1.25 Gbps Single Mode Transceiver

C-1x-1250(C)-T(DFB)3-SSCx

Features

- SC Duplex Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Complies with IEEE 802.3 Gigabit Ethernet
- Single +3.3V Power Supply
- OperatingTemperature Range: 0 to 70°C
- LVPECL Differential Inputs and Outputs
- LVPECL Signal Detection Output (C-1x-1250-Tx3-SSCx)
- LVTTL Signal Detection Output (C-1x-1250C-Tx3-SSCx)
- Wave Solderable and Aqueous Washable
- Uncooled laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Gigabit Ethernet Application

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
Operating temerature	T_{opr}	0	70	°C	
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
Operating Temperature	T_{opr}	0	-	70	°C
Data Rate	-	-	1250	-	Mbps

Transmitter Specifications, (0°C<Topr<70°C, 3.1V < V_{CC} < 3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-9.5	-	-3	dBm	C-13-1250(C)-T3-SSC
Optical Transmit Power	P_o	-5	-	0	dBm	C-1x-1250(C)-Tx3-SSC2
Output center Wavelength	λ_p	1270	1310	1355	nm	C-13-1250(C)-T3-SSC
Output center Wavelength	λ_p	1275	1310	1350	nm	C-13-1250(C)-T3-SSC2
Output center Wavelength	λ_p	1280	1310	1340	nm	C-13-1250(C)-TDFB3-SSC2
Output center Wavelength	λ_p	1520	1550	1580	nm	C-15-1250C-TDFB3-SSC2
Output Spectrum Width	$\Delta\lambda_{rms}$	-	-	4t	nm	RMS(σ), C-13-1250(C)-T3-SSC
Output Spectrum Width	$\Delta\lambda_{rms}$	-	-	2.5	nm	RMS(σ), C-13-1250(C)-T3-SSC2
Output Spectrum Width	$\Delta\lambda_{rms}$	-	-	1	nm	-20 dB width, C-1x-1250(C)-TDFB3-SSC2
Side Mode Suppression Ratio	Sr	30	35	-	dB	CW
Extinction Ratio	ER	9	-	-	dB	
Output Eye		Compliant with IEEE 802.3				
Optical Rise Time	t_r	-	-	0.26	ns	20% to 80% Values
Optical Fall Time	t_f	-	-	0.26	ns	20% to 80% Values
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	TJ	-	-	0.27	ns	Measured with 2^7-1 PRBS with 72 ones and 72 zeros.

Transmitter Specifications, (0°C<Topr<70°C, 3.1V < V_{CC} < 3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I_{CC}	-	-	180	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	

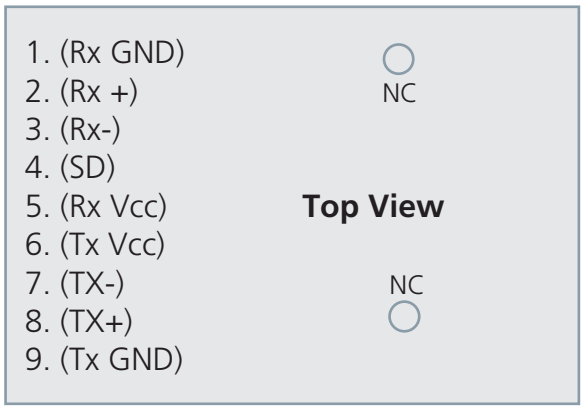
Receiver Specifications, (0°C<Topr<70°C, 3.1V < V_{CC} < 3.5V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-20	dBm	C-13-1250(C)-T3-SSC(2), Measured with 2^7-1 PRBS,BER= 10^{-12}
Sensitivity	-	-	-	-22	dBm	C-1x-1250(C)-TDFB3-SSC2, Measured with 2^7-1 PRBS,BER= 10^{-12}
Maximum Input Power	P_{in}	-	-	-3	dBm	C-13-1250(C)-T3-SSC
Maximum Input Power	P_{in}	-	-	0	dBm	C-1x-1250(C)-Tx3-SSC2
Signal Detect-Asserted	Pa	-	-	-22	dBm	Measured on transition: low to high
Signal Detect-Deasserted	Pd	-38	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1	-	-	dB	
Wavelength of Operation		1100	-	1600	nm	

Receiver Specifications, (0°C<Topr<70°C, 3.1V < V_{CC} < 3.5V)

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	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs
Data Output Voltage-High	V_{OH}- V_{cc}	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V_{SDL}-V_{cc}	-	-	0.5	V	C-1x-1250C-Tx3-SSCx
Signal Detect Output Voltage-High	V_{SDH}- V_{cc}	2.0	-	-	V	
Signal Detect Output Voltage-Low	V_{SDL}-V_{cc}	-2.0	-	-1.58	V	C-1x-1250-Tx3-SSCx
Signal Detect Output Voltage-High	V_{SDH}- V_{cc}	-1.1	-	-0.74	V	

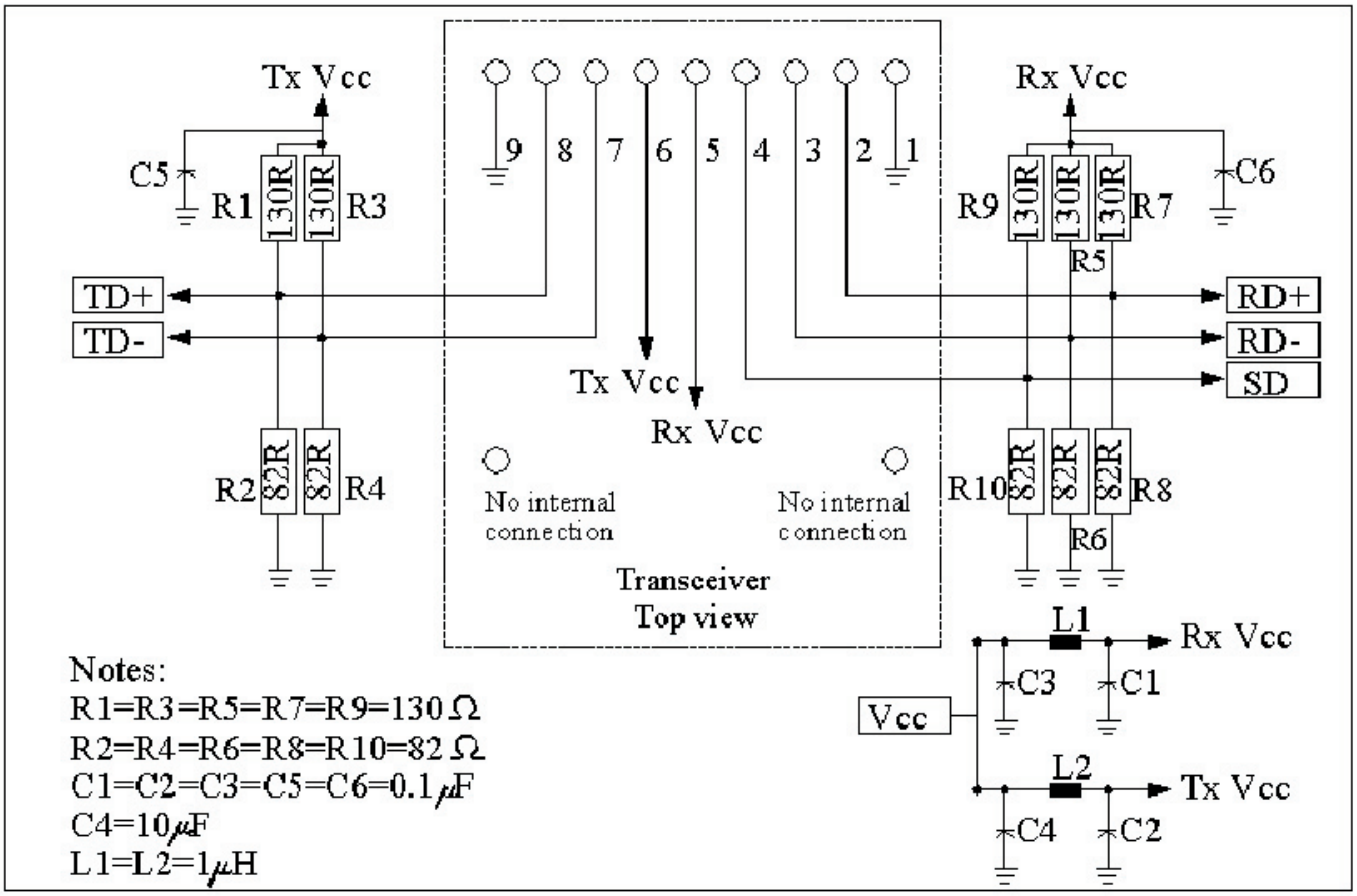
Connection Diagram



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

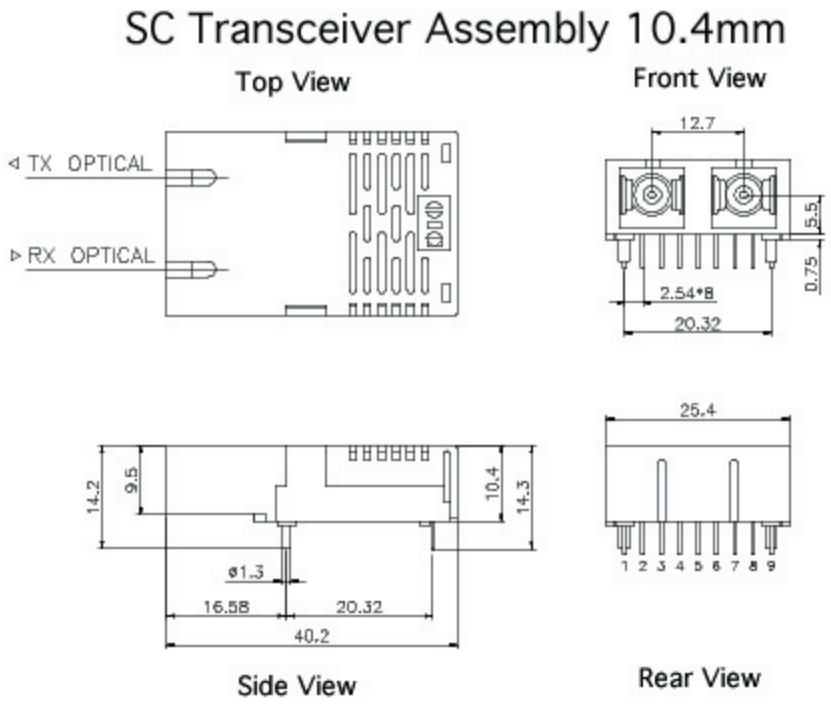
PIN	Symbol	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	RxVcc	+3.3V dc power for the receiver section
6	TxVcc	+3.3V dc power for the transmitter section
7	TD-	See recommended circuit schematic
8	TD+	See recommended circuit schematic
9	TxGND	Directly connect this pin to the transmitter ground plane

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.
For SD LVTTL output, C-13-1250C-Tx3-SSCx, R9 and R10 open.

Package Diagram



Ordering Information

C - 1x -1250(C) - Tx3 - S SC x

- Wavelength
  13= 1310 nm
  15= 1550 nm
- Communication protocol (1250 Mbps)
  Blank = LVPECL Signal Detection Output
  C = LVTTL Signal Detection Output
- 3.3V Transceiver
  T3 = +3.3V, FP
  TDFB3 = +3.3V, DFB
- Single mode fiber
- Connector options
- Reach
  Blank = -9.5 to -3dB output power
  2 = -5 to 0 dB output power

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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