

C-1xx-1250(C)-TDFB3-SSC2



Features

- SC Duplex Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Complies with IEEE 802.3z Gigabit Ethernet
- Single +3.3V Power Supply
- Operating temperature Range 0 to 70°C
- LVPECL Differential Inputs and Outputs
- LVPECL Signal Detection Output (C-1xx-1250-TDFB3-SSC2)
- LVTTTL Signal Detection Output (C-1xx-1250C-TDFB3-SSC2)
- Wave solderable and Aqueous Washable
- Uncooled laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- 1.25 Gbps application
- CWDM 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 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}	3.1	3.3	3.5	V
Operating Temperature	T_{opr}	0	-	70	°C
Data Rate	-	-	1250	-	Mbps

Transmitter Specifications, (0°C < T_{opr} < 70°C, 3.1V < V_{CC} < 3.3V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-5	-	0	dBm	Output Power is coupled into a 9/125 μ m single mode fiber
Output center Wavelength	λ	$\lambda - 5.5$	λ	$\lambda + 7.5$	nm	$\lambda = 1xxx$ nm
Output Spectrum Width	$\Delta\lambda$	-	-	1	nm	-20 dB width
Side Mode Suppression Ratio	Sr	30	35	-	dB	CW, $P_o = 5$ mW
Extinction Ratio	ER	9	-	-	dB	
Output Eye		Compliant with IEEE 802.3z				
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.

C-1xx-1250(C)-TDFB3-SSC2

Transmitter Specifications, (0°C<T_{opr}<70°C, 3.1V < V_{CC} < 3.3V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I _{CC}	-	-	260	mA	Maximum current is specified at V _{CC} = 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<T_{opr}<70°C, 3.1V < V_{CC} < 3.3V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-22	dBm	Measured with 2 ⁷ -1 PRBS, BER= 10 ⁻¹²
Maximum Input Power	P _{in}	-	-	-3	dBm	
Signal Detect-Asserted	P _a	-	-	-22	dBm	Measured on transition: low to high
Signal Detect-Deasserted	P _d	-38	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis	P _a -P _d	1	-	-	dB	
Wavelength of Operation		1250	-	1620	nm	

Receiver Specifications, (0°C<T_{opr}<70°C, 3.1V < V_{CC} < 3.3V)

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 LVPECL outputs
Data Output Voltage-High	V _{OH} -V _{CC}	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V _{SDL}	-	-	0.5	V	C-1xx-1250C-TDFB3-SSC2
Signal Detect Output Voltage-High	V _{SDH}	2.0	-	-	V	
Signal Detect Output Voltage-Low	V _{SDL} -V _{CC}	-2.0	-	-1.58	V	C-1xx-1250-TDFB3-SSC2
Signal Detect Output Voltage-High	V _{SDH} -V _{CC}	-1.1	-	-0.74	V	

Connection Diagram

1. (Rx GND)
2. (Rx +)
3. (Rx-)
4. (SD)
5. (Rx Vcc)
6. (Tx Vcc)
7. (TX-)
8. (TX+)
9. (Tx GND)

Top View

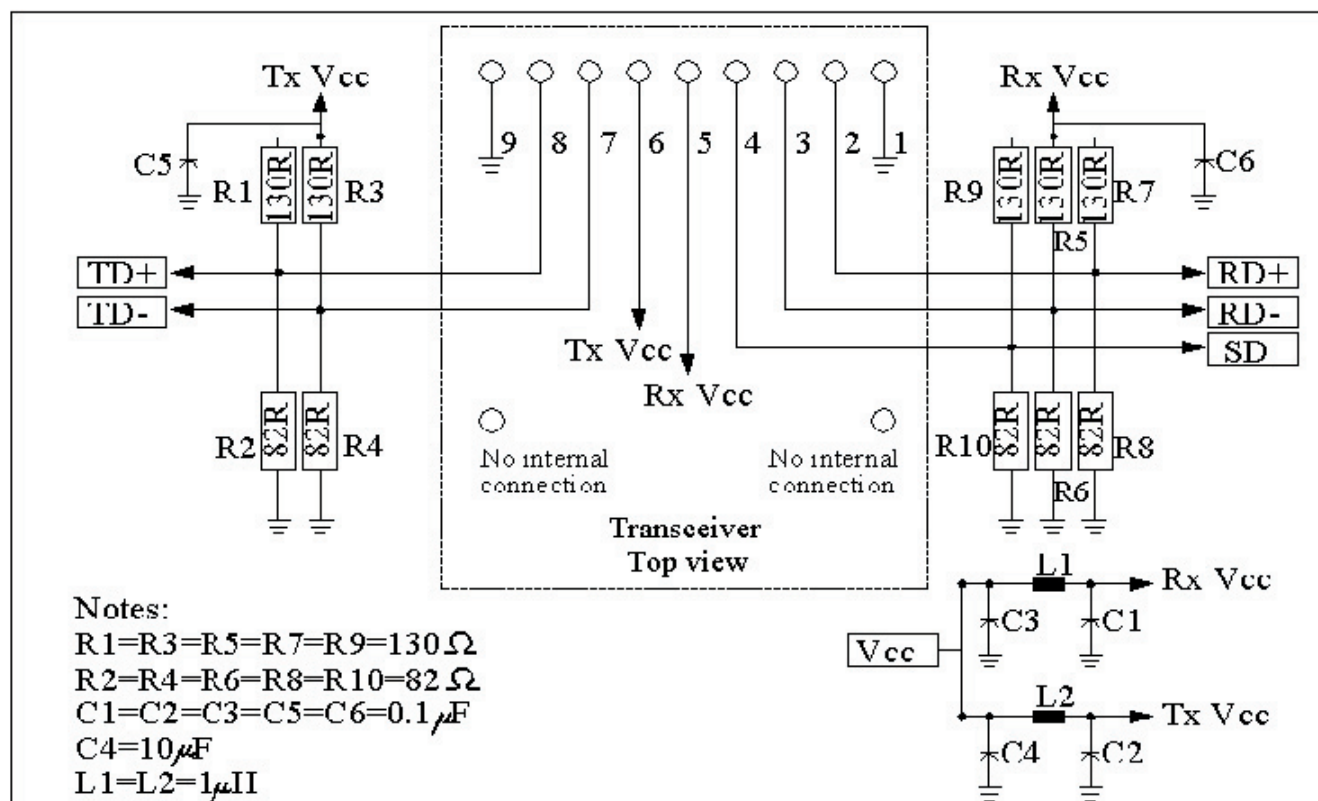
○
NC

NC
○

- 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	+3.3 V 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

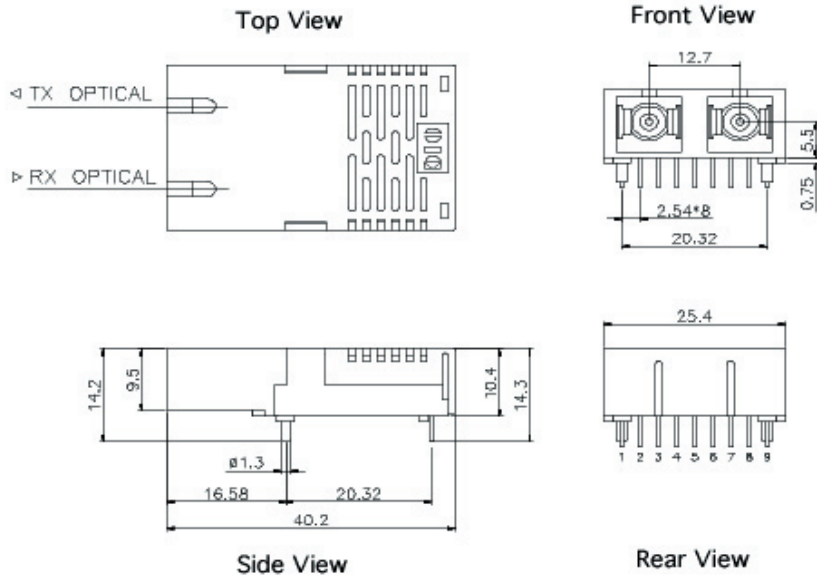
Recommended Circuit Schematic



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.

Package Diagram

SC Transceiver Assembly 10.4mm



Ordering Information

	C -	1xxx	-	1250(C)	-	TDFB3	-	SSC 2
• Wavelength								
127 = 1270 nm								
129 = 1290 nm								
131 = 1310 nm								
133 = 1330 nm								
135 = 1350 nm								
137 = 1370 nm								
139 = 1390 nm								
141 = 1410 nm								
143 = 1430 nm								
145 = 1450 nm								
147 = 1470 nm								
149 = 1490 nm								
151 = 1510 nm								
153 = 1530 nm								
155 = 1550 nm								
157 = 1570 nm								
159 = 1590 nm								
161 = 1610 nm								
• Communication protocol (1250 Mbps)								
• +3.3V DFB Transceiver								
• Connector options								

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 Notice

IMPORTANT NOTICE!

All information contained in this document is subject to change without notice, at Luminent's sole and absolute discretion. Luminent warrants performance of its products to current specifications only in accordance with the company's standard one-year warranty; however, specifications designated as "preliminary" are given to describe components only, and Luminent expressly disclaims any and all warranties for said products, including express, implied, and statutory warranties, warranties of merchantability, fitness for a particular purpose, and non-infringement of proprietary rights. Please refer to the company's Terms and Conditions of Sale for further warranty information.

Luminent assumes no liability for applications assistance, customer product design, software performance, or infringement of patents, services, or intellectual property described herein. No license, either express or implied, is granted under any patent right, copyright, or intellectual property right, and Luminent makes no representations or warranties that the product(s) described herein are free from patent, copyright, or intellectual property rights. Products described in this document are NOT intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. Luminent customers using or selling products for use in such applications do so at their own risk and agree to fully defend and indemnify Luminent for any damages resulting from such use or sale.

THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED ON AN "AS IS" BASIS. Customer agrees that Luminent is not liable for any actual, consequential, exemplary, or other damages arising directly or indirectly from any use of the information contained in this document. Customer must contact Luminent to obtain the latest version of this publication to verify, before placing any order, that the information contained herein is current.

© Luminent, Inc. 2003
All rights reserved