

TX-1310/RX-1550 nm Single-mode, Bi-directional Transceiver GBIC, SC Simplex Connector, 3.3/5.0 V (1000Base-LX, 10km) 1.0625Gbd Fiber Channel/1.25 Gigabit Ethernet



Features

- Compliant with Gigabit Interface Converter Specification
- Compliant with IEEE802.3z Gigabit Ethernet standard
- Compliant with Fiber Channel standard
- SCA-2 Host connector
- Duplex SC connector
- Differential PECL inputs and outputs
- Single power supply 3.3V and 5V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

Ordering Information

| PART NUMBER | TX/RX | VOLTAGE | TEMPERATURE | LD Type | Distance |
|------------------|-----------|---------|---------------|---------|----------|
| KS35-CAS-TC-N-B3 | 1310/1550 | 3.3V/5V | 0 °C to 70 °C | 1310 FP | 10km |

Absolute Maximum Ratings

| PARAMETER | SYMBOL | MIN | MAX | UNITS | NOTE |
|---------------------|----------|------|----------|-------|------|
| Storage Temperature | T_s | -40 | 85 | °C | |
| Supply Voltage | V_{cc} | -0.5 | 6.0 | V | |
| Input Voltage | V_{IN} | -0.5 | V_{cc} | V | |
| Output Current | I_o | --- | 50 | mA | |
| Operating Current | I_{OP} | --- | 400 | mA | |

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Recommended Operating Conditions

| PARAMETER | SYMBOL | MIN | MAX | UNITS | NOTE |
|----------------------------|-------------------|-----|------|-------|------|
| Case Operating Temperature | T_C | 0 | 70 | °C | |
| Supply Voltage | V_{CC} | 3.1 | 5.25 | V | |
| Supply Current | $I_{TX} + I_{RX}$ | --- | 300 | mA | |

Transmitter Electro-optical Characteristics

$V_{CC} = 3.1 \text{ V to } 5.25 \text{ V}, T_C = 0^\circ\text{C to } 70^\circ\text{C}$

| PARAMETER | SYMBOL | MIN | TYP. | MAX | UNITS | NOTE |
|---|---------------------------|------|------|----------|---------------|---------|
| Output Optical Power 9/125 μm fiber | P_{out} | -9 | -6 | -3 | dBm | Average |
| Extinction Ratio | ER | 9 | --- | --- | dB | |
| Center Wavelength | λ_C | 1270 | 1310 | 1355 | nm | |
| Spectral Width (RMS) | $\Delta\lambda$ | --- | --- | 3 | nm | |
| Rise/Fall Time, (20–80%) | $T_{r,f}$ | --- | --- | 260 | ps | |
| Relative Intensity Noise | RIN | --- | --- | -120 | dB/Hz | |
| Total Jitter | TJ | --- | --- | 227 | ps | |
| Output Eye | Compliant with IEEE802.3z | | | | | |
| Max. P_{out} TX-DISABLE Asserted | P_{OFF} | --- | --- | -45 | dBm | |
| Differential Input Voltage | V_{DIFF} | 0.4 | --- | 2.0 | V | |
| Transmit Fault Output-Low | TX_FAULT_L | 0.0 | --- | 0.5 | V | |
| Transmit Fault Output-High | TX_FAULT_H | 2.4 | --- | V_{CC} | V | |
| Time to initialize, include reset of TX_FAULT | t_{init} | --- | --- | 300 | ms | |
| TX_FAULT from fault to assertion | t_{fault} | --- | --- | 100 | μs | |
| TX_DISABLE time to start reset | t_{reset} | 10 | --- | --- | μs | |

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Receiver Electro-optical Characteristics

$V_{CC} = 3.1 \text{ V to } 5.25 \text{ V}, T_C = 0^\circ \text{C to } 70^\circ \text{C}$

| PARAMETER | SYMBOL | MIN | TYP. | MAX | UNITS | NOTE |
|--|-------------|------|------|----------|-------|------------------|
| Optical Input Power-maximum | P_{IN} | -3 | --- | --- | dBm | BER < 10^{-12} |
| Optical Input Power-minimum (Sensitivity) | P_{IN} | --- | -25 | -20 | dBm | BER < 10^{-12} |
| Operating Center Wavelength | λ_C | 1480 | --- | 1600 | nm | |
| Optical Return Loss | ORL | 14 | --- | --- | dB | |
| Signal Detect-Asserted | P_A | --- | --- | -20 | dBm | |
| Signal Detect-Deasserted | P_D | -35 | --- | --- | dBm | |
| Differential Output Voltage | V_{DIFF} | 0.5 | --- | 1.2 | V | |
| Data Output Rise, Fall Time (20–80%) | $T_{r,f}$ | --- | --- | 0.35 | ns | |
| Receiver Loss of Signal Output Voltage-Low | RX_LOS_L | 0 | --- | 0.5 | V | |
| Receiver Loss of Signal Output Voltage-High | RX_LOS_H | 2.4 | --- | V_{CC} | V | |

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Description

Transmitter and Receiver Optical Sub-assembly Section

A 1310 nm InGaAsP laser and an InGaAs PIN photodiode integrate with an WDM filter to form a bi-directional single fiber optical subassembly (OSA). The laser of OSA is driven by a LD driver IC which converts differential input PECL logic signals into an analog laser driving current. And, The photodiode of OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

TX_FAULT

When sensing an improper power level in the laser driver, the GBIC set this signal high and turns off the Laser. TX_FAULT can be reset with the TX_DISABLE line. The signal is in TTL level.

TX_DISABLE

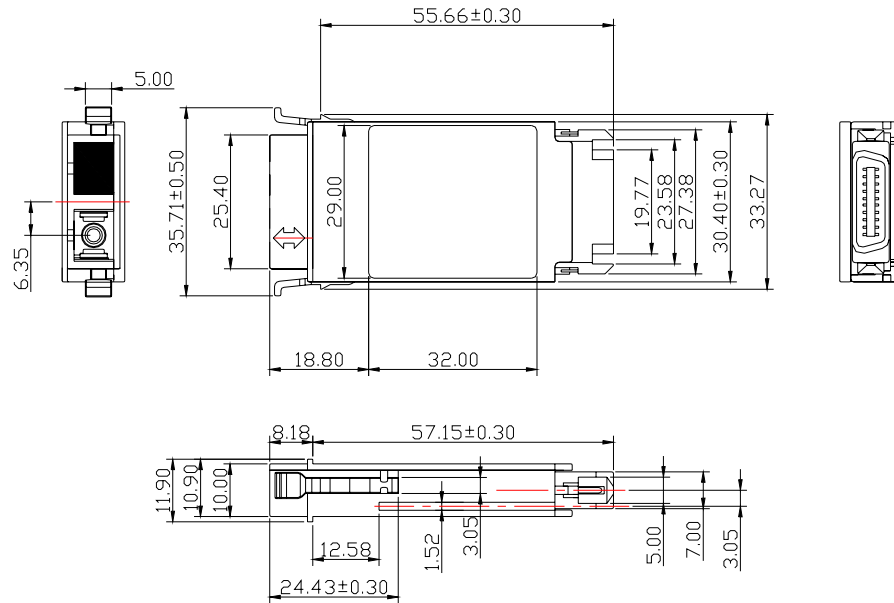
The TX_DISABLE signal is high (TTL logic "1") to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic "0").

Receive Loss (RX_LOS)

The RX_LOS is high (logic "1") when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

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Dimensions



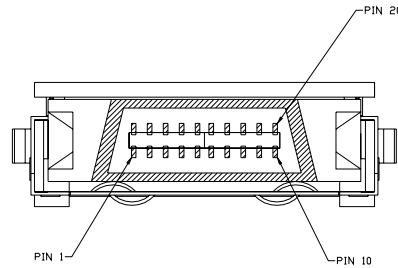
ALL DIMENSIONS ARE±0.20mm UNLESS OTHERWISE SPECIFIED

Unit: mm

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Pin Assignment

Pin-Out



| Pin | Signal Name | Description |
|-----|--------------------|---|
| 1 | <i>RX_LOS</i> | Receiver Loss of Signal, TTL High, open collector |
| 2 | <i>R_GND</i> | Receiver Ground |
| 3 | <i>R_GND</i> | Receiver Ground |
| 4 | <i>MOD_DEF (0)</i> | TTL Low |
| 5 | <i>MOD_DEF (1)</i> | SCL Serial Clock Signal |
| 6 | <i>MOD_DEF (2)</i> | SDA Serial Data Signal |
| 7 | <i>TX_DISABLE</i> | Transmit Disable, internal pull high |
| 8 | <i>T_GND</i> | Transmit Ground |
| 9 | <i>T_GND</i> | Transmit Ground |
| 10 | <i>TX_FAULT</i> | Transmit Fault, TTL High, open collector |
| 11 | <i>R_GND</i> | Receiver Ground |
| 12 | <i>RX-</i> | Receive Data Bar, Differential PECL, ac coupled |
| 13 | <i>RX+</i> | Receive Data, Differential PECL, ac coupled |
| 14 | <i>R_GND</i> | Receiver Ground |
| 15 | <i>V_CCR</i> | Receiver Power Supply |
| 16 | <i>V_CCT</i> | Transmitter Power Supply |
| 17 | <i>T_GND</i> | Transmitter Ground |
| 18 | <i>TX+</i> | Transmit Data, Differential PCEL, ac coupled |
| 19 | <i>TX-</i> | Transmit Data Bar, Differential PCEL, ac coupled |
| 20 | <i>T_GND</i> | Transmitter Ground |

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Eye Safety Mark

The KS3 series Single-mode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.

Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

Required Mark

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

Note : All information contained in this document is subject to change without notice.