155 Mbps CWDM Laser Single Mode Transceiver

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 sturcture
- 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

20550 Nordhoff St. • Chatsworth, CA 91311 • tel: 818.773.9044 • fax: 818.576.9486
9F, No 81, Shui Lee Rd. • Hsinchu, Taiwan, R.O.C. • tel: 886.3.5169222 • fax: 886.3.5169213

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	λn–5.5	λn	λn+7.5	nm	λn = 1XX0 nm
Side Mode Suppression Ratio	Sr	30	35	-	dB	CW, P_o = 5mW
Output Spectrum Width	Δλ	-	-	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	tr	-	-	2	ns	10% to 90% Values
Optical Fall Time	tf	-	-	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 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	

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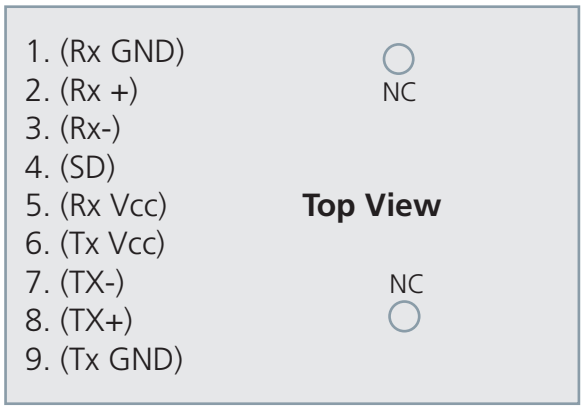
Receiver Specifications

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	Pa	-	-	-35	dBm	Measured on transition: low to high, C-1XX-155-TDFB(3)-SSC5
Signal Detect-Asserted	Pa	-	-	-37	dBm	Measured on transition: low to high, C-1XX-155-TDFB(3)-SSC9
Signal Detect-Deasserted	Pd	-47	-	-	dBm	Measured on transition: high to low, C-1XX-155-TDFB(3)-SSC5
Signal Detect-Deasserted	Pd	-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	

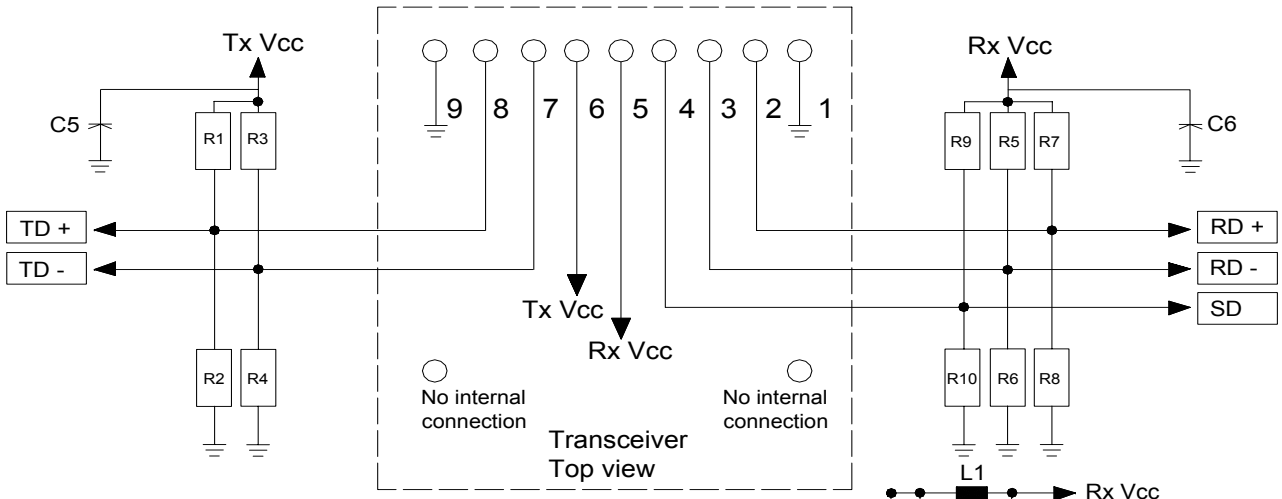
Connection Diagram



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



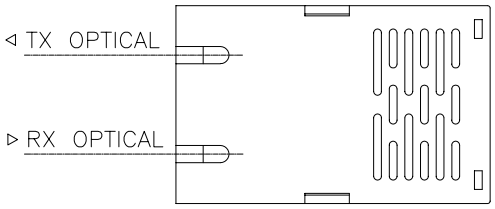
Notes +3.3V:
R1=R3=R5=R7=R9=130Ω
R2=R4=R6=R8=R10=82Ω
C1=C2=C3=C5=C6=0.1 μF
C4=10 μF
L1=L2=1 μH

Notes +5V:
R1=R3=R5=R7=R9=82Ω
R2=R4=R6=R8=R10=130Ω
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.

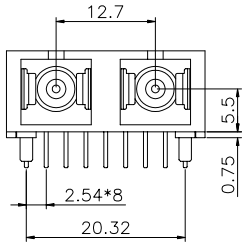
Package Diagram (10.4 mm SC transceiver assembly)

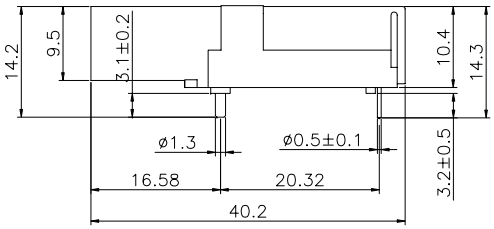
Top View



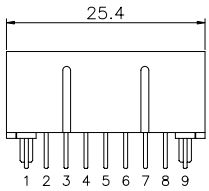
Front View

Units: mm





Side View

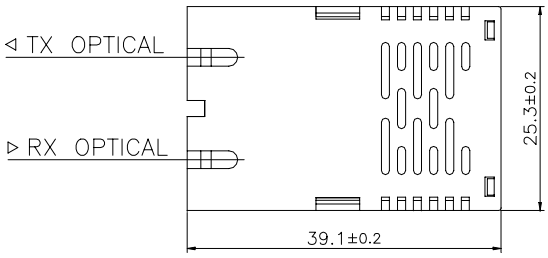


Rear View

Blank: Black case

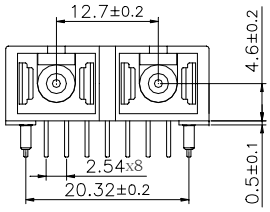
Package Diagram (9.8 mm SC transceiver assembly)

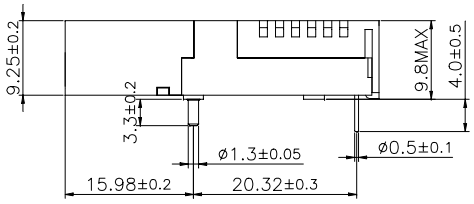
Top View



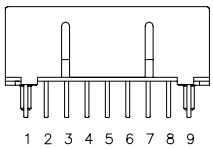
Front View

Units: mm





Side View



Rear View

D: Black case
E: Blue case

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.

Legal Notes:

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