

Features

- Transceiver unit with independent
 - 1310nm FP Laser diode transmitter
 - 1550nm InGaAs PIN photodiode receiver
- Single Fiber Bi-directional Operation ,1×9 pin package and plastic package
- +5V or +3.3V Single power supply, PECL or LVPECL interface logic level
- Operating case temperature:
 - Standard : 0 to +70℃
 - Industrial : -40 to +85℃
- Integrated WDM Filter, Isolation>35dB and Cross Talk>45dB
- Class I laser product complies with IEC 60825-1
- Complies with Telcordia GR-468-CORE
- Compliant ROHS and lead free

Application

- SONET/SDH
- ATM
- Ethernet
- CCTV

Performance Specifications

Table1. Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit | |
|---------------------------------|---------|--------------|--------|------|---|
| Storage Temperature | Tst | -40 | +85 | ℃ | |
| Input Voltage | Vin | GND | Vcc | V | |
| Power Supply Voltage | Vcc-Vee | CB53F5-1*-13 | 0 | +6 | V |
| | | CB33F5-1*-13 | 0 | +3.6 | |
| Lead Soldering Temperature/Time | - | - | 240/10 | ℃/S | |

Note: Stress in excess of maximum absolute ratings can cause permanent damage to the module

Table2. Operating Environment

| Parameter | Symbol | Min | Max | Unit | |
|-------------------------------|--------|--------------|-------|-------|---|
| Power Supply Voltage | Vcc | CB53F5-1*-13 | +4.75 | +5.25 | V |
| | | CB33F5-1*-13 | +3.1 | +3.5 | |
| Ambient Operating Temperature | TA | CB*3F5-11-13 | 0 | +70 | ℃ |
| | | CB*3F5-12-13 | -40 | +85 | |

Table3. Optical and Electrical Characteristics

(T=25°C, 5V:Vcc=+4.75~+5.25V, 3.3V:Vcc=+3.1~+3.5V Input and output PECL or LVPECL signal)

| Parameter | Symbol | Min | Typ | Max | Unit | Note |
|----------------------------------|---------------------------|------|------|------|------|---------------------|
| Transmitter | | | | | | |
| Center Wavelength | λ_p | 1285 | 1310 | 1343 | nm | - |
| Spectral Width | $\Delta\lambda$ (RMS) | - | - | 3 | nm | - |
| Average Optical Output Power | Po | -10 | - | -3 | dBm | - |
| Extinction Ratio | Er | 8.2 | - | - | dB | - |
| Optical Rise/Fall Time (20%~80%) | Tr/Tf | - | - | 0.26 | ns | - |
| Operating Current | Icc | - | 70 | 180 | mA | 1 |
| Output Eye | Compliant with IEEE802.3Z | | | | | |
| Data Inputs | PECL/LVPECL | | | | | |
| Receiver | | | | | | |
| Parameter | Symbol | Min | Typ | Max | Unit | Note |
| operate Wavelength | λ_p | 1480 | - | 1580 | nm | - |
| Sensitivity | Pr | - | - | -23 | dBm | 2 |
| Maximum Input Power | Ps | -3 | - | - | dBm | 2 |
| Optical Isolation | Iso | 35 | - | - | dB | - |
| Signal Detect Assert Level | Pa(SD H-L) | -35 | - | - | dBm | Low-level: Alarm |
| Signal Detect Deassert Level | Pd(SD L-H) | - | - | -23 | dBm | |
| Signal Detect Hysteresis | - | - | 3 | - | dB | - |
| Operating Current | Icc | - | 80 | 100 | mA | 1 |
| Data Outputs | PECL/LVPECL | | | | | |
| Alarm Output | PECL/LVPECL | | | | | |

PECL or LVPECL Input Pins TD+ and TD-

| Parameter | Symbol | Min | Typ | Max | Unit | Note |
|--------------------|-----------------|------------|-----|------------|------|------|
| Input High Voltage | V _{IH} | VCC - 1165 | - | VCC - 880 | mV | 3 |
| Input Low Voltage | V _{IL} | VCC - 1810 | - | VCC - 1475 | mV | 3 |

PECL or LVPECL Output Pins SD, RD+ and RD-

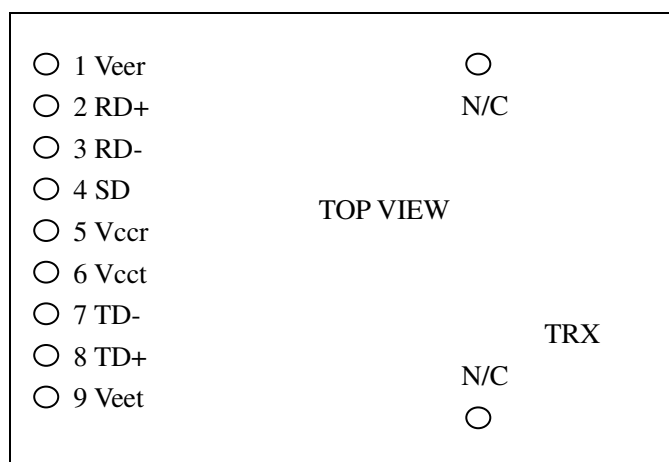
| Parameter | Symbol | Min | Typ | Max | Unit | Note |
|---------------------------|-----------------|------------|-----|------------|------|------|
| Low-level Output Voltage | V _{OL} | VCC - 1840 | - | VCC - 1600 | mV | 3 |
| High-level Output Voltage | V _{OH} | VCC - 1100 | - | VCC - 900 | mV | 3 |

Note:

1. The current excludes the output load current.
2. Minimum Sensitivity and saturation levels for a $2^7 - 1$ PRBS test pattern@1.25Gb/S
3. RL=50R connected to a level of Vcc -2V.

Pin Definitions

Pin Out Diagram

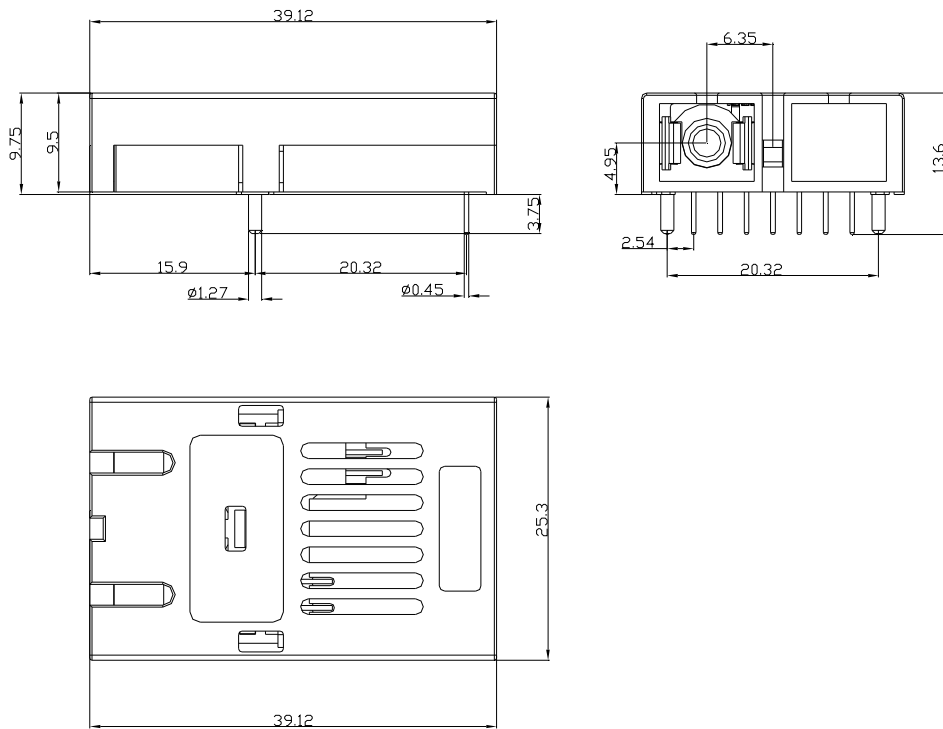


Pin Description

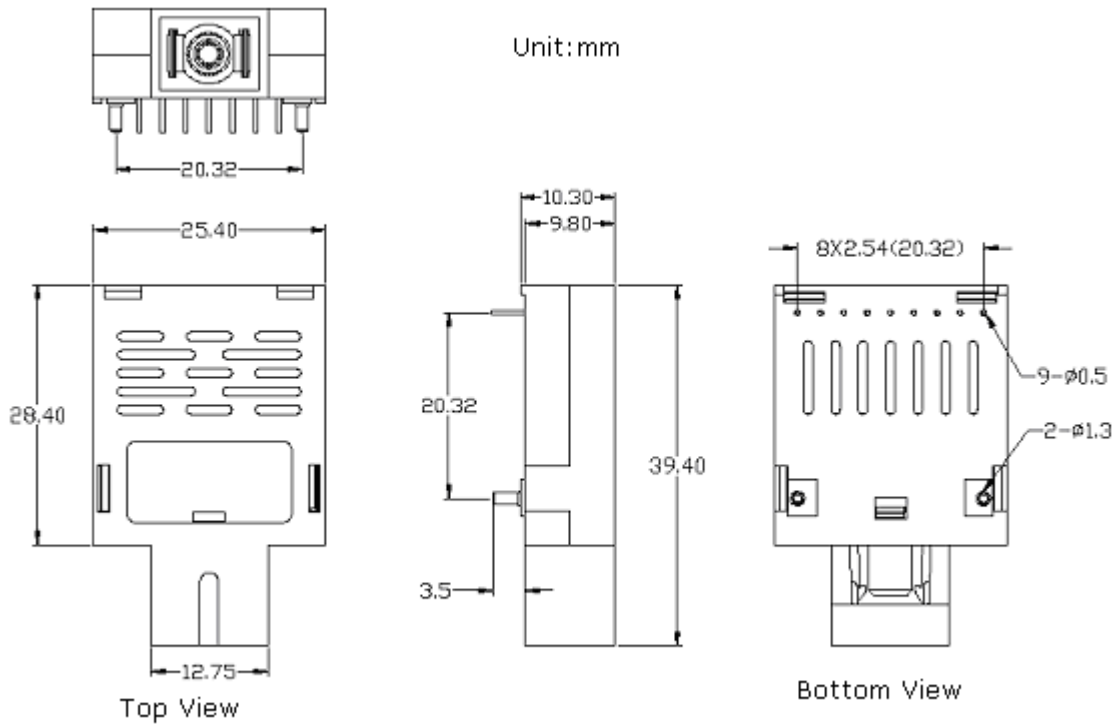
| Pin# | Pin Name | | Logic Level | Description |
|------|----------------|-----------------------|-------------|--|
| N/C | Mounting Studs | | | The two pins are not connected to the transceiver internal circuit. |
| 1 | VEER | RX Ground | N/C | Directly connect this pin to receiver signal ground plane. |
| 2 | RD+ | RX Output Data | PECL/LVPECL | |
| 3 | RD- | RX Output Invert Data | PECL/LVPECL | |
| 4 | SD | RX Signal Detect | PECL/LVPECL | Normal Operation: Logic "1" Out put , represents that optical is present at receiver input. Fault Condition: Logic "0" output |
| 5 | VCCR | RX Power Supply | N/C | Provide +5V/+3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCR pin. |
| 6 | VCCT | TX Power Supply | N/C | Provide +5V/+3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCT pin |
| 7 | TD- | TX Invert Data Input | PECL/LVPECL | |
| 8 | TD+ | TX Data Input | PECL/LVPECL | |
| 9 | VEET | TX Ground | N/C | Directly connect this pin to transmitter signal ground plane. |

Package Information

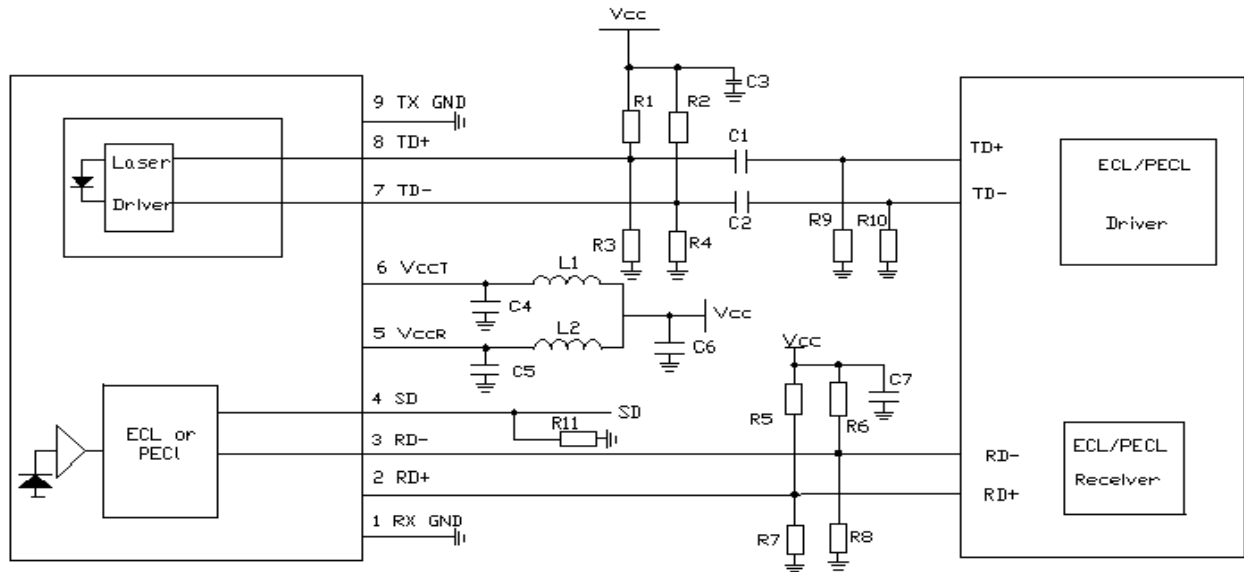
CB*3F5-1*-13



CB*3F5-1*-13-T



Recommended Circuit



SD: PECL

$C1=C2=C3=C4=C5=C7=0.1\mu F$ $C6=4.7\mu F$ $L1=L2=1\mu H$

$V_{cc}=3.3V$: $R1=R2=R5=R6=82\Omega$ $R3=R4=R7=R8=130\Omega$ $R9=R10=R11=180\Omega$

$V_{cc}=5V$: $R1=R2=R5=R6=68\Omega$ $R3=R4=R7=R8=180\Omega$ $R9=R10=R11=300\Omega$

For More Information

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Ordering Information

