R7=R9=130 Ω
R2=R4=R6=R8=R10=82 Ω
C1=C2=C3=C5=C6=0.1 µF
C4=10 µF
L1=L2=1 µH

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.

Label

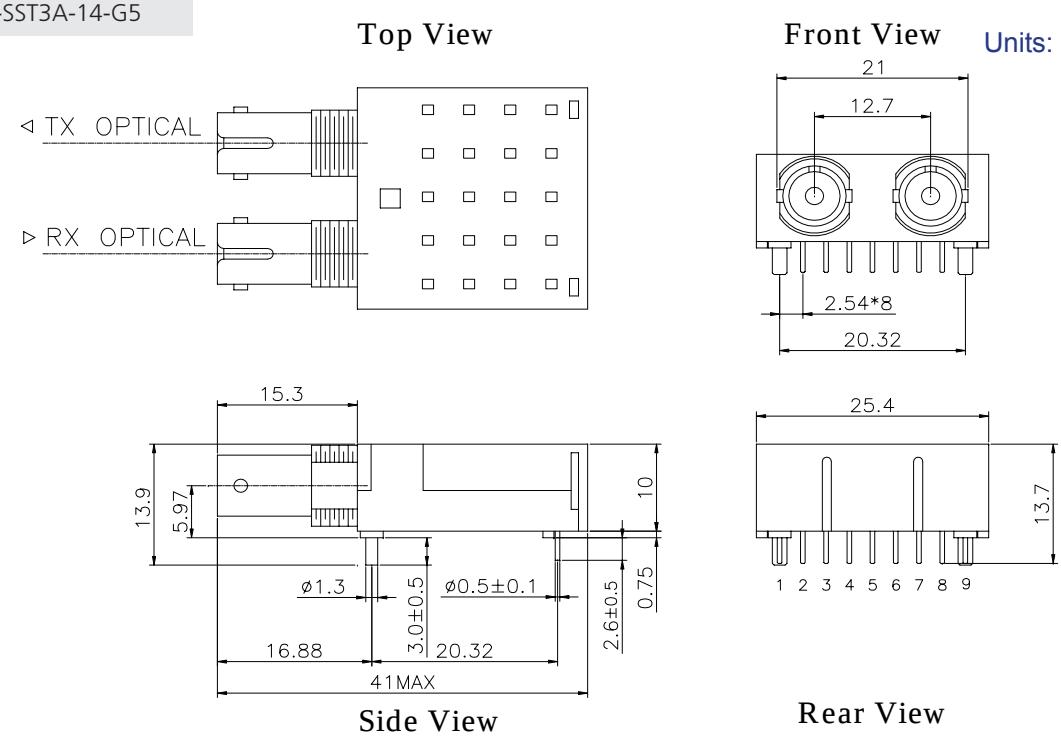
Class 1 Laser Product
Complies with 21 CFR
1040.10 and 1040.11

Model Number:
C-13-155-T3-SST3A-14-G5

Package Diagram

C-13-155-T3-SST3A-14-G5

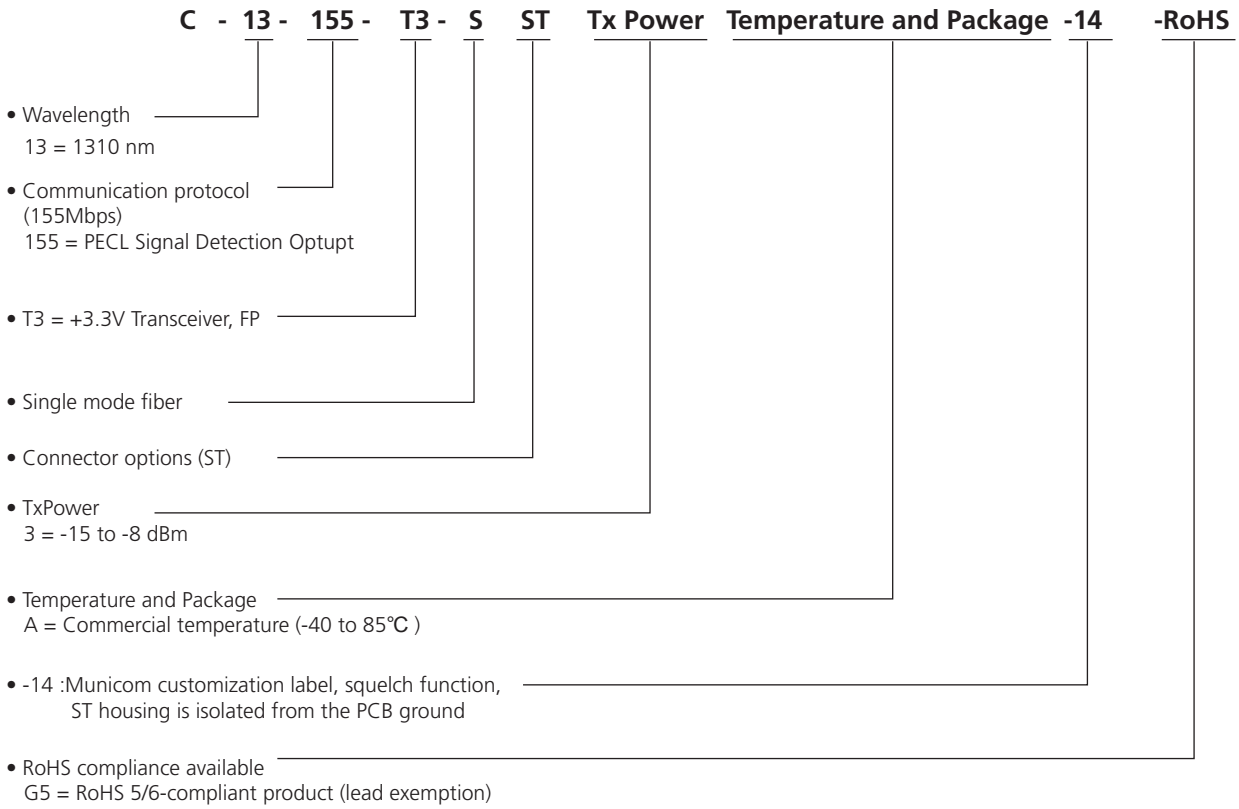
Units: mm



Ordering Information

Available Options:
C-13-155-T3-SST3A-14-G5

Part numbering Definition:



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

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.

Legal Notes: