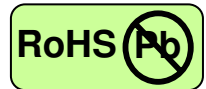


# 2.488 Gbps ATM-Single Mode Transceiver



2x5 SFF, Duplex LC Connector, 1310nm DFB LD for Single Mode Fiber, RoHS Compliant



## Features

- 1310nm DFB LD
- Data Rate: 2.488Gbps, NRZ
- Single +3.3V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Compliant with Multi-Source Agreement (MSA) Small Form Factor (SFF) 2x5 Footprint
- Duplex LC Connector
- Compliance with ATM standard
- Compliance with specifications for IEEE-802.3z Gigabit Ethernet
- Compliance with ANSI specifications for Fibre Channel applications
- Eye Safety  
Designed to meet Laser Class 1 comply with EN60825-1

## Applications

- ATM/SONET/SDH
- Gigabit Ethernet
- Fibre Channel Links

## Description

The CT-2500TSR-NB5L from Coretek Opto Corp. is a high performance and cost-effective module for serial optical data communication applications specified for single mode of 2.488 Gb/s. It operates with +3.3V power supply. The module is intended for single mode fiber, operates at a nominal wavelength of 1310nm and complies with Multi-Source Agreement (MSA) Small Form Factor (SFF) 2x5 footprint. Each module consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. All of them are housed in a plastic package and the combination produces a reliable component.

The module is a duplex LC connector transceiver designed to provide ATM/SONET OC-48/SDH STM-16 compliant link at 2.488 Gb/s, Gigabit Ethernet compliant link at 1.25 Gb/s, Fibre Channel compliant link at 1.062 and 2.125 Gb/s applications. The characteristics are performed in accordance with Telcordia Specification GR-468-CORE.

## EMC

Most equipment utilizing high-speed transceivers will be required to meet the following requirements:

- 1) FCC in the United States
- 2) CENELEC EN55022 (CISPR 22) in Europe

To assist the customer in managing the overall equipment EMC performance, the transceivers have been designed to satisfy FCC class B limits and provide good immunity to radio-frequency electromagnetic fields.

## Eye Safety

The transceivers have been designed to meet Class 1 eye safety and comply with EN 60825-1.

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## Product Information

Model Number	Operating Voltage & SD Output	Distance	LD Type & Wavelength	Output Power	Sensitivity
CT-2500TSR-NB5L	3.3V TTL AC/AC	15 km	1310 nm DFB	-5 ~ 0 dBm	≤-18 dBm

## ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	T <sub>S</sub>	-40	85	°C	
Supply Voltage	V <sub>CC</sub>	0	6	V	
Lead Soldering Temperature/Time	T <sub>SOLD</sub>		260	°C	10 sec on lead
Data Input Voltage	---	0	V <sub>cc</sub>	V	

## OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Ambient Operating Temperature	T <sub>A</sub>	0		70	°C	
Supply Voltage	V <sub>CC</sub>	3.1		3.5	V	
Data Input Voltage Swing	V <sub>ID</sub>	400		1660	mV	

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
<b>Transmitter</b>					
Transmitter Supply Current	I <sub>CCT</sub>		200	mA	
TTL Transmit Disable Input Voltage - Low	V <sub>IL</sub>		0.8	V	
TTL Transmit Disable Input Voltage - High	V <sub>IH</sub>	V <sub>cc</sub> -1.3	V <sub>cc</sub>	V	
<b>Receiver</b>					
Receiver Supply Current	I <sub>CCR</sub>		100	mA	
Receiver Data Output Differential Voltage	V <sub>OD</sub>	0.4	1.3	V	
TTL Signal Detect Output Voltage – Low	V <sub>OL</sub>		0.8	V	
TTL Signal Detect Output Voltage – High	V <sub>OH</sub>	2.0		V	

## TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power	P <sub>o</sub>	-5		0	dBm	1
Extinction Ratio	ER	8.2			dB	
Center Wavelength	λ <sub>c</sub>	1290	1310	1325	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
RIN	RIN			-117	dB/Hz	
Optical Rise time (20%-80%)	t <sub>r</sub>			180	ps	2
Optical Fall time (20%-80%)	t <sub>f</sub>			180	ps	2
Jitter Generation (peak to peak)	TJ			0.1	UI	
Deterministic Jitter		Compliant with ITU recommendation G.957				

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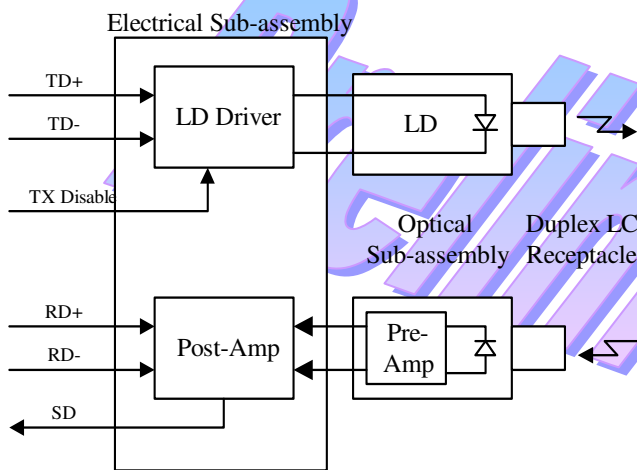
## RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	$P_{max}$	0			dBm	3
Minimum Input Optical Power	$P_{min}$	2.5Gb/s		-18		3
		2.1Gb/s		-20	dBm	4
		1.25Gb/s		-20		4
Operating Wavelength	$\lambda$	1100		1600	nm	
Loss of Signal - Asserted	$P_D$			-18	dBm	5
Loss of Signal - Deasserted	$P_A$	-35			dBm	6
Receiver Reflection	-			-27	dB	

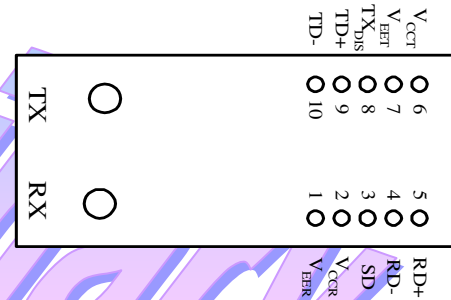
### Notes:

1. Measured average power coupled into 9/125  $\mu$  m single-mode fiber.
2. These are 20-80% values.
3. Measured with  $2^{23}-1$  PRBS at BER< $10^{-10}$
4. Measured with  $2^7-1$  PRBS at BER< $10^{-12}$
5. Measured on transition – low to high
6. Measured on transition – high to low

## BLOCK DIAGRAM OF TRANSCEIVER



## PIN OUT DIAGRAM OF TRANSCEIVER



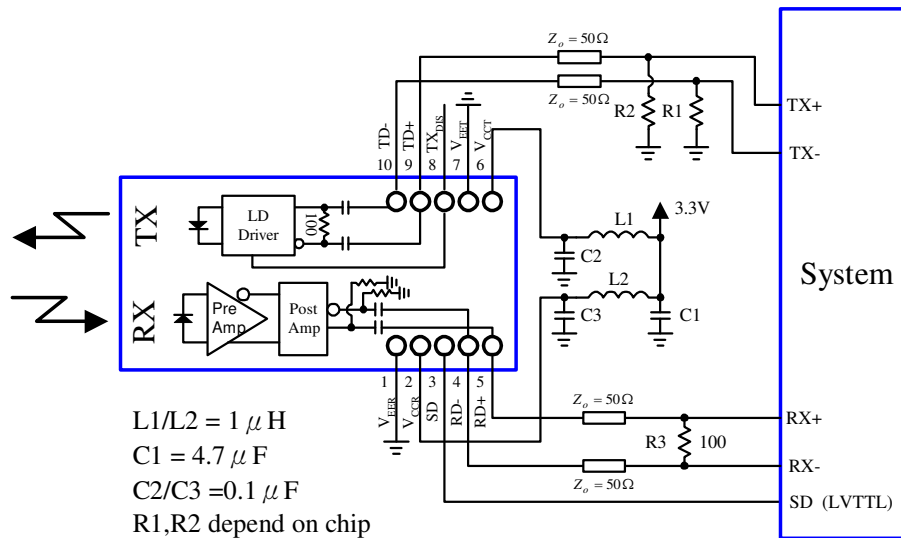
## PIN OUT TABLE

Pin	Symbol	Functional Description
Mounting Posts		The mounting posts are provided for transceiver mechanical attachment to the circuit board. They should not be connected to the circuit ground but can be connected to the chassis ground.
1	$V_{EER}$	Receiver Signal Ground
2	$V_{CCR}$	Receiver Power Supply
3	SD	Signal Detect is a TTL output. A high level indicates a received optical signal
4	RD-	Receiver Data Inverted Differential Output
5	RD+	Receiver Data Non-inverted Differential Output
6	$V_{CCT}$	Transmitter Power Supply
7	$V_{EET}$	Transmitter Signal Ground
8	TX_DIS	Transmitter Disable
9	TD+	Transmitter Data Non-inverted Differential Input
10	TD-	Transmitter Data Inverted Differential Input

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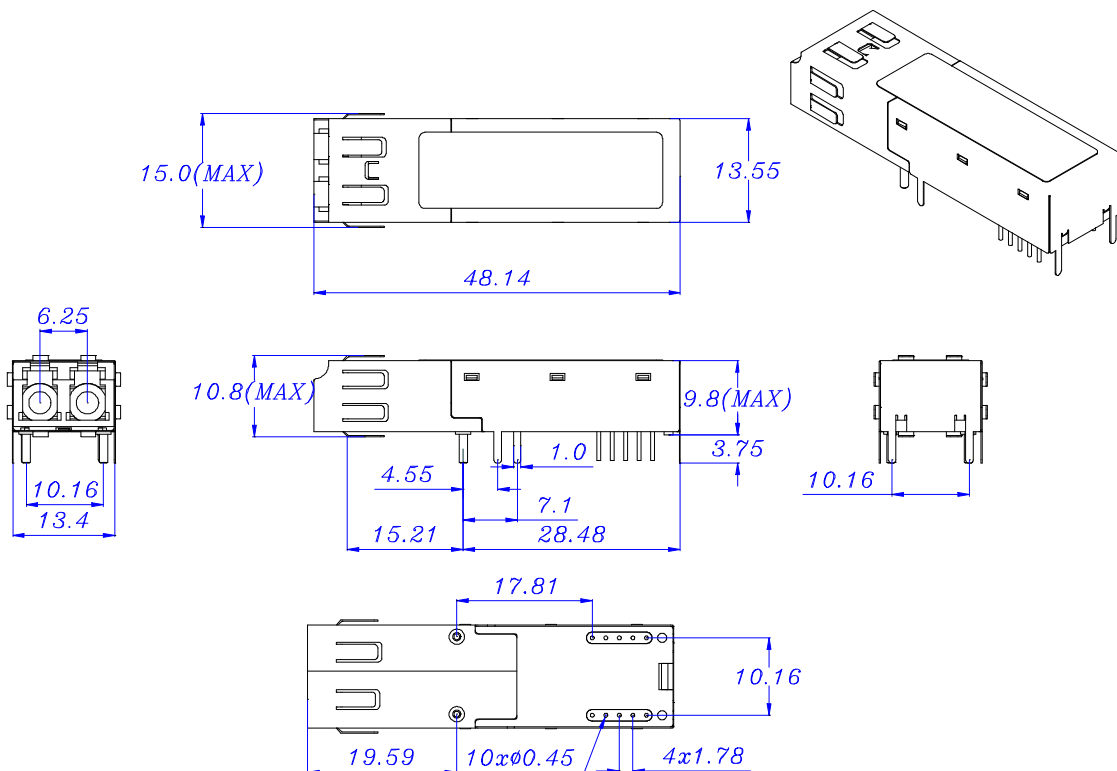


## RECOMMENDED CIRCUIT SCHEMATIC



## MECHANICAL DIMENSIONS

Units in mm



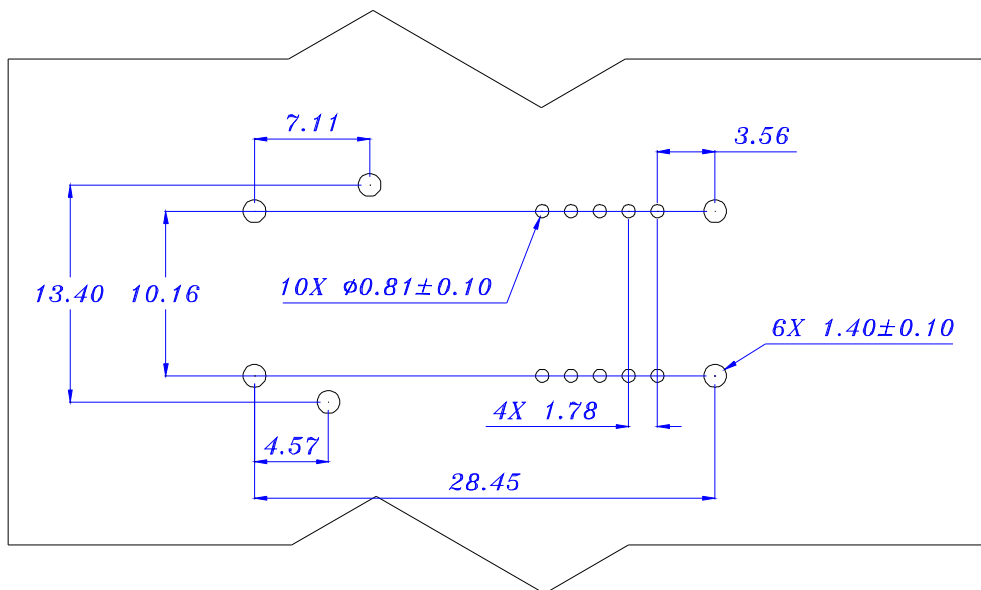
All dimensions are  $\pm 0.2$ mm unless otherwise specified.

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## RECOMMENDED SFF HOST BOARD LAYOUT

Units in mm



**Claim:**

CORETEK Opto Corp. reserves the right to make changes in the specification described hereinafter without prior notice.

**Preliminary**