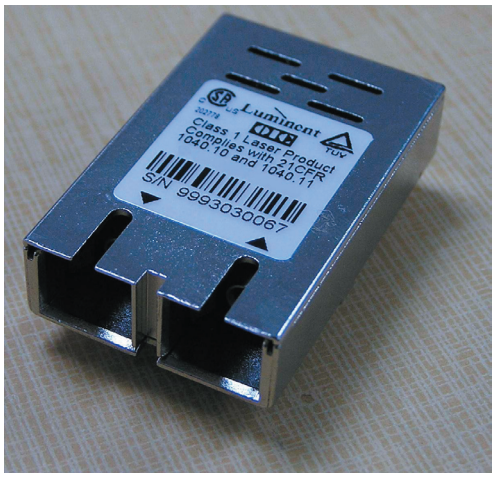
C-1X-2500(C)-TDFB(3)-SSCX



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℃ ~ +70℃
- 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

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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	Δλ	-	-	1	nm	-20 dB width
Side Mode Suppression Ratio	SMSR	30	35	-	dB	CW, Po=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 Vcc= 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	Pa	-	-	-20	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	
Reflectance				-27	dB	

Note 2: Measured with 2^{23}-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	

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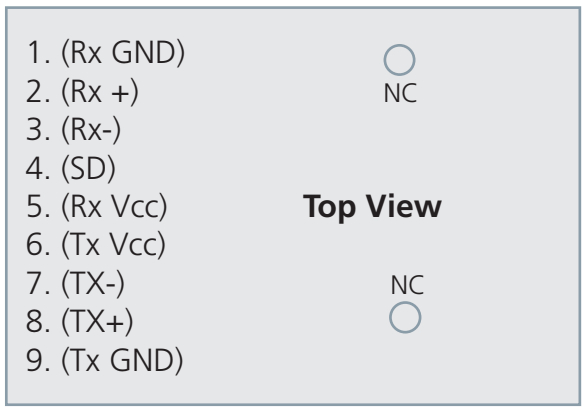
Connection Diagram



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	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

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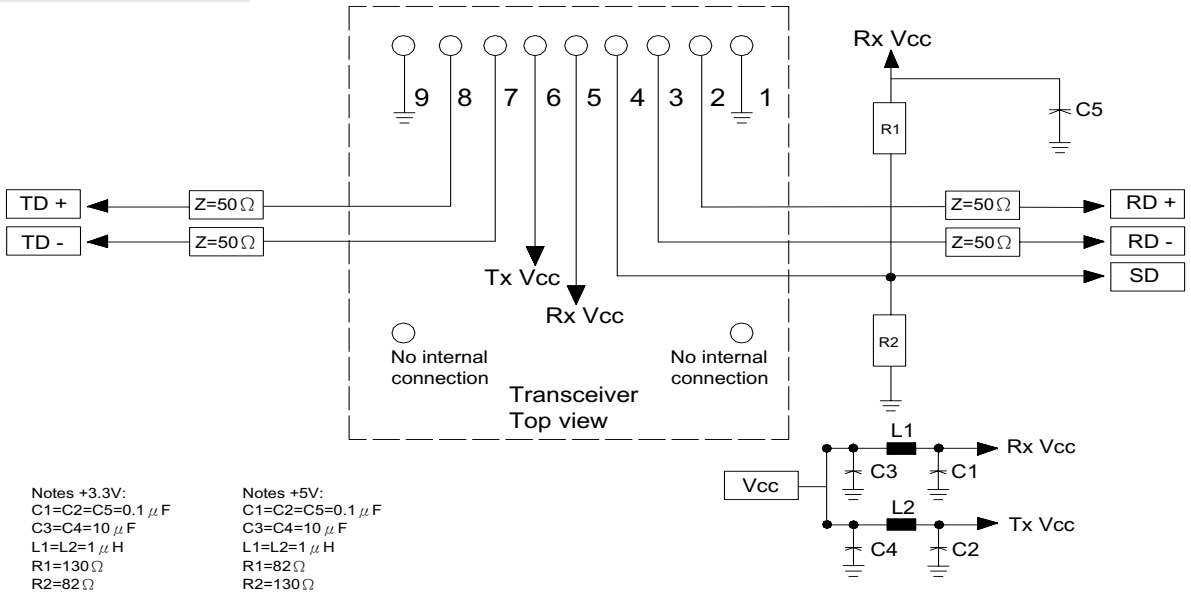
Recommended Circuit Schematic

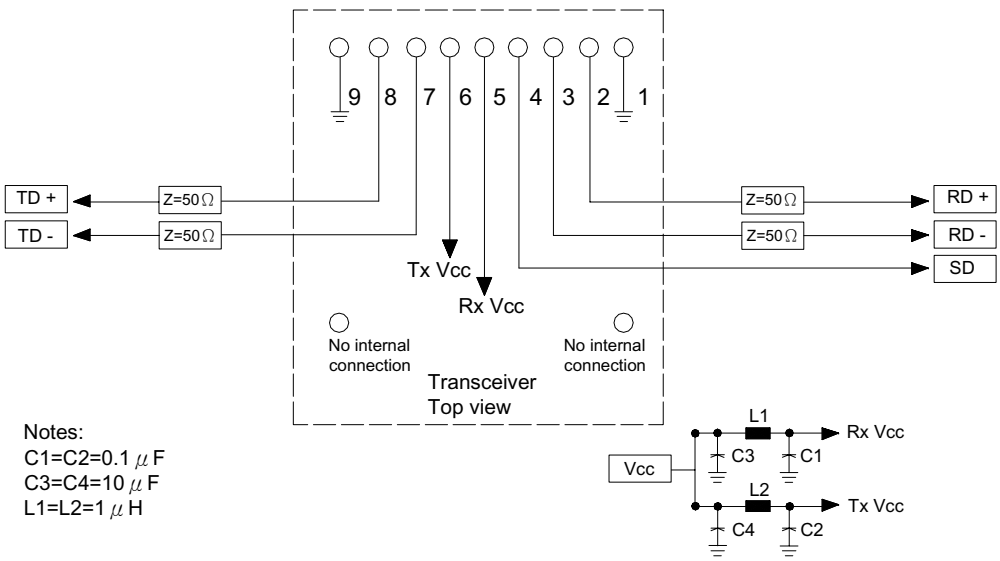
C-1X-2500-TDFB(3)-SSCX



Notes +3.3V:
C1=C2=C5=0.1 μF
C3=C4=10 μF
L1=L2=1 μH
R1=130Ω
R2=82Ω

Notes +5V:
C1=C2=C5=0.1 μF
C3=C4=10 μF
L1=L2=1 μH
R1=82Ω
R2=130Ω

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



Notes:
C1=C2=0.1 μF
C3=C4=10 μF
L1=L2=1 μH

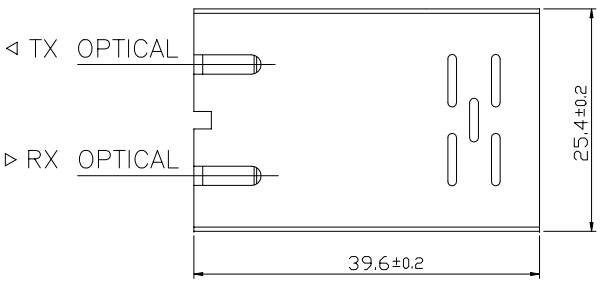
The split-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals.
The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc.
A GND plane under the module is required for good EMI and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

Package Diagram

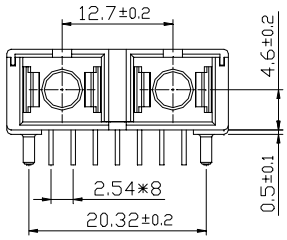
Units in mm

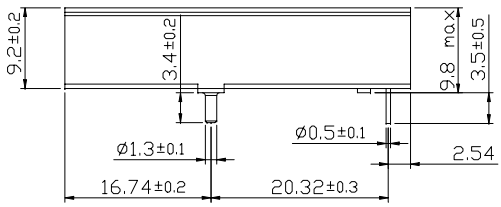
SC Transceiver Assembly 9.8mm

Top View

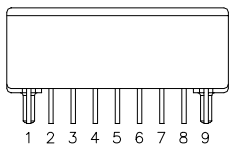


Front View





Side View



Rear View

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 Transceier, 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:

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