

C-1XX-155-TDFB(3)-SSC5(9)



Features

- Duplex SC Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Long reach SONET OC-3 SDH STM-1 Compliant
- Single +3.3V/+5V Power Supply
- LVPECL/PECL Differential Inputs and Outputs
- Wave Solderable and Aqueous Washable
- Class 1 Laser Int. Safety Standard IEC 825 Compliant
- Uncooled laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- ATM 155 Mbps Links application
- SONET/SDH Equipment Interconnect application
- CWDM
- RoHS compliance available

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	0	3.6	V	C-1XX-155-TDFB3-SSC5(9)
Power Supply Voltage	V_{CC}	0	6	V	C-1XX-155-TDFB-SSC5(9)
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	V_{CC}	3.1	3.3	3.5	V
Power Supply Voltage	V_{CC}	4.75	5	5.25	V
Operating Temperature (Case)	T_{opr}	0	-	70	°C
Data Rate	-	-	155	-	Mbps

Note1: Please refer to ordering information

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Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-5	-	0	dBm	C-1XX-155-TDFB(3)-SSC5
Optical Transmit Power	P_o	0	-	+5	dBm	C-1XX-155-TDFB(3)-SSC9
Output center Wavelength	λ	$\lambda_n - 5.5$	λ_n	$\lambda_n + 7.5$	nm	$\lambda_n = 1XX0$ nm
Side Mode Suppression Ratio	Sr	30	35	-	dB	CW, $P_o = 5$ mW
Output Spectrum Width	$\Delta\lambda$	-	-	1	nm	-20 dB width
Extinction Ratio	ER	10	-	-	dB	
Output Pulse Mask		Compliant with FDDI SMR-PMD1				
Output Eye		Compliant with 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
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	TJ	-	-	1.2	ns	

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	

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Receiver Specifications

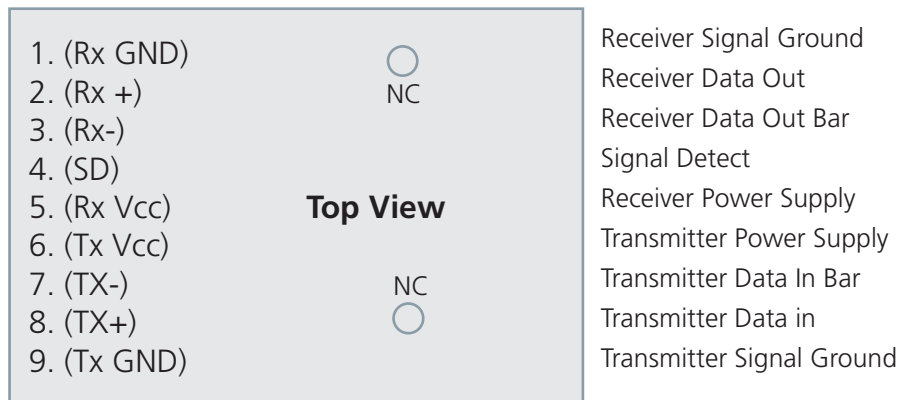
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-35	dBm	Measured with 223-1 PRBS with 72 ones and 72 zeros, C-1XX-155-TDFB(3)-SSC5
Sensitivity	-	-	-	-37	dBm	Measured with 223-1 PRBS with 72 ones and 72 zeros, C-1XX-155-TDFB(3)-SSC9
Maximum Input Power	P_{in}	0	-	-	dBm	
Signal Detect-Asserted	P_a	-	-	-35	dBm	Measured on transition: low to high, C-1XX-155-TDFB(3)-SSC5
Signal Detect-Asserted	P_a	-	-	-37	dBm	Measured on transition: low to high, C-1XX-155-TDFB(3)-SSC9
Signal Detect-Deasserted	P_d	-47	-	-	dBm	Measured on transition: high to low, C-1XX-155-TDFB(3)-SSC5
Signal Detect-Deasserted	P_d	-48	-	-	dBm	Measured on transition: high to low, C-1XX-155-TDFB(3)-SSC9
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Wavelength of Operation		1100	-	1620	nm	

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	

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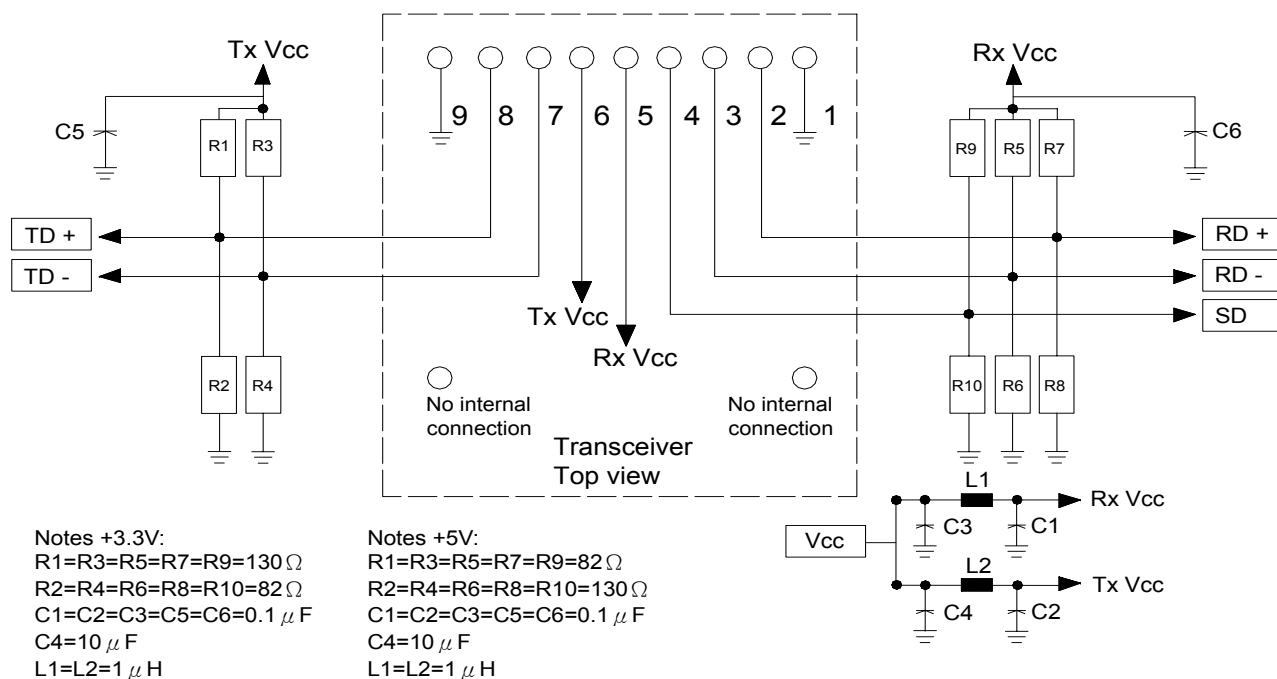
Connection Diagram



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

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Recommended Circuit Schematic



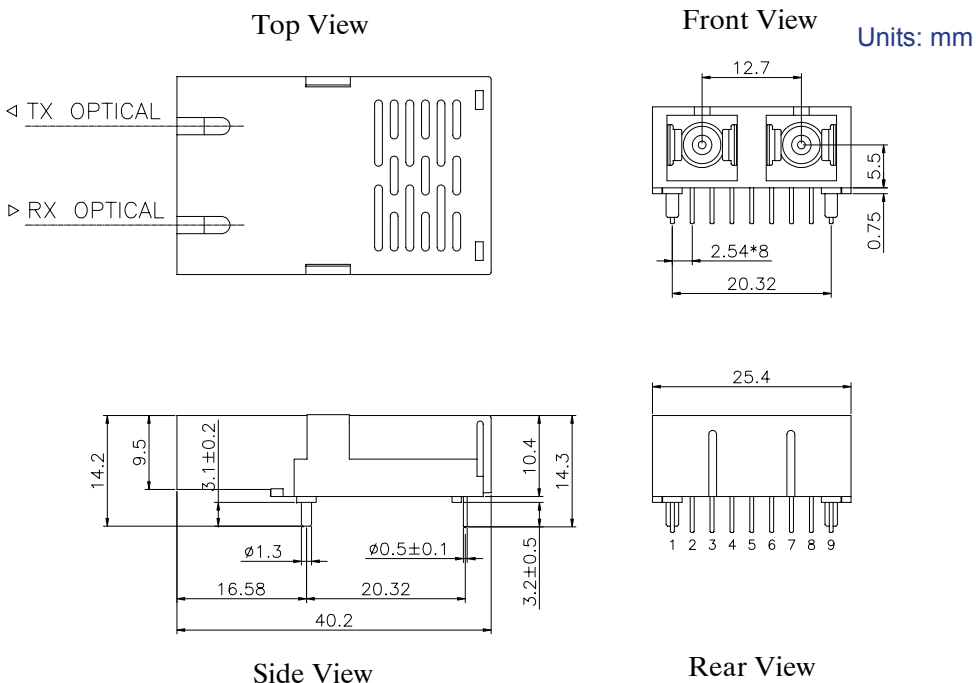
The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals.

The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc.

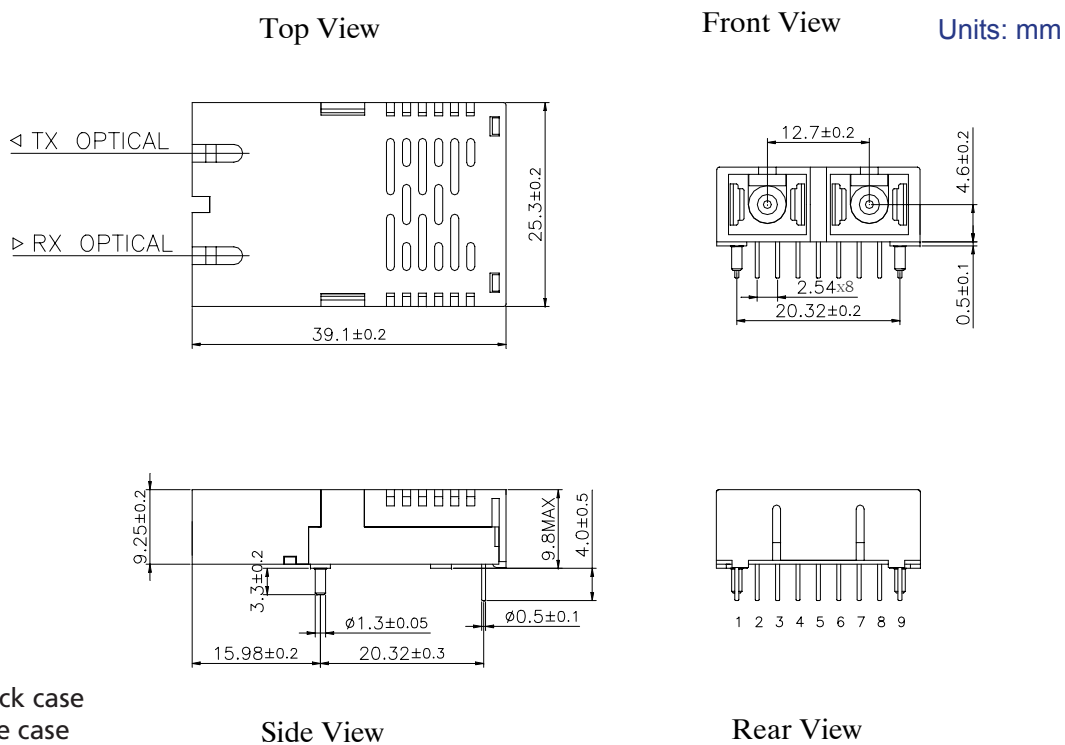
A GND plane under the module is required for good EMI and sensitivity performance.

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Package Diagram (10.4 mm SC transceiver assembly)



Package Diagram (9.8 mm SC transceiver assembly)



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Ordering Information

Available Options:

C-127-155-TDFB(3)-SSC5(9)(-G5)	C-127-155-TDFB(3)-SSC5(9)D(-G5)	C-127-155-TDFB(3)-SSC5(9)E(-G5)
C-129-155-TDFB(3)-SSC5(9)(-G5)	C-129-155-TDFB(3)-SSC5(9)D(-G5)	C-129-155-TDFB(3)-SSC5(9)E(-G5)
C-131-155-TDFB(3)-SSC5(9)(-G5)	C-131-155-TDFB(3)-SSC5(9)D(-G5)	C-131-155-TDFB(3)-SSC5(9)E(-G5)
C-133-155-TDFB(3)-SSC5(9)(-G5)	C-133-155-TDFB(3)-SSC5(9)D(-G5)	C-133-155-TDFB(3)-SSC5(9)E(-G5)
C-135-155-TDFB(3)-SSC5(9)(-G5)	C-135-155-TDFB(3)-SSC5(9)D(-G5)	C-135-155-TDFB(3)-SSC5(9)E(-G5)
C-137-155-TDFB(3)-SSC5(9)(-G5)	C-137-155-TDFB(3)-SSC5(9)D(-G5)	C-137-155-TDFB(3)-SSC5(9)E(-G5)
C-139-155-TDFB(3)-SSC5(9)(-G5)	C-139-155-TDFB(3)-SSC5(9)D(-G5)	C-139-155-TDFB(3)-SSC5(9)E(-G5)
C-141-155-TDFB(3)-SSC5(9)(-G5)	C-141-155-TDFB(3)-SSC5(9)D(-G5)	C-141-155-TDFB(3)-SSC5(9)E(-G5)
C-143-155-TDFB(3)-SSC5(9)(-G5)	C-143-155-TDFB(3)-SSC5(9)D(-G5)	C-143-155-TDFB(3)-SSC5(9)E(-G5)
C-145-155-TDFB(3)-SSC5(9)(-G5)	C-145-155-TDFB(3)-SSC5(9)D(-G5)	C-145-155-TDFB(3)-SSC5(9)E(-G5)
C-147-155-TDFB(3)-SSC5(9)(-G5)	C-147-155-TDFB(3)-SSC5(9)D(-G5)	C-147-155-TDFB(3)-SSC5(9)E(-G5)
C-149-155-TDFB(3)-SSC5(9)(-G5)	C-149-155-TDFB(3)-SSC5(9)D(-G5)	C-149-155-TDFB(3)-SSC5(9)E(-G5)
C-151-155-TDFB(3)-SSC5(9)(-G5)	C-151-155-TDFB(3)-SSC5(9)D(-G5)	C-151-155-TDFB(3)-SSC5(9)E(-G5)
C-153-155-TDFB(3)-SSC5(9)(-G5)	C-153-155-TDFB(3)-SSC5(9)D(-G5)	C-153-155-TDFB(3)-SSC5(9)E(-G5)
C-155-155-TDFB(3)-SSC5(9)(-G5)	C-155-155-TDFB(3)-SSC5(9)D(-G5)	C-155-155-TDFB(3)-SSC5(9)E(-G5)
C-157-155-TDFB(3)-SSC5(9)(-G5)	C-157-155-TDFB(3)-SSC5(9)D(-G5)	C-157-155-TDFB(3)-SSC5(9)E(-G5)
C-159-155-TDFB(3)-SSC5(9)(-G5)	C-159-155-TDFB(3)-SSC5(9)D(-G5)	C-159-155-TDFB(3)-SSC5(9)E(-G5)
C-161-155-TDFB(3)-SSC5(9)(-G5)	C-161-155-TDFB(3)-SSC5(9)D(-G5)	C-161-155-TDFB(3)-SSC5(9)E(-G5)

Part numbering Definition:

C	1XX	155	TDFB(3)	S	SC	TxPower	Temperature and Package	RoHS compliance
• Tx Wavelength=1XX0 nm XX= 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61 • Communication protocol (155 Mbps) • DFB laser Transceiver TDFB3= +3.3V TDFB= +5V • Single mode fiber • Connector options • Power range 5 = -5 to 0 dBm 9 = 0 to +5 dBm • Temperature range and package Blank = commercial temperature(0 to 70 °C), 10.4 mm, Black case D = commercial temperature(0 to 70 °C), 9.8 mm, Black case E = commercial temperature(0 to 70 °C), 9.8 mm, Blue case • Blank = RoHS non-compliant product G5 = RoHS 5/6-compliant product (lead exemption)								

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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