

## C-13-155-T3-SSCxB/C



### Features

- Duplex SC Single Mode Transceiver
- Industry Standard 1 x 9 Footprint
- Intermediate reach SONET OC-3 SDH STM-1(S1.1) Compliant
- Single +3.3V Power Supply
- LVPECL Differential Inputs and Outputs
- Wave Solderable and Aqueous Washable
- LED Multisourced 1 x 9 Transceiver Interchangeable
- Class 1 Laser Int. Safety Standard IEC 825 Compliant
- Uncooled laser diode with MQW structure
- Complies with Bellcore TA-NWT-000983
- Operating temperature: -40 to +85°C
- Low profile of only 9.8 mm

### Application

- ATM 155 Mbps Links

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Note
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
Case Temperature	$T_{opr}$	-40	+85	°C	
Storage Temperature	$T_{stg}$	-40	+85	°C	

### Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	$V_{CC}$	3.1	3.3	3.5	V
Case Temperature	$T_{opr}$	-40	-	+85	°C
Data Rate	-	-	155	-	Mbps

### Receiver Specifications (-40°C < $T_{opr}$ < 85°C, 3.1 V < $V_{CC}$ < 3.5 V)

Parameter	Symbol	Min	Typ	Max	Unit	Test condition
<b>Optical</b>						
Sensitivity	-	-	-	-34	dBm	Measured with 2 <sup>23</sup> -1 PRBS with 72 ones and 72 zeros. (ITU-T recommendation G.958)
Maximum Input Power	$P_{in}$	-7	-	-	dBm	
Signal Detect – Asserted	$P_a$	-	-	-34	dBm	Measured on transition: low to high
Signal Detect –Deasserted	$P_d$	-47	-	-	dBm	Measured on transition: high to low
Signal detect –Hysteresis		1	-	4	dB	
Wavelength of Operation		1100	-	1600	nm	
<b>Electrical</b>						
Power Supply Current	$I_{CC}$	-	-	100	mA	The current excludes the output load current These outputs are compatible with 10K, 10KH and 100K ECL and LVPECL outputs.
Data output Voltage-Low	$V_{OL}-V_{CC}$	-2	-	-1.58	V	
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	

## C-13-155-T3-SSCxB/C

Transmitter Specifications (-40°C < T<sub>opr</sub> < 85°C, 3.1 V < V<sub>cc</sub> < 3.5 V)

Parameter	Symbol	Min	Typ	Max	Unit	Test condition
Optical Transmit Power						
C-13-155-T3-SSC3B	P <sub>o</sub>	-15	-	-7	dBm	Output power is coupled into a 9/125μm singlemode fiber
C-13-155-T3-SSC5B	P <sub>o</sub>	-5	-	0	dBm	
C-13-155-T3-SSC7B	P <sub>o</sub>	-3	-	3	dBm	
C-13-155-T3-SSC9B	P <sub>o</sub>	0	-	5	dBm	
Output Center Wavelength						
C-13-155-T3-SSC3B	λ	1261	1310	1360	nm	
C-13-155-T3-SSC5B	λ	1280	1310	1335	nm	
C-13-155-T3-SSC7B	λ	1270	1310	1350	nm	
C-13-155-T3-SSC9B	λ	1270	1310	1350	nm	
Output Spectrum Width						
C-13-155-T3-SSC3B	Δλ	-	-	7.7	nm	RMS
C-13-155-T3-SSC5B	Δλ	-	-	4	nm	
C-13-155-T3-SSC7B	Δλ	-	-	4	nm	
C-13-155-T3-SSC9B	Δλ	-	-	4	nm	
Extinction Ratio	E <sub>R</sub>	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 <sub>r</sub>	-	-	2	ns	10%-90% Values
Optical Fall Time	t <sub>f</sub>	-	-	2	ns	10%-90% Values
Relative Intensity Noise	RIN	-	-	-116	dB/Hz	
Total Jitter	TJ	-	-	1.2	ns	Measured with 223-1 PRBS with 72 ones and 72 zeros.
<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	-	-1.58	V	These inputs are compatible with 10K, 10KH and 100K ECL and LVPECL inputs.
Data Input Voltage-High	V <sub>IH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	

Connection Diagram

Pin	Symbol	Unit
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

1. (Rx GND)  
2. (RD+)  
3. (RD-)  
4. (SD)  
5. (Rx Vcc)  
6. (Tx Vcc)  
7. (TD-)  
8. (TD+)  
9. (Tx GND)

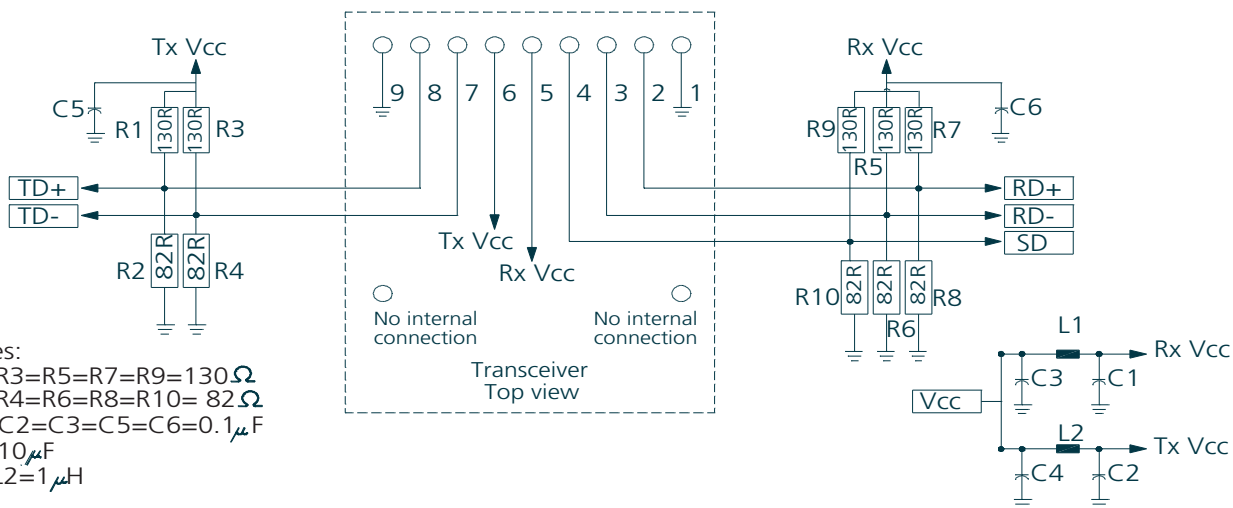
TOP VIEW

○  
N/C  
○  
N/C  
○

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

## C-13-155-T3-SSCxB/C

### Recommended Circuit Schematic



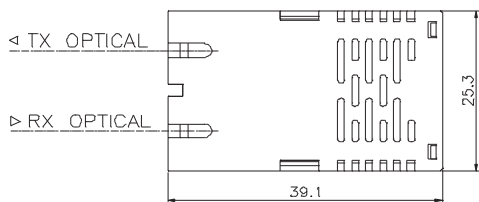
The split-load terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx V<sub>cc</sub> and Tx V<sub>cc</sub>. A GND plane under the module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

### Package Diagram

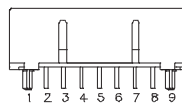
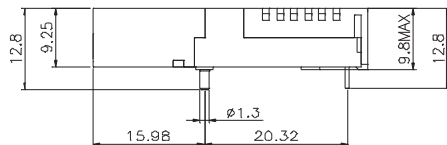
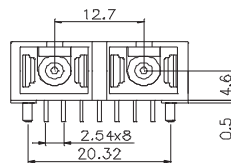
#### C-13-155-T3-SSCxB/C

#### SC Transceiver Assembly 9.8 mm

##### Top View



##### Front View



B : Blue Case  
C : Black Case

Units in mm

## C-13-155-T3-SSCxB/C

### Ordering Information

	C-13-155-T3-S SC xB/C
Wavelength=1310nm	
Communication protocol (155Mbps)	
3.3 V Transceiver	
Single mode fiber	
Connector options	
Optical transmit power	
B : Blue Case	
C : Black Case	

### 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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