



Features

- SC Duplex Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Complies with IEEE 802.3 Gigabit Ethernet
- Single +3.3V/5V Power Supply
- Operating Temperature Range 0 to 70°C
- PECL Differential Inputs and Outputs
- PECL Signal Detection Output
[C-1xx-1250-TDFB(3)-SSC2(3/4)]
- TTL Signal Detection Output
[C-1xx-1250C-TDFB(3)-SSC2(3/4)]
- Wave Solderable and Aqueous Washable
- Uncooled Laser Diode with MQW Structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- 1.25 Gbps Application
- CWDM Application
- RoHS Compliance Available

Table 1 – Absolute Maximum Rating

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Voltage	Vcc	0	-	6	V	
Power Supply Voltage	Vcc	0	-	3.6	V	
Output Current	I _{out}	-	-	30	mA	
Soldering Temperature	-	-	-	260	°C	1
Storage Temperature	T _{stg}	-40	-	85	°C	

Note 1: 10 seconds on leads only

Table 2 – Recommended Operating Condition

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Voltage	Vcc	4.75	5	5.25	V	
Power Supply Voltage	Vcc	3.1	3.3	3.5	V	
Operating Temperature (Case)	T _{opr}	0	-	70	°C	2
Data Rate	DR	-	1250	-	Mbps	

Note 2: Please refer to ordering information

Table 3 – Transmitter Specifications (Optical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Optical Transmit Power	P_o	-5	-	0	dBm	3
Optical Transmit Power	P_o	-3	-	+2	dBm	4
Optical Transmit Power	P_o	0	-	+5	dBm	5
Output Center Wavelength	λ	$\lambda - 5.5$	λ	$\lambda + 7.5$	nm	6
Side Mode Suppression Ratio	Sr	30	35	-	dB	7
Output Spectrum Width	$\Delta \lambda$	-	-	1	nm	8
Extinction Ratio	ER	9	-	-	dB	
Output Eye		Compliant with IEEE 802.3				
Optical Rise/Fall Time	t_r / t_f	-	-	0.26	ns	9
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	T_J	-	-	0.27	ns	10

Note 3: Output Power is coupled into a 9/125 μ m single mode fiber C-1xx-1250(C)-TDFB(3)-SSC2

Note 4: Output Power is coupled into a 9/125 μ m single mode fiber C-1xx-1250(C)-TDFB(3)-SSC3

Note 5: Output Power is coupled into a 9/125 μ m single mode fiber C-1xx-1250(C)-TDFB(3)-SSC4

Note 6: $\lambda = 1xxx$ nm

Note 7: CW, $P_o = 5$ mW

Note 8: -20 dB width

Note 9: 20% to 80% Values

Note 10: Measured with $2^7 - 1$ PRBS

Table 4 – Transmitter Specifications (Electrical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Current	I_{CC}	-	-	260	mA	11
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	12
Data Input Voltage-High	$V_{IH} - V_{CC}$	-1.1	-	-0.74	V	

Note 11: Maximum current is specified at $V_{CC} = \text{Maximum}$ @ maximum temperature

Note 12: These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs

Table 5 – Receiver Specifications (Optical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Sensitivity	-	-	-	-24	dBm	13
Maximum Input Power	P_{in}	-3	-	-	dBm	
Signal Detect-Asserted	P_a	-	-	-24	dBm	14
Signal Detect-Deasserted	P_d	-38	-	-	dBm	15
Signal Detect-Hysteresis	-	1	-	-	dB	
Wavelength of Operation		1100	-	1620	nm	

Note 13: Measured with 2^7-1 PRBS, 10^{-12} BER.

Note 14: Measured on transition: low to high.

Note 15: Measured on transition: high to low.

Table 6 – Receiver Specifications (Electrical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Current	I_{CC}	-	-	100	mA	16
Data Output Voltage-Low	$V_{OL}-V_{CC}$	-2	-	-1.58	V	17
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	18
Signal Detect Output Voltage-High	$V_{SDH}-V_{CC}$	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V_{SDL}	-	-	0.5	V	19
Signal Detect Output Voltage-High	V_{SDH}	2.0	-	-	V	

Note 16: The current excludes the output load current

Note 17: These outputs are compatible with 10K, 10KH and 100K ECL and LVPECL outputs.

Note 18: C-1xx-1250-TDFB(3)-SSC2(3/4).

Note 19: C-1xx-1250C-TDFB(3)-SSC2(3/4).

Connection Diagram

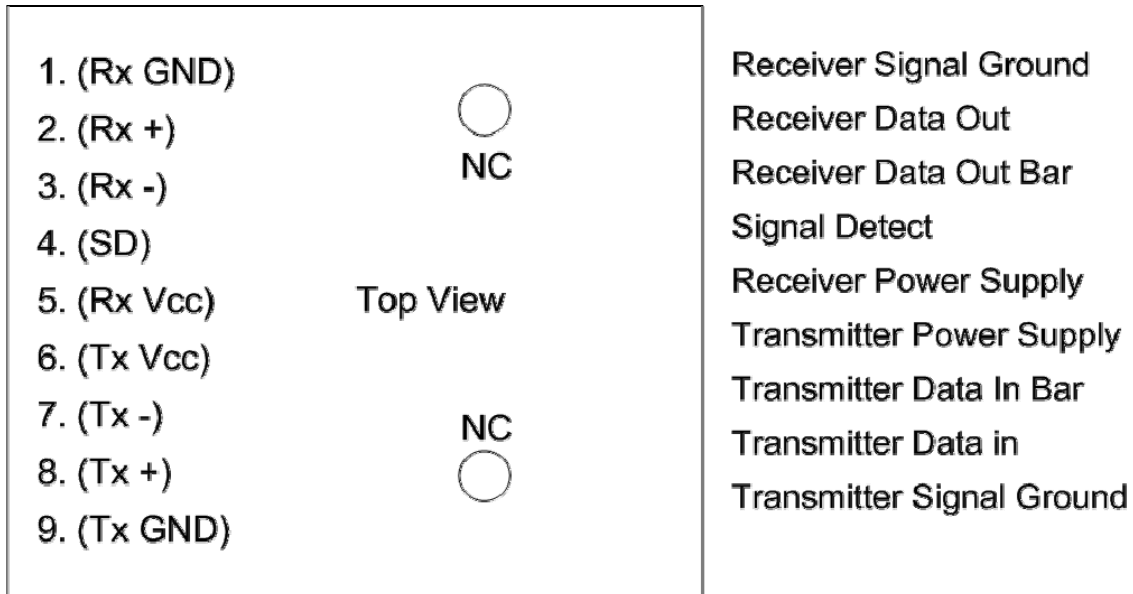
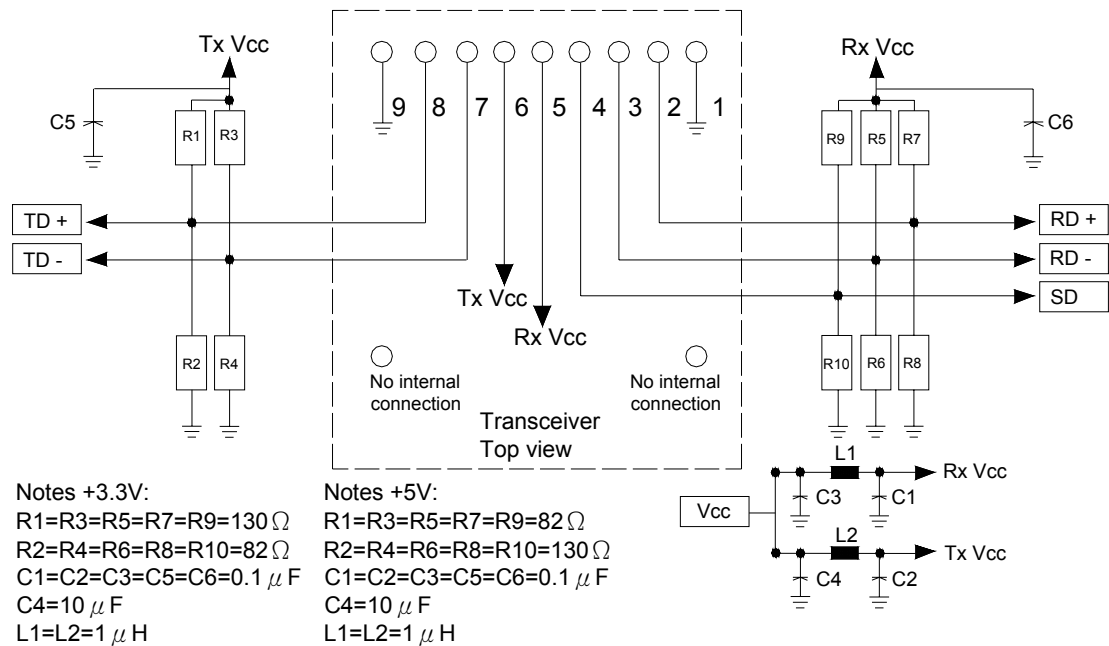


Table 7 – Pin Definitions

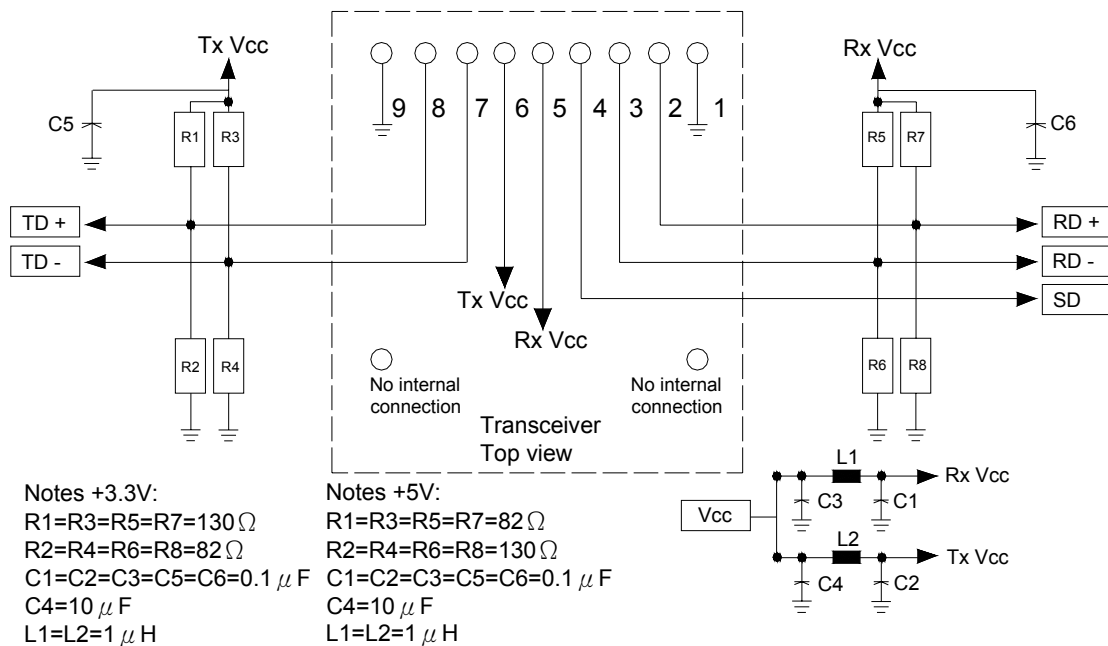
Pin	Unit	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical section
5	RxV _{CC}	DC power for the receiver section
6	TxV _{CC}	DC power for the transmitter 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-1xx-1250-TDFB(3)-SSC2(3/4)



C-1xx-1250C-TDFB(3)-SSC2(3/4)



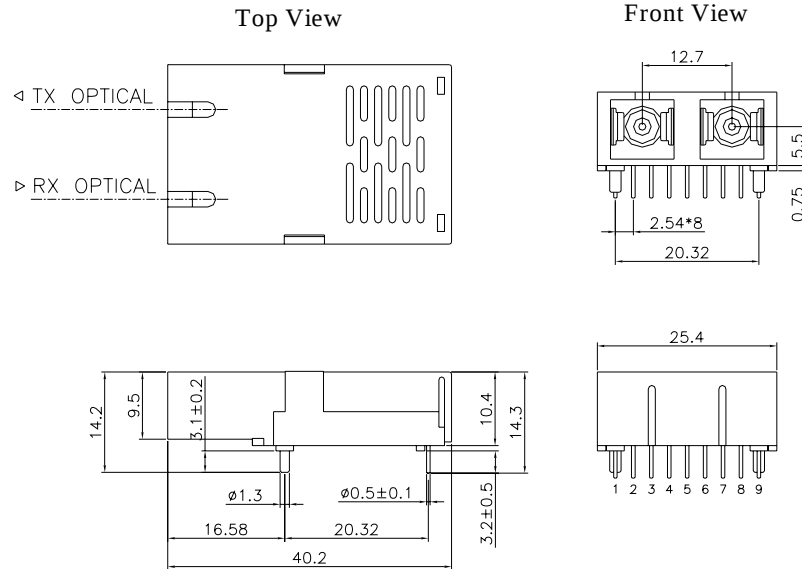
The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc. / Tx Vcc.

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

Package Diagram (10.4 mm SC transceiver assembly)

C-1xx-1250(C)-TDFB(3)-SSC2(3/4)

Units: mm

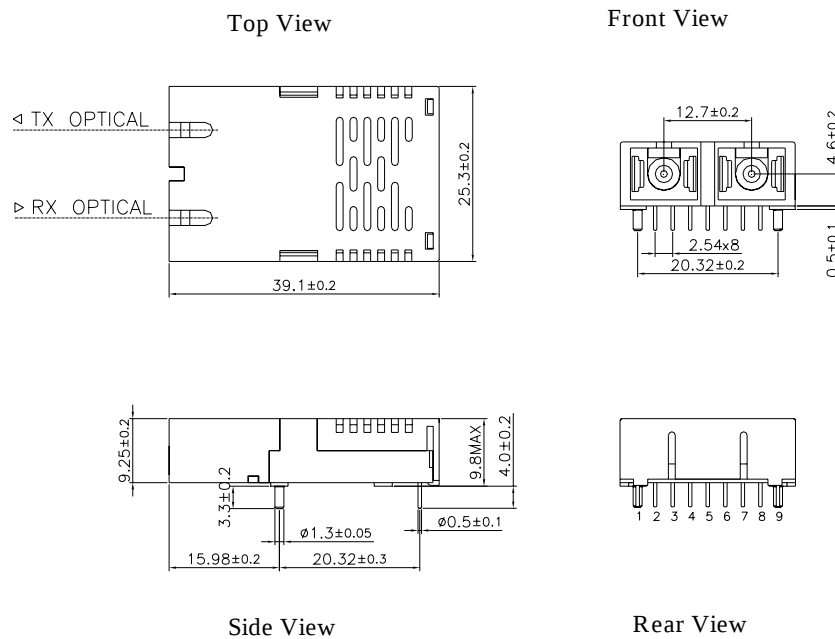


Blank: Black case

Package Diagram (9.8 mm SC transceiver assembly)

C-1xx-1250(C)-TDFB(3)-SSC2(3/4)E

Units: mm



E: Blue case

Order Information

Table 8 – Order Information

Part No.	Part No.	Part No.
C-127-1250(C)-TDFB(3)-SSC2(E)(G5)	C-127-1250(C)-TDFB(3)-SSC3(E)(G5)	C-127-1250(C)-TDFB(3)-SSC4(E)(G5)
C-129-1250(C)-TDFB(3)-SSC2(E)(G5)	C-129-1250(C)-TDFB(3)-SSC3(E)(G5)	C-129-1250(C)-TDFB(3)-SSC4(E)(G5)
C-131-1250(C)-TDFB(3)-SSC2(E)(G5)	C-131-1250(C)-TDFB(3)-SSC3(E)(G5)	C-131-1250(C)-TDFB(3)-SSC4(E)(G5)
C-133-1250(C)-TDFB(3)-SSC2(E)(G5)	C-133-1250(C)-TDFB(3)-SSC3(E)(G5)	C-133-1250(C)-TDFB(3)-SSC4(E)(G5)
C-135-1250(C)-TDFB(3)-SSC2(E)(G5)	C-135-1250(C)-TDFB(3)-SSC3(E)(G5)	C-135-1250(C)-TDFB(3)-SSC4(E)(G5)
C-137-1250(C)-TDFB(3)-SSC2(E)(G5)	C-137-1250(C)-TDFB(3)-SSC3(E)(G5)	C-137-1250(C)-TDFB(3)-SSC4(E)(G5)
C-139-1250(C)-TDFB(3)-SSC2(E)(G5)	C-139-1250(C)-TDFB(3)-SSC3(E)(G5)	C-139-1250(C)-TDFB(3)-SSC4(E)(G5)
C-141-1250(C)-TDFB(3)-SSC2(E)(G5)	C-141-1250(C)-TDFB(3)-SSC3(E)(G5)	C-141-1250(C)-TDFB(3)-SSC4(E)(G5)
C-143-1250(C)-TDFB(3)-SSC2(E)(G5)	C-143-1250(C)-TDFB(3)-SSC3(E)(G5)	C-143-1250(C)-TDFB(3)-SSC4(E)(G5)
C-145-1250(C)-TDFB(3)-SSC2(E)(G5)	C-145-1250(C)-TDFB(3)-SSC3(E)(G5)	C-145-1250(C)-TDFB(3)-SSC4(E)(G5)
C-147-1250(C)-TDFB(3)-SSC2(E)(G5)	C-147-1250(C)-TDFB(3)-SSC3(E)(G5)	C-147-1250(C)-TDFB(3)-SSC4(E)(G5)
C-149-1250(C)-TDFB(3)-SSC2(E)(G5)	C-149-1250(C)-TDFB(3)-SSC3(E)(G5)	C-149-1250(C)-TDFB(3)-SSC4(E)(G5)
C-151-1250(C)-TDFB(3)-SSC2(E)(G5)	C-151-1250(C)-TDFB(3)-SSC3(E)(G5)	C-151-1250(C)-TDFB(3)-SSC4(E)(G5)
C-153-1250(C)-TDFB(3)-SSC2(E)(G5)	C-153-1250(C)-TDFB(3)-SSC3(E)(G5)	C-153-1250(C)-TDFB(3)-SSC4(E)(G5)
C-155-1250(C)-TDFB(3)-SSC2(E)(G5)	C-155-1250(C)-TDFB(3)-SSC3(E)(G5)	C-155-1250(C)-TDFB(3)-SSC4(E)(G5)
C-157-1250(C)-TDFB(3)-SSC2(E)(G5)	C-157-1250(C)-TDFB(3)-SSC3(E)(G5)	C-157-1250(C)-TDFB(3)-SSC4(E)(G5)
C-159-1250(C)-TDFB(3)-SSC2(E)(G5)	C-159-1250(C)-TDFB(3)-SSC3(E)(G5)	C-159-1250(C)-TDFB(3)-SSC4(E)(G5)
C-161-1250(C)-TDFB(3)-SSC2(E)(G5)	C-161-1250(C)-TDFB(3)-SSC3(E)(G5)	C-161-1250(C)-TDFB(3)-SSC4(E)(G5)

Part Numbering Definition:

C	1xx	1250(C)	TDFB(3)	S	SC	TxPower	Temperature and Package	-RoHS
● Wavelength: _____ 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 (1.25Gbps) 1250 = PECL Signal Detection Output 1250C = TTL Signal Detection Output ● DFB Laser Transceiver _____ TDFB = +5V Transceiver, DFB TDFB3= +3.3V Transceiver, DFB ● Single Mode Fiber _____ ● Connector Options _____ ● Tx Power Range _____ 2 = -5 to 0 dBm 3 = -3 to +2 dBm 4 = 0 to +5 dBm ● Temperature Range and Package _____ Blank = Commercial Temperature(0 to 70 °C), 10.4 mm, Black case E = Commercial Temperature(0 to 70 °C), 9.8 mm, Blue case ● RoHS _____ 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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