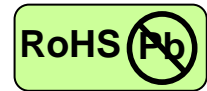


1.25 Gigabit Ethernet-Single Mode Transceiver



SFF BIDI, Single SC Connector, 1310nm DFB LD for Single Mode Fiber, RoHS Compliant



Features

- 1310nm DFB LD
- Data Rate: 1.25Gbps, 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
- Single SC Connector
- Compliance with specifications for IEEE-802.3z Gigabit Ethernet at 1.25 Gbps
- Compliance with ANSI specifications for Fibre Channel applications at 1.06 Gbps
- Eye Safety
Designed to meet Laser Class 1 comply with EN60825-1

Applications

- Gigabit Ethernet links
- Fibre Channel links at 1.06 Gbps
- High speed backplane interconnects
- Switched backbones

Description

The CT-1250TBF-NB6C from Coretek Opto Corp. is a high performance and cost-effective module for serial optical data communication applications specified for single mode of 1.25 Gb/s. It operates with +3.3V power supply. The module is intended for single mode fiber, operates at a nominal wavelength of Tx: 1310nm / Rx: 1550nm and complies with Multi-Source Agreement (MSA) Small Form Factor (SFF) 2x5 footprint. Each module consists of a bi-directional optical subassembly that combines a transmitter with a receiver and an electrical subassembly. All of them are housed in a metal package and the combination produces a reliable component.

The module is a single fiber connector transceiver designed for use in Gigabit Ethernet applications and to provide IEEE-802.3z compliant link for 1.25Gb/s intermediate reach 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-1250TBF-NB6C | 3.3V TTL AC/AC | 40 km | 1310 nm DFB | -3 ~ +2 dBm | ≤-23 dBm |

ABSOLUTE MAX RATINGS

| PARAMETER | SYMBOL | MIN | MAX | UNIT | NOTE |
|---------------------------------|-------------------|-----|-----------------|------|----------------|
| Storage Temperature | T _S | -40 | 85 | °C | |
| Supply Voltage | V _{CC} | 0 | 6 | V | |
| Lead Soldering Temperature/Time | T _{SOLD} | | 260 | °C | 10 sec on lead |
| Data Input Voltage | --- | 0 | V _{CC} | V | |

OPERATING CONDITIONS

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | NOTE |
|-------------------------------|-----------------|------|------|------|------|------|
| Ambient Operating Temperature | T _A | 0 | | 70 | °C | |
| Supply Voltage | V _{CC} | 3.1 | | 3.5 | V | |
| Data Input Voltage Swing | V _{ID} | 400 | | 1660 | mV | |

ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | MAX | UNIT | NOTE |
|---|------------------|----------------------|-----------------|------|------|
| Transmitter | | | | | |
| Transmitter Supply Current | I _{CCT} | | 200 | mA | |
| TTL Transmit Disable Input Voltage - Low | V _{IL} | | 0.8 | V | |
| TTL Transmit Disable Input Voltage - High | V _{IH} | V _{CC} -1.3 | V _{CC} | V | |
| Receiver | | | | | |
| Receiver Supply Current | I _{CCR} | | 100 | mA | |
| Receiver Data Output Differential Voltage | V _{OD} | 0.4 | 1.3 | V | |
| TTL Signal Detect Output Voltage - Low | V _{OL} | | 0.8 | V | |
| TTL Signal Detect Output Voltage - High | V _{OH} | 2.0 | | V | |

TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP. | MAX | UNIT | NOTE |
|-----------------------------|----------------|--------------------------------|------|------|-------|------|
| Optical Output Power | P _O | -3 | | 2 | dBm | 1 |
| Extinction Ratio | ER | 9 | | | dB | |
| Center Wavelength | λ _c | 1290 | 1310 | 1325 | nm | |
| Spectral Width (-20dB) | Δλ | | | 1 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| RIN | RIN | | | -120 | dB/Hz | |
| Optical Rise time (20%-80%) | t _r | | | 260 | ps | 2 |
| Optical Fall time (20%-80%) | t _f | | | 260 | ps | 2 |
| Output Eye | | Compliant with IEEE802.3z/D5.0 | | | | |

1.25 Gigabit Ethernet-Single Mode Transceiver



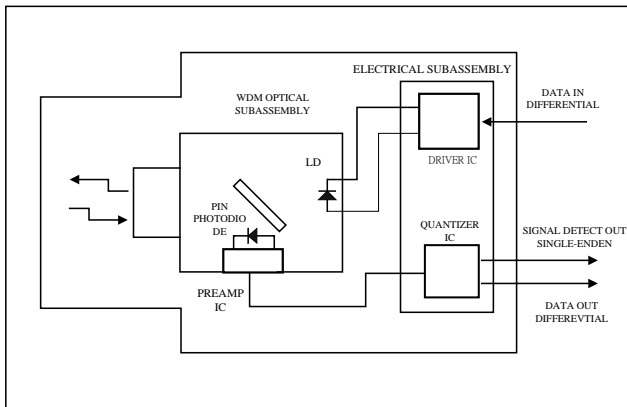
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP. | MAX | UNIT | NOTE |
|--|-----------|------|------|------|------|------|
| Maximum Input Optical Power | P_{max} | -3 | | | dBm | 3 |
| Receiver Sensitivity | P_{min} | | | -23 | dBm | 3 |
| Operating Wavelength | λ | 1480 | | 1580 | nm | |
| Optical Return Loss | ORL | 12 | | | dB | |
| Receiver Electrical 3dB Upper Cutoff Frequency | --- | | | 1500 | MHz | |
| Loss of Signal - Asserted | P_D | | | -22 | dBm | 4 |
| Loss of Signal - Deasserted | P_A | -35 | | | dBm | 5 |

Notes:

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

BLOCK DIAGRAM OF TRANSCEIVER



PIN OUT DIAGRAM OF TRANSCEIVER



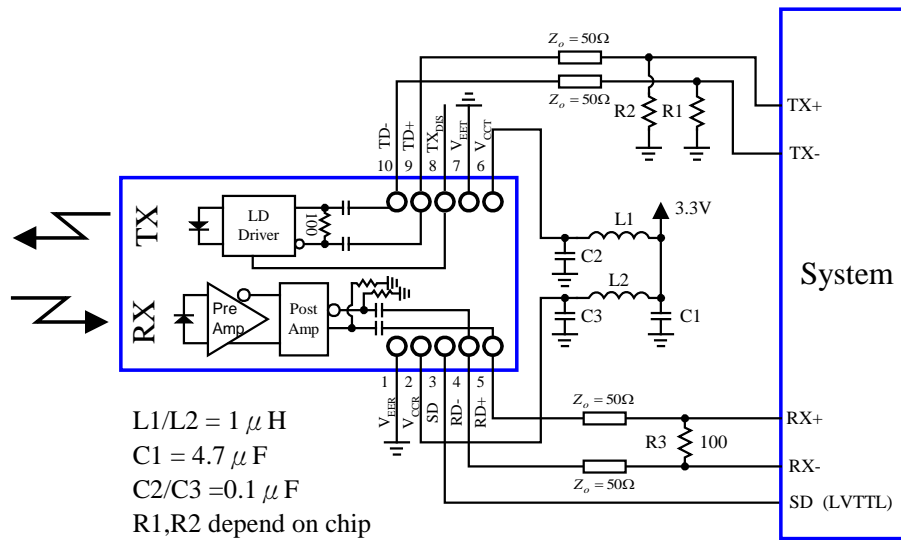
PIN OUT TABLE

| 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 |

1.25 Gigabit Ethernet-Single Mode Transceiver

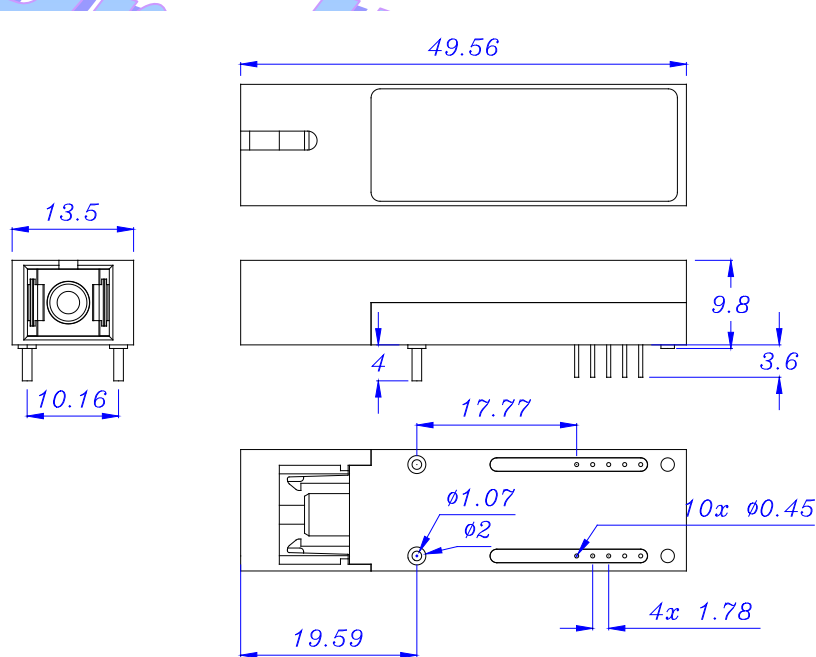


RECOMMENDED CIRCUIT SCHEMATIC



MECHANICAL DIMENSIONS

Units in mm



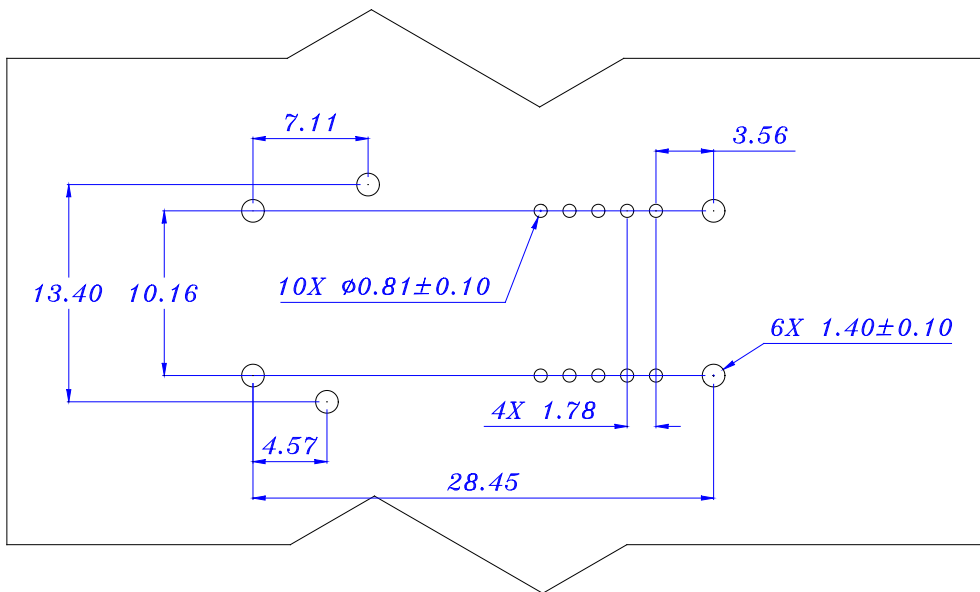
All dimensions are ± 0.2 mm unless otherwise specified.

1.25 Gigabit Ethernet-Single Mode Transceiver



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