

C-1X-2500(C)-TDFB(3)-SSCX



Features

- SC Duplex Single Mode Transceiver
- Industry Standard 1x9 Footprint
- Complies with SONET OC-48 STM-16
- Single +3.3V / +5V Power Supply
- Operating Temperature Range 0°C ~ +70°C
- CML Differential Data Inputs and Outputs
- PECL/LVPECL Signal Detection Output [C-1X-2500-TDFB(3)-SSCX]
- TTL/LVTTL Signal Detection Output [C-1X-2500C-TDFB(3)-SSCX]
- Wave Solderable and Aqueous Washable
- Uncooled laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE

Applications

- STM 16/ OC-48, 2.5 Gigabit

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	0	3.6	V	C-1X-2500(C)-TDFB3-SSCX
Power Supply Voltage	V_{CC}	0	6	V	C-1X-2500(C)-TDFB-SSCX
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 ¹	V_{CC}	3.1	3.3	3.5	V
Power Supply Voltage ¹	V_{CC}	4.75	5	5.25	V
Operating Temperature (Case)	T_{opr}	0	-	70	°C
Data Rate	-	-	2488.32	-	Mbit/s

Note1: Please refer to ordering information

C-1X-2500(C)-TDFB(3)-SSCX

Transmitter Specifications (Optical)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical Transmit Power	P_o	-5	-	0	dBm	C-1X-2500(C)-TDFB(3)-SSC2
Optical Transmit Power	P_o	0	-	+5	dBm	C-1X-2500(C)-TDFB(3)-SSC4
Output center Wavelength	λ	1280	1310	1355	nm	C-13-2500(C)-TDFB(3)-SSCX
Output center Wavelength	λ	1500	1550	1580	nm	C-15-2500(C)-TDFB(3)-SSCX
Output Spectrum Width	$\Delta\lambda$	-	-	1	nm	-20 dB width
Side Mode Suppression Ratio	SMSR	30	35	-	dB	CW, $P_o=5mW$
Extinction Ratio	ER	8.2	-	-	dB	
Output Eye		Compliant with ITU recommendation G.957				
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	TJ	-	-	0.18	ns	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros

Transmitter Specifications (Electrical)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
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	
Data Input Voltage	$V_{IH}-V_{IL}$	300	-	-	mV	Peak-peak, single ended, AC coupled

Receiver Specifications (Optical)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Sensitivity ²	-	-	-	-20	dBm	
Maximum Input Power	P_{in}	0	-	-	dBm	
Signal Detect-Asserted	P_a	-	-	-20	dBm	Measured on transition: low to high
Signal Detect-Deasserted	P_d	-38	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1	-	-	dB	
Wavelength of Operation		1100	-	1600	nm	
Reflectance				-27	dB	

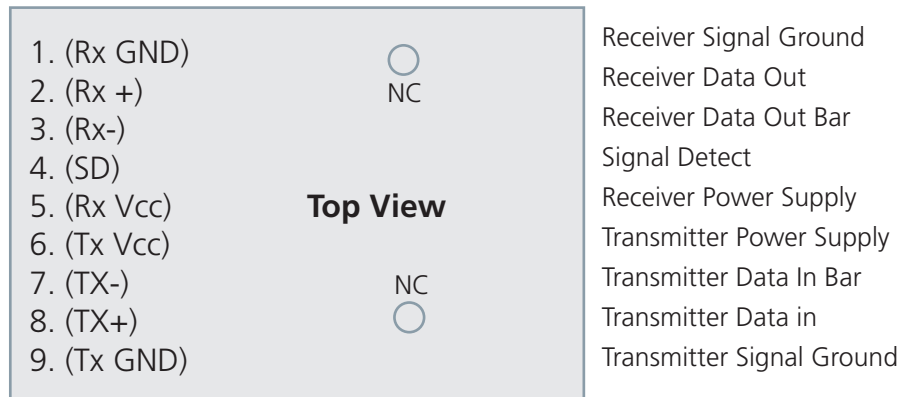
Note 2: Measured with 2²³-1 PRBS, BER= 10⁻¹⁰

Receiver Specifications (Electrical)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Power Supply Current	I_{CC}	-	-	100	mA	The current excludes the output load current
Data output Voltage	$V_{OH}-V_{OL}$	300	-	900	mV	Peak-peak, single-ended, AC-coupled
Signal Detect Output Voltage-Low	V_{SDL}	-	-	0.5	V	C-1X-2500C-TDFB(3)-SSCX
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-1X-2500-TDFB(3)-SSCX
Signal Detect Output Voltage-High	$V_{SDH}-V_{CC}$	-1.1	-	-0.74	V	

C-1X-2500(C)-TDFB(3)-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	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:
 $C1=C2=C5=0.1\ \mu\text{F}$
 $C3=C4=10\ \mu\text{F}$
 $L1=L2=1\ \mu\text{H}$
 $R1=130\ \Omega$
 $R2=82\ \Omega$

Notes +5V:
 $C1=C2=C5=0.1\ \mu\text{F}$
 $C3=C4=10\ \mu\text{F}$
 $L1=L2=1\ \mu\text{H}$
 $R1=82\ \Omega$
 $R2=130\ \Omega$

Notes:

- $C1=C2=0.1 \mu F$
- $C3=C4=10 \mu F$
- $L1=L2=1 \mu H$

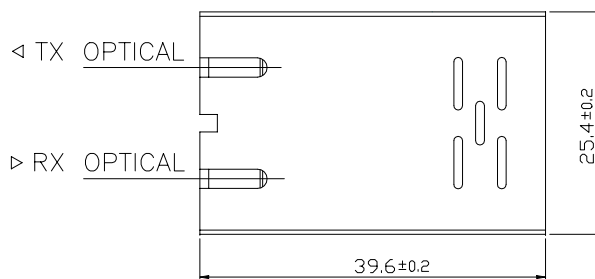
4

Package Diagram

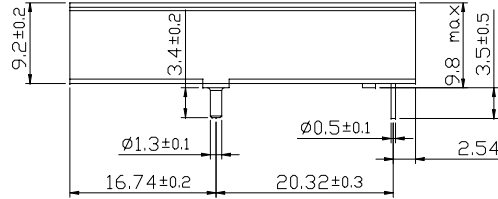
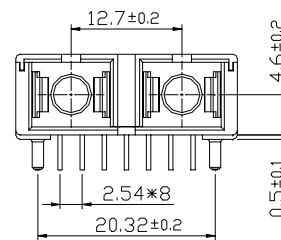
Units in mm

SC Transceiver Assembly 9.8mm

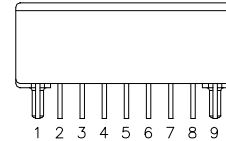
Top View



Front View



Side View



Rear View

C-1X-2500(C)-TDFB(3)-SSCX

Ordering Information

Available Options:

C-13-2500-TDFB-SSC2	C-13-2500-TDFB-SSC4
C-13-2500C-TDFB-SSC2	C-13-2500C-TDFB-SSC4
C-13-2500-TDFB3-SSC2	C-13-2500-TDFB3-SSC4
C-13-2500C-TDFB3-SSC2	C-13-2500C-TDFB3-SSC4
C-15-2500-TDFB-SSC2	C-15-2500-TDFB-SSC4
C-15-2500C-TDFB-SSC2	C-15-2500C-TDFB-SSC4
C-15-2500-TDFB3-SSC2	C-15-2500-TDFB3-SSC4
C-15-2500C-TDFB3-SSC2	C-15-2500C-TDFB3-SSC4

Part numbering Definition:

C - 1X - 2500(C) - TDFB(3) - S SC TxPower

- 13 = Wavelength 1310nm
15 = Wavelength 1550nm
- Communication protocol (2.5 Gbps)
2500 = PECL Signal Detection Output
2500C = TTL Signal Detection Output
- TDFB = +5V Transceiver, DFB
TDFB3= +3.3V Transceiver, DFB
- Single mode fiber
- Connector options
- Tx Power range
2 = -5 to 0 dBm
4 = 0 to +5 dBm

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:

IMPORTANT NOTICE!

All information contained in this document is subject to change without notice, at LuminentOIC's sole and absolute discretion. LuminentOIC 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 LuminentOIC 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.

LuminentOIC 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 LuminentOIC 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. LuminentOIC customers using or selling products for use in such applications do so at their own risk and agree to fully defend and indemnify LuminentOIC 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 LuminentOIC 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 LuminentOIC to obtain the latest version of this publication to verify, before placing any order, that the information contained herein is current.

© LuminentOIC, Inc. 2003
All rights reserved