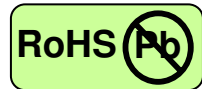


# 2.125 Gbps Fibre Channel-Single Mode Transceiver



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



## Features

- 1310nm FP LD
- Data Rate: 2.125Gbps, 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 specifications for IEEE-802.3z Gigabit Ethernet
- Compliance with ANSI specifications for Fiber Channel applications
- Eye Safety  
Designed to meet Laser Class 1 comply with EN60825-1

## Applications

- Gigabit Ethernet links
- Fibre Channel links

## Description

The CT-2125TSR-MB4L from Coretek Opto Corp. is a high performance and cost-effective module for serial optical data communication applications specified for single mode of 2.125 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 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 ANSI Fibre Channel Physical Interface (FC-PI) Rev 13.

## 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-2125TSR-MB4L	3.3V TTL AC/AC	10 km	1310 nm FP	-9.5 ~ -3 dBm	≤-21 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>	-9.5		-3	dBm	1
Optical Modulation Amplitude	OMA	150			μW	2
Extinction Ratio	ER	9			dB	
Center Wavelength	λ <sub>c</sub>	1270	1310	1355	nm	
Spectral Width (RMS)	Δλ			3	nm	
RIN	RIN			-120	dB/Hz	
Optical Rise time (20%-80%)	t <sub>r</sub>			180	ps	3
Optical Fall time (20%-80%)	t <sub>f</sub>			180	ps	3
Jitter Generation (peak to peak)	TJ			0.44	UI	
Deterministic Jitter	DJ			0.26	UI	

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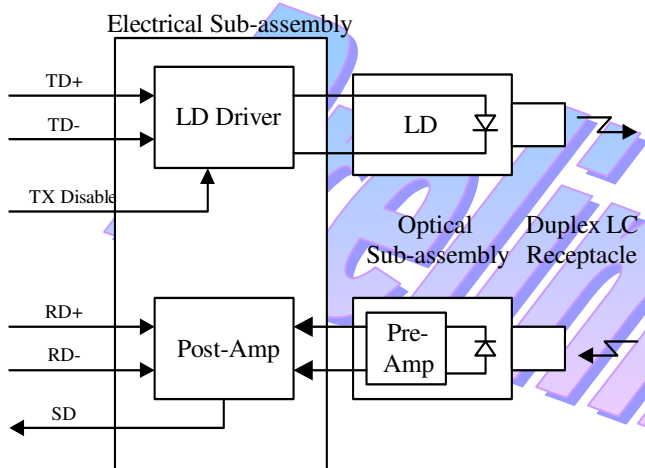
## RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	$P_{max}$	-3			dBm	4
Minimum Input Optical Power	$P_{min}$			-21	dBm	4
				-22		
Operating Wavelength	$\lambda$	1100		1600	nm	
Loss of Signal - Asserted	$P_D$			-21	dBm	5
Loss of Signal - Deasserted	$P_A$	-35			dBm	6

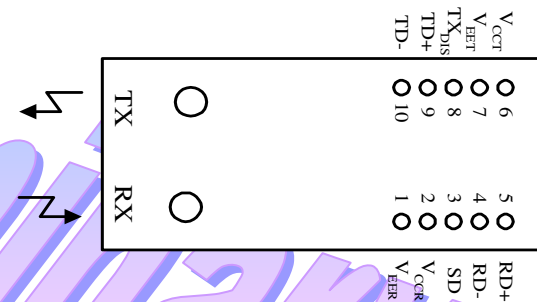
### Notes:

1. Measured average power coupled into 9/125  $\mu$  m single-mode fiber.
2. These are 20-80% values.
3. Equivalent extinction ratio specification for Fibre Channel. Allows smaller ER at higher average power.
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



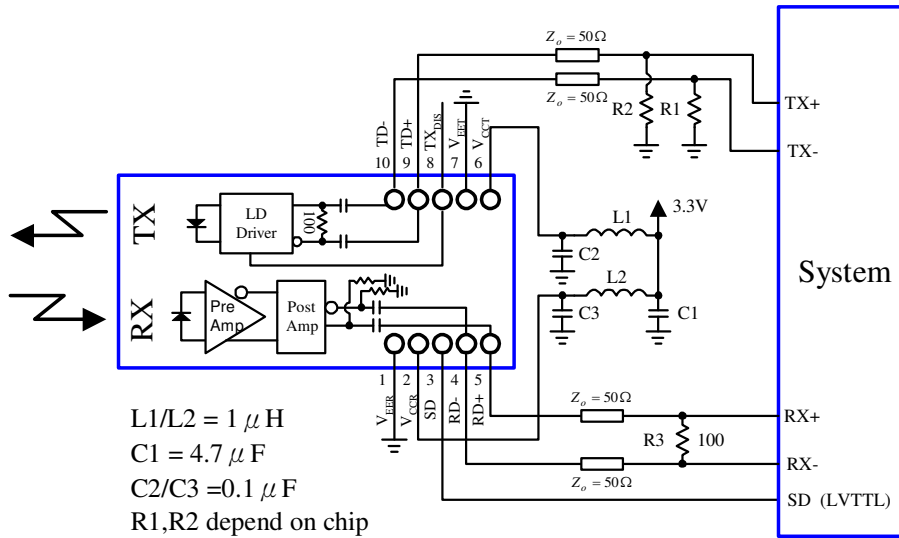
## PIN OUT TABLE

Pin	Symbol	Functional Description
Mounting Posts		
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

# 2.125 Gbps Fibre Channel-Single Mode Transceiver

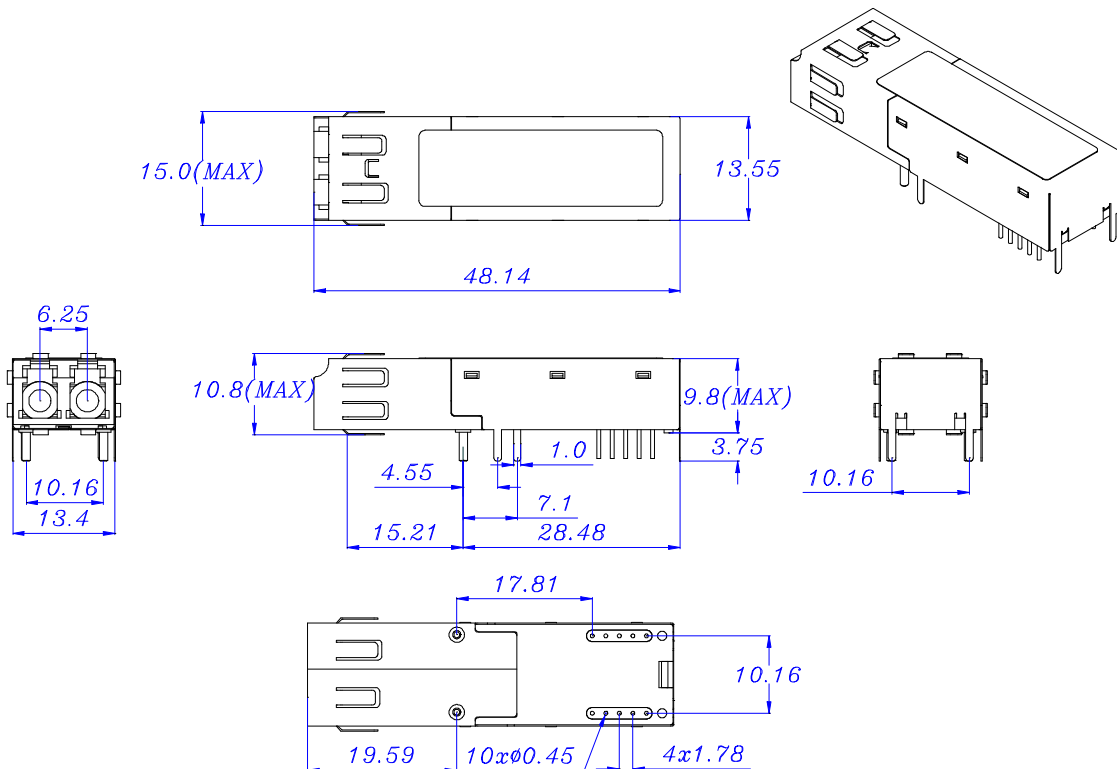


## RECOMMENDED CIRCUIT SCHEMATIC



## MECHANICAL DIMENSIONS

Units in mm



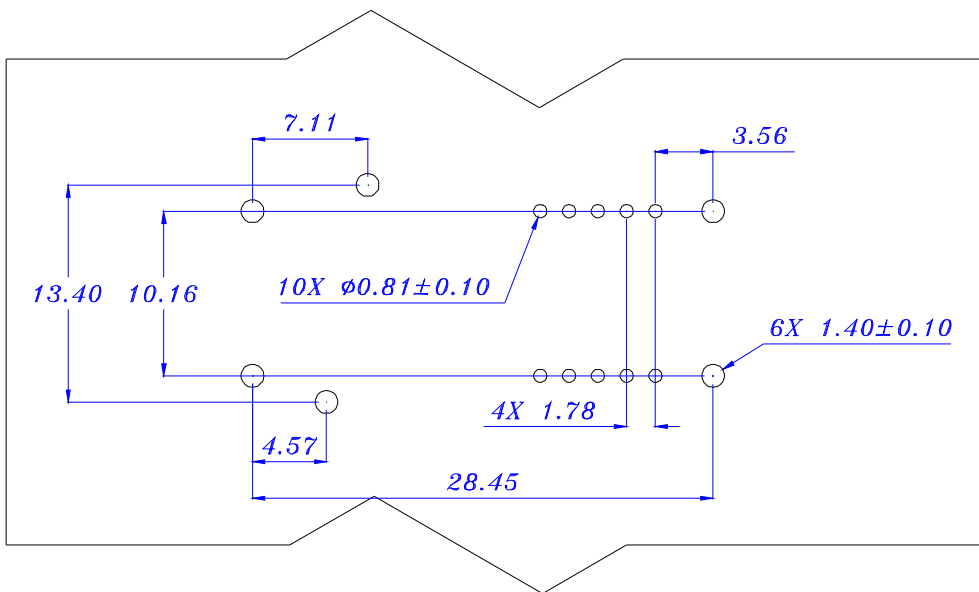
All dimensions are  $\pm 0.2\text{mm}$  unless otherwise specified.

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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*