

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



### Features

- SC Duplex Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Complies with IEEE 802.3 Gigabit Ethernet
- Single +5V Power Supply
- Operating Temperature Range: 0 to 70°C
- LVPECL Differential Inputs and Outputs
- LVPECL Signal Detection Output (C-1x-1250-Tx-SSCx)
- LVTTTL Signal Detection Output (C-1x-1250C-Tx-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	6	V	
Output Current	$I_{out}$	0	30	mA	
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Operating Temperature	$T_{opr}$	0	70	°C	
Storage Temperature	$T_{stg}$	-40	85	°C	

### Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	$V_{CC}$	4.75	5	5.25	V
Operating Temperature	$T_{opr}$	0	-	70	°C
Data Rate	-	-	1250	-	Mbps

### Transmitter Specifications, (0°C < $T_{opr}$ < 70°C, 4.75V < $V_{CC}$ < 5.25V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Optical</b>						
Optical Transmit Power	$P_o$	-9.5	-	-3	dBm	C-13-1250(C)-T-SSC
Optical Transmit Power	$P_o$	-5	-	0	dBm	C-1x-1250(C)-Tx-SSC2
Output center Wavelength	$\lambda_p$	1270	1310	1355	nm	C-13-1250(C)-T-SSC
Output center Wavelength	$\lambda_p$	1275	1310	1350	nm	C-13-1250(C)-T-SSC2
Output center Wavelength	$\lambda_p$	1280	1310	1340	nm	C-13-1250(C)-TDFB-SSC2
Output center Wavelength	$\lambda_p$	1520	1550	1580	nm	C-15-1250C-TDFB-SSC2
Output Spectrum Width	$\Delta\lambda_{rms}$	-	-	4	nm	RMS( $\sigma$ ), C-13-1250(C)-T-SSC
Output Spectrum Width	$\Delta\lambda_{rms}$	-	-	2.5	nm	RMS( $\sigma$ ), C-13-1250(C)-T-SSC2
Output Spectrum Width	$\Delta\lambda$	-	-	1	nm	20 dB width, C-1x-1250(C)-TDFB-SSC2
Side Mode Suppression Ratio	$S_r$	30	35	-	dB	CW, $P_o = 5\text{mw}$
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 27-1 PRBS with 72 ones and 72 zeros.

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**Transmitter Specifications, (0°C<T<sub>opr</sub><70°C, 4.75V < V<sub>CC</sub> < 5.25V)**

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Electrical</b>						
Power Supply Current	I <sub>CC</sub>	-	-	180	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>	-2.0	-	-1.58	V	These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs
Data Input Voltage-High	V <sub>IH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	

**Receiver Specifications, (0°C<T<sub>opr</sub><70°C, 4.75V < V<sub>CC</sub> < 5.25V)**

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Optical</b>						
Sensitivity	-	-	-	-20	dBm	C-13-1250(C)-T-SSC(2), Measured with 27-1 PRBS, BER= 10 <sup>-12</sup>
Sensitivity	-	-	-	-22	dBm	C-1x-1250(C)-TDFB-SSC2, Measured with 27-1 PRBS, BER= 10 <sup>-12</sup>
Maximum Input Power	P <sub>in</sub>	-	-	-3	dBm	
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<T<sub>opr</sub><70°C, 4.75V < V<sub>CC</sub> < 5.25V)**

Parameter	Symbol	Min	Typical	Max	Unit	Note
<b>Electrical</b>						
Power Supply Current	I <sub>CC</sub>	-	-	100	mA	The current excludes the output load current
Data output Voltage-Low	V <sub>OL</sub> -V <sub>CC</sub>	-2.0	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs
Data output Voltage-High	V <sub>OH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V <sub>SDL</sub>	-	-	0.5	V	C-1x-1250C-Tx-SSCx
Signal Detect Output Voltage-High	V <sub>SDH</sub>	2.0	-	-	V	
Signal Detect Output Voltage-Low	V <sub>SDL</sub> -V <sub>CC</sub>	-2.0	-	-1.58	V	C-1x-1250-Tx-SSCx
Signal Detect Output Voltage-High	V <sub>SDH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	

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

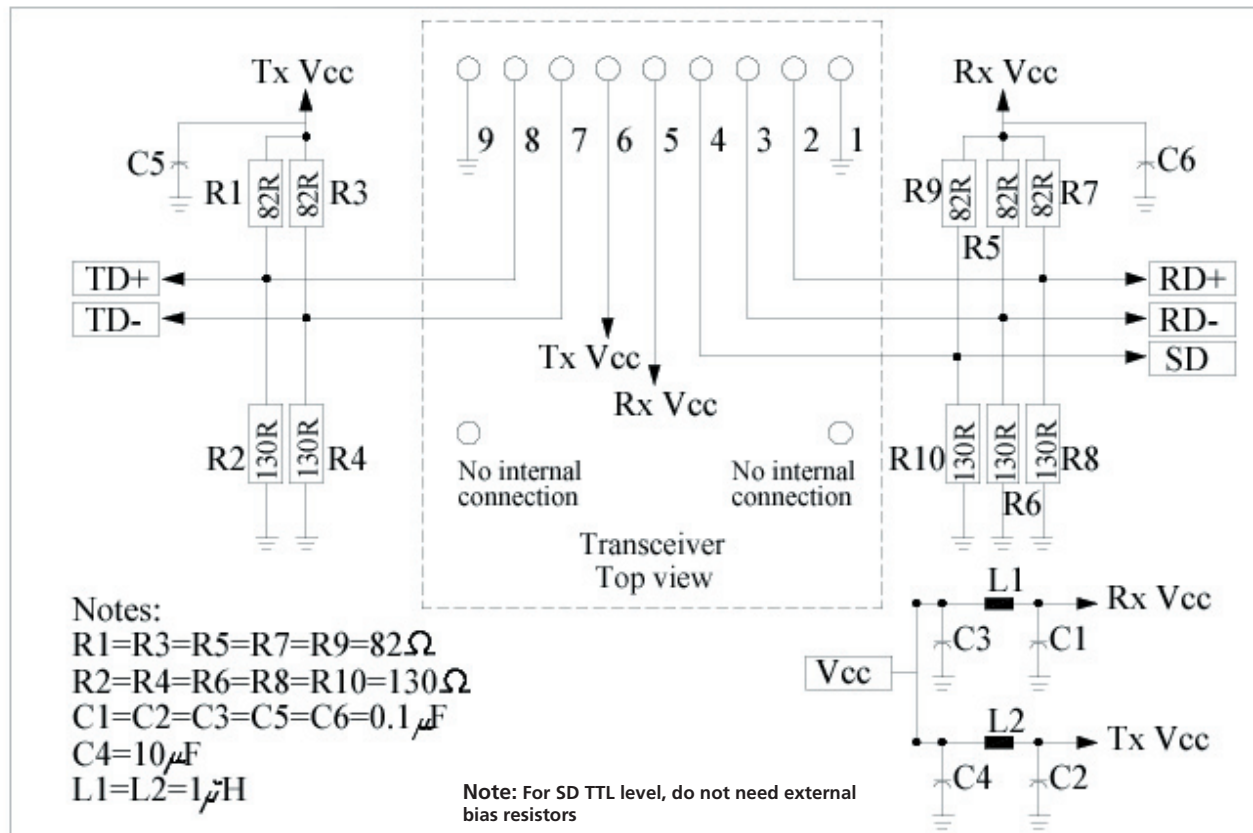
### Connection Diagram



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	+5V dc power for the receiver section
6	TxVcc	+5V 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

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

### Recommended Circuit Schematic

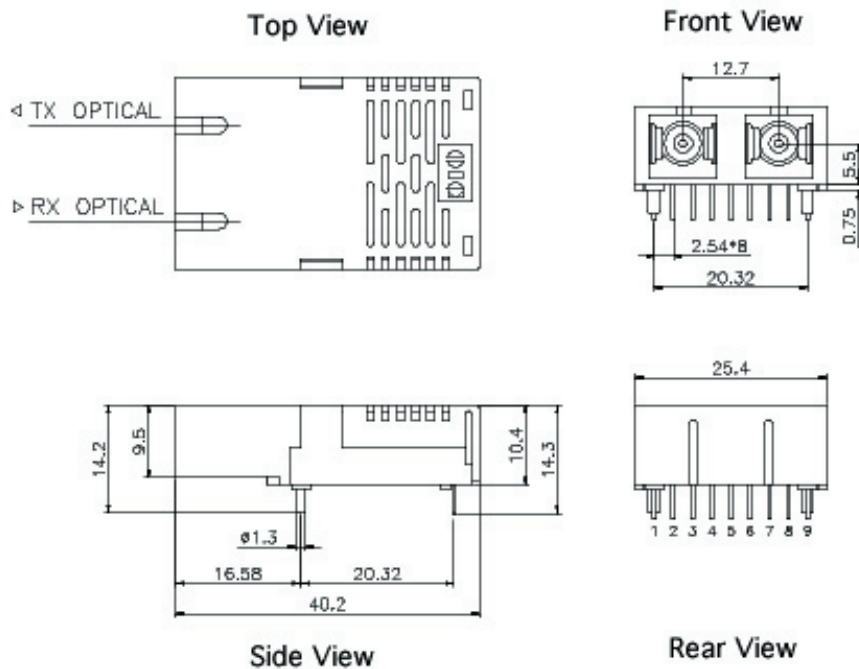


The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals.  
 The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc.  
 A GND plane under the module is required for good EMI and sensitivity performance.  
 For SD TTL output, C-1x-1250C-Tx-SSCx, R9 and R10 open.

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

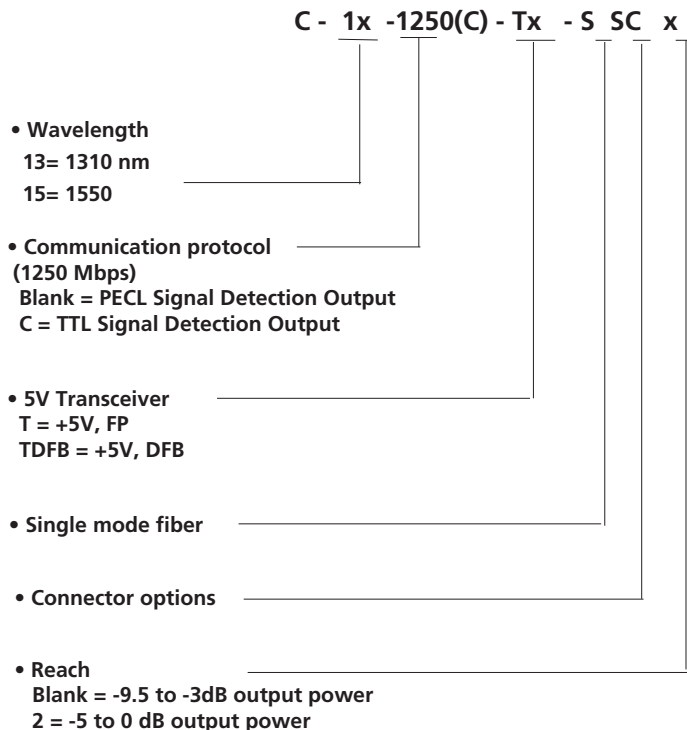
## Package Diagram

### SC Transceiver Assembly 10.4mm



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

### Ordering Information



### 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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