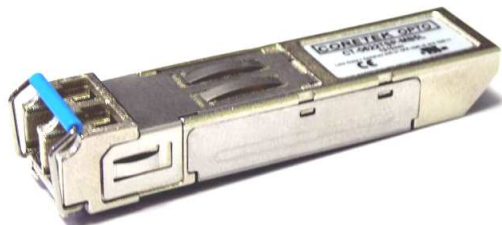
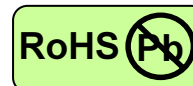


# DC to 0.5 Mb/s - Single Mode Transceiver



SFP, Duplex LC Connector, 1310 nm FP LD for Single Mode Fiber, RoHS Compliant



## Features

- 1310 nm FP LD
- Data Rate: DC~0.5 Mb/s
- Single +5 V Power Supply
- RoHS Compliant and Lead-free
- TTL Electrical Data Interface
- Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- Duplex LC Connector
- Eye Safety

Designed to meet Laser Class 1 comply with EN60825-1

## Applications

- PDH Data Transmission
- Fiber Modem
- Fiber Monitor System
- Single Mode fiber links
- Optical-Electrical Interface Conversion

## Description

The CT-000ATSP-M15L from Coretek Opto Corp. is cost-effective module for serial optical data communication applications specified for data-rates of 0.5 Mb/s. It operates with a +5 V power supply. The module is intended for single mode fiber, operates at a nominal wavelength of 1310 nm and complies with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP). Each module consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. All of them are housed in a metal package and the combination produces a reliable component.

The module is a dual fiber connector transceiver designed for use in PDH (Plesiochronous Digital Hierarchy) data transmission for 0.5 Mb/s long reach application. The characterization is 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

This laser based single mode transceiver is a CLASS 1 LASER PRODUCT, Hazard level 1. It complies with IEC 60825-1 Ed.2: 2007-03 and FDA performance standards for laser products (21 CFR 1040.10 and 1040.11) except for deviations pursuant to Laser Notice 50, dated June 24, 2007.

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## Product Information

| Model Number    | Operating Voltage & Data Interface | Connector | Distance | LD Type & Wavelength | Output Power | Sensitivity    |
|-----------------|------------------------------------|-----------|----------|----------------------|--------------|----------------|
| CT-000ATSP-M15L | 5 V TTL                            | LC        | 20 km    | 1310 nm FP           | -12 ~ -8 dBm | $\leq$ -22 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> | 4.75 |      | 5.25 | V    |      |

## ELECTRICAL CHARACTERISTICS

| PARAMETER                             | SYMBOL           | MIN | MAX | UNIT | NOTE |  |
|---------------------------------------|------------------|-----|-----|------|------|--|
| <b>Transmitter</b>                    |                  |     |     |      |      |  |
| Transmitter Supply Current            | I <sub>CCT</sub> |     | 100 | mA   |      |  |
| Transmitter Data Input Voltage – Low  | V <sub>IL</sub>  |     | 0.4 | V    |      |  |
| Transmitter Data Input Voltage – High | V <sub>IH</sub>  | 2.4 |     | V    |      |  |
| <b>Receiver</b>                       |                  |     |     |      |      |  |
| Receiver Supply Current               | I <sub>CCR</sub> |     | 100 | mA   |      |  |
| Receiver Data Output Voltage – Low    | V <sub>OL</sub>  |     | 0.4 | V    |      |  |
| Receiver Data Output Voltage – High   | V <sub>OH</sub>  | 2.4 |     | V    |      |  |

## TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

| PARAMETER            | SYMBOL           | MIN  | TYP. | MAX  | UNIT | NOTE |
|----------------------|------------------|------|------|------|------|------|
| Optical Output Power | P <sub>o</sub>   | -12  |      | -8   | dBm  | 1    |
| Extinction Ratio     | ER               | 10   |      |      | dB   |      |
| Center Wavelength    | $\lambda_c$      | 1270 | 1310 | 1355 | nm   |      |
| Spectral Width (RMS) | $\Delta \lambda$ |      |      | 7    | nm   |      |

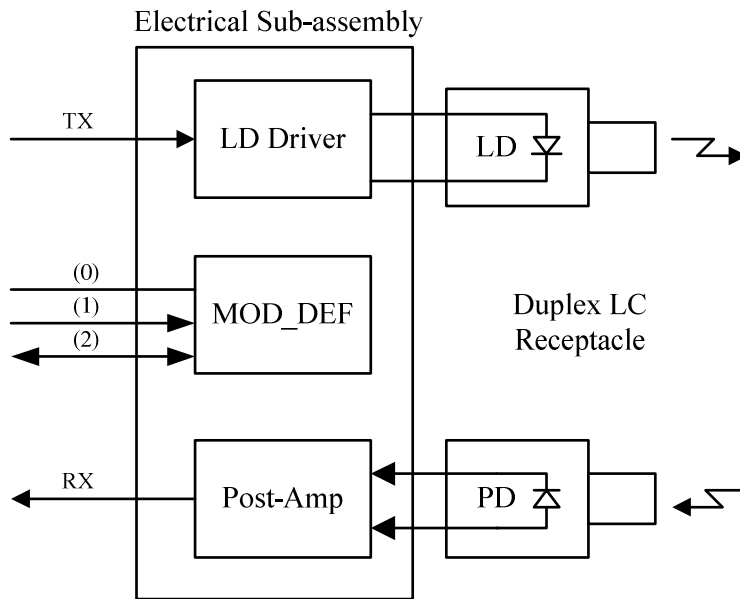
## RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

| PARAMETER                   | SYMBOL           | MIN  | TYP. | MAX  | UNIT | NOTE |
|-----------------------------|------------------|------|------|------|------|------|
| Maximum Input Optical Power | P <sub>max</sub> | -3   |      |      | dBm  |      |
| Receiver Sensitivity        | P <sub>min</sub> |      |      | -22  | dBm  | 2    |
| Operating Wavelength        | $\lambda$        | 1100 |      | 1600 | nm   |      |

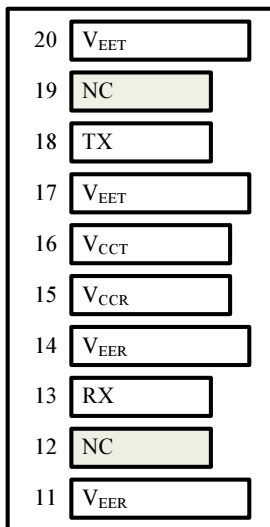
### Notes:

1. Measured average power coupled into 9/125  $\mu$ m single mode fiber.
2. Measured with square wave pattern.

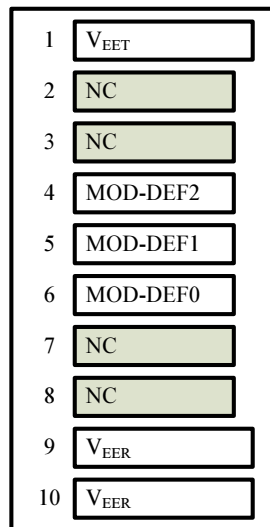
## BLOCK DIAGRAM OF TRANSCEIVER



## PIN OUT DIAGRAM OF TRANSCEIVER



Top of Board



Bottom of Board (As Viewed through Top of Board)

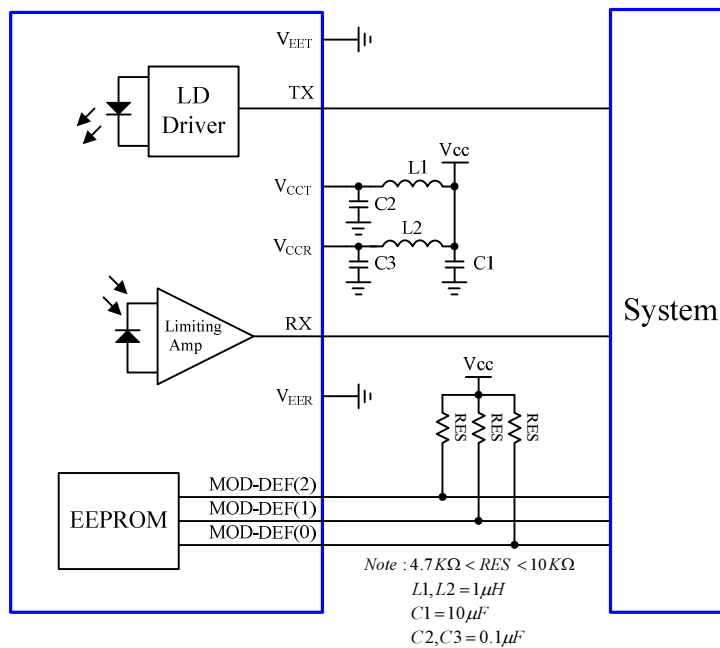
# DC to 0.5 Mb/s - Single Mode Transceiver



## PIN OUT TABLE

| Pin | Symbol           | Functional Description                             |
|-----|------------------|--|
| 1   | V <sub>EET</sub> | Transmitter Ground                                 |
| 2   | NC               | Not Connect  |
| 3   | NC               | Not Connect  |
| 4   | MOD-DEF(2)       | Module Definition 2 – Two wire serial ID interface |
| 5   | MOD-DEF(1)       | Module Definition 1 – Two wire serial ID interface |
| 6   | MOD-DEF(0)       | Module Definition 0 – Grounded in module           |
| 7   | NC               | Not Connect  |
| 8   | NC               | Not Connect  |
| 9   | V <sub>EER</sub> | Receiver Ground                                    |
| 10  | V <sub>EER</sub> | Receiver Ground                                    |
| 11  | V <sub>EER</sub> | Receiver Ground                                    |
| 12  | NC               | Not Connect  |
| 13  | RX               | Received Data Out                                  |
| 14  | V <sub>EER</sub> | Receiver Ground                                    |
| 15  | V <sub>CCR</sub> | Receiver Power                                     |
| 16  | V <sub>CCT</sub> | Transmitter Power                                  |
| 17  | V <sub>EET</sub> | Transmitter Ground                                 |
| 18  | TX               | Transmitter Data In                                |
| 19  | NC               | Not Connect  |
| 20  | V <sub>EET</sub> | Transmitter Ground                                 |

## RECOMMENDED CIRCUIT SCHEMATIC

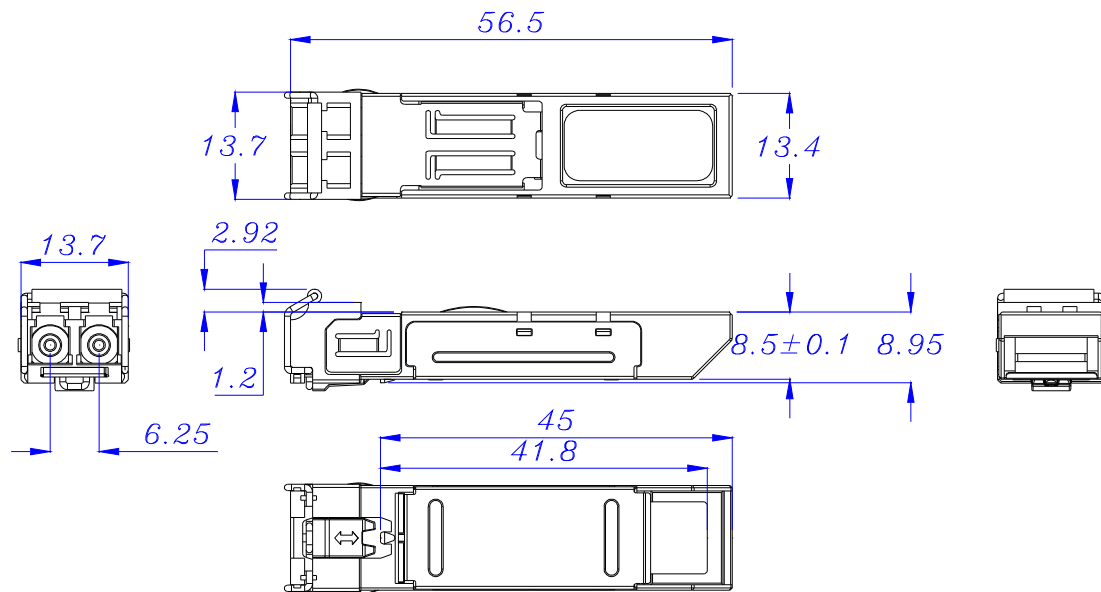


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## MECHANICAL DIMENSIONS

Units in mm



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

### Claim:

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