

1X9 Single Mode Fiber DUAL Transceiver

DC~2Mbps 10~20km

RTR1-3F00-1C**

Product Features

- 1310nm FP Laser Transmitter
- InGaAs PIN Photodiode Receiver
- Reach 20km Transmission Distance on 9/125μm SMF
- DUAL Single Mode Transceiver 1x9 Footprint
- SC, FC or ST Optical Interface are Optional
- Single +3.3V/5V Power Supply
- TTL Single-terminal Input and Output
- LVTTTL Signal Detection Output
- Compliant With RoHS and Lead Free
- Metal Enclosure for Lower EMI
- Operating Case Temperature:
 - Standard: 0 to +70°C
 - Extend: -20 to +75°C
 - Industrial: -40 to +85°C

Product Applications

- ATM/SONET/SDH
- Switch/Router
- Other Optical Transmission Systems

Performance Specifications

➤ Absolute Maximum Ratings

| Parameter | Symbol | | Min | Max | Unit |
|-----------------------|----------------------------------|----------------|-----|-----------------|------|
| Storage Temperature | Tst | | -40 | +85 | °C |
| Operating Temperature | To | RTR1-3F00-1C** | 0 | +70 | °C |
| Input Voltage | - | | GND | V _{CC} | V |
| Power Supply Voltage | V _{CC} -V _{EE} | | 0 | +6 | V |

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

➤ Recommended Operating Conditions

| Parameter | Symbol | | Min | Typ | Max | Unit |
|----------------------------|-----------------|----------------|------|-----|------|------|
| Storage Temperature | Tst | | -40 | - | +85 | °C |
| Operating Case Temperature | Tc | RTR1-3F00-1C** | 0 | - | +70 | °C |
| Power Supply Voltage | V _{CC} | | 3.13 | 3.3 | 3.47 | V |
| Power Supply Voltage | V _{CC} | | 4.75 | 5.0 | 5.25 | V |
| Power Supply Current | I _{CC} | | - | - | 300 | mA |
| Data Rate | DR | | - | 2 | - | Mbps |

➤ Optical Specification

| Transmitter | | | | | | | |
|---------------------------------|---------|-------------------|------|------|------|------|-------------------|
| Parameter | | Symbol | Min | Typ | Max | Unit | Note |
| Center Wavelength | 1310 FP | λ_c | 1260 | 1310 | 1360 | nm | - |
| Spectral Width | FP | $\Delta\lambda$ | - | - | 3 | nm | - |
| Average Optical Output Power | | P _o | -15 | - | -8 | dBm | - |
| Extinction Ratio | | ER | 11 | - | - | dB | - |
| Optical Rise/Fall Time(20%-80%) | | Tr/Tf | - | - | 8 | ns | - |
| Receiver | | | | | | | |
| Parameter | | Symbol | Min | Typ | Max | Unit | Note |
| Operate Wavelength | | - | 1260 | - | 1620 | nm | - |
| Receiver Sensitivity | | R _{SENS} | - | - | -28 | dBm | 1 |
| Receiver Saturation | | P _{RS} | -6 | - | - | dBm | 1 |
| SD Assert | | - | -35 | - | - | dBm | Alarm: High-level |
| SD De-Assert | | - | - | - | -28 | dBm | |
| SD Hysteresis | | - | 0.5 | - | 5 | dBm | - |

Electrical Specification

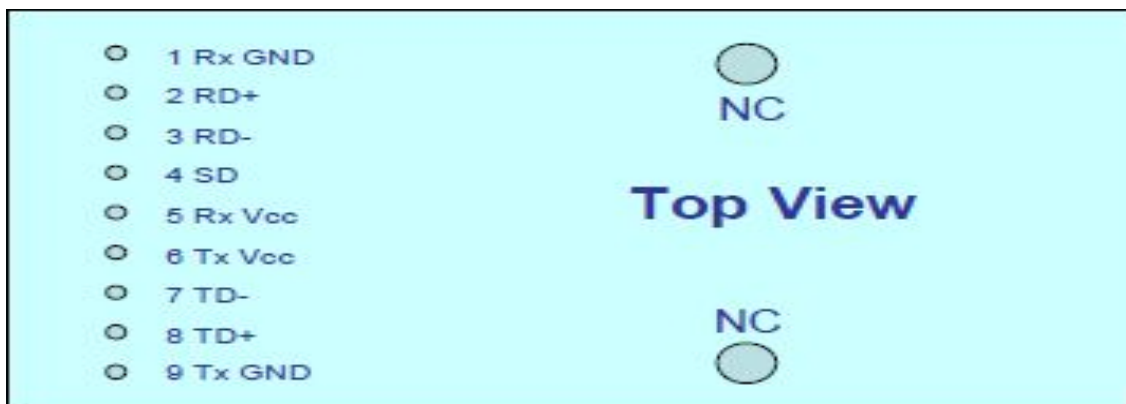
| Transmitter | | | | | | |
|-------------------------------------|--------------------|-----|-----|------|----------|-----------|
| Parameter | Symbol | Min | Typ | Max | Unit | Note |
| Power Supply Current | I_{CC} | - | 70 | 180 | mA | 2 |
| Input Single-terminal Impedance | Z_{IN} | 45 | 50 | 55 | Ω | - |
| Single-terminal Input Voltage | $V_{IH} - V_{IL}$ | 300 | - | 1000 | mV | - |
| Single-terminal Input Voltage-Low | $V_{IL} - V_{CC}$ | - | - | 0.8 | V | TTL/LVTTL |
| Single-terminal Input Voltage-High | $V_{IH} - V_{CC}$ | 2.0 | - | - | V | |
| Receiver | | | | | | |
| Parameter | Symbol | Min | Typ | Max | Unit | Note |
| Power Supply Current | I_{CC} | - | 70 | 150 | mA | 2 |
| Single-terminal Output Voltage-Low | $V_{OL} - V_{CC}$ | - | - | 0.8 | V | TTL/LVTTL |
| Single-terminal Output Voltage-High | $V_{OH} - V_{CC}$ | 2.0 | - | - | V | |
| Signal Detect Output Voltage-Low | $V_{SDL} - V_{CC}$ | - | - | 0.8 | V | TTL/LVTTL |
| Signal Detect Output Voltage-High | $V_{SDH} - V_{CC}$ | 2.0 | - | - | V | |

Note: 2. The current excludes the output load current.

3. Terminated with 50 Ohm to $V_{CC} - 2V$.

Pin Definitions

PIN Diagram

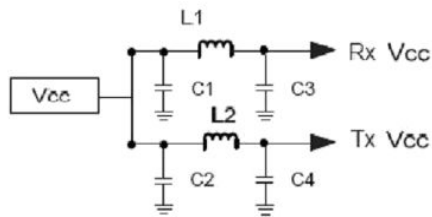
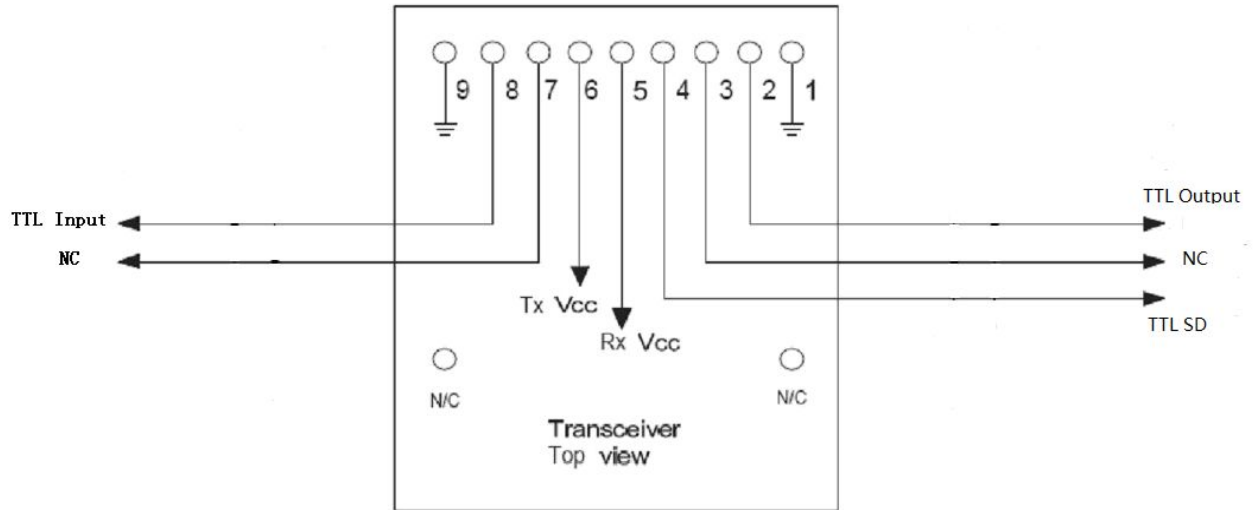


PIN Description

| PIN | Symbol | Note |
|-----|-----------|---|
| 1 | GNDR | Directly connect this pin to receiver signal ground plane. |
| 2 | RD+ | See recommended circuit schematic. |
| 3 | RD- | NC |
| 4 | SD | Active high on this indicates a receiver optical signal. |
| 5 | V_{CCR} | +3.3V/+5.0V DC power for the receiver section. |
| 6 | V_{CCT} | +3.3V/+5.0V DC power for the transmitter section. |
| 7 | TD- | NC |
| 8 | TD+ | See recommended circuit schematic. |
| 9 | GNDT | Directly connect this pin to transmitter signal ground plane. |

Recommended Circuit

▶ TTL Transmitter And TTL Receiver

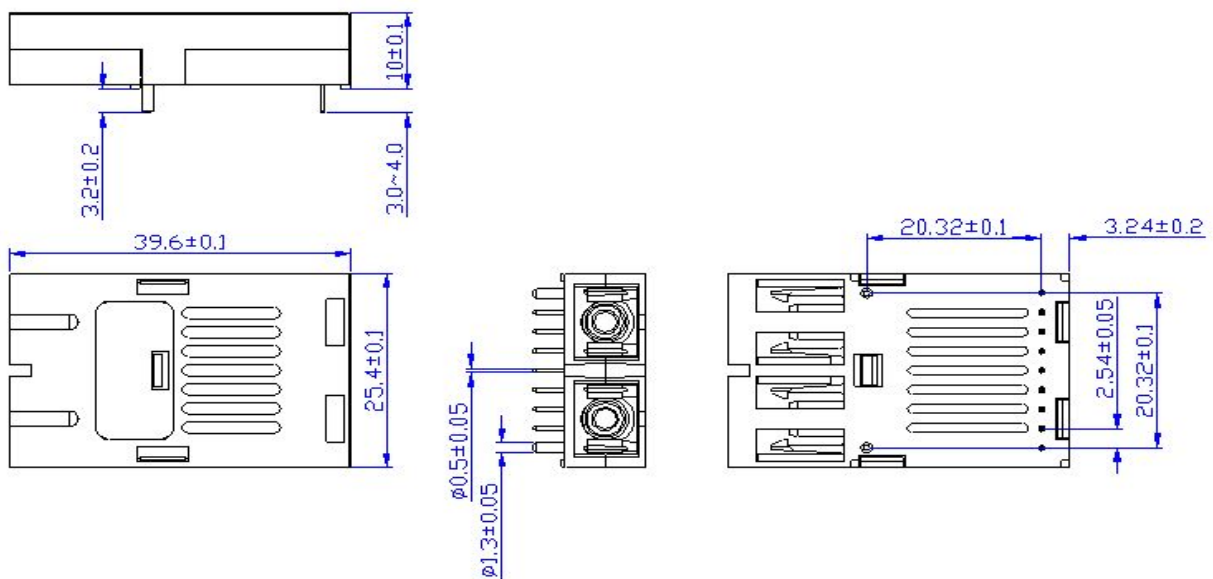


Notes:

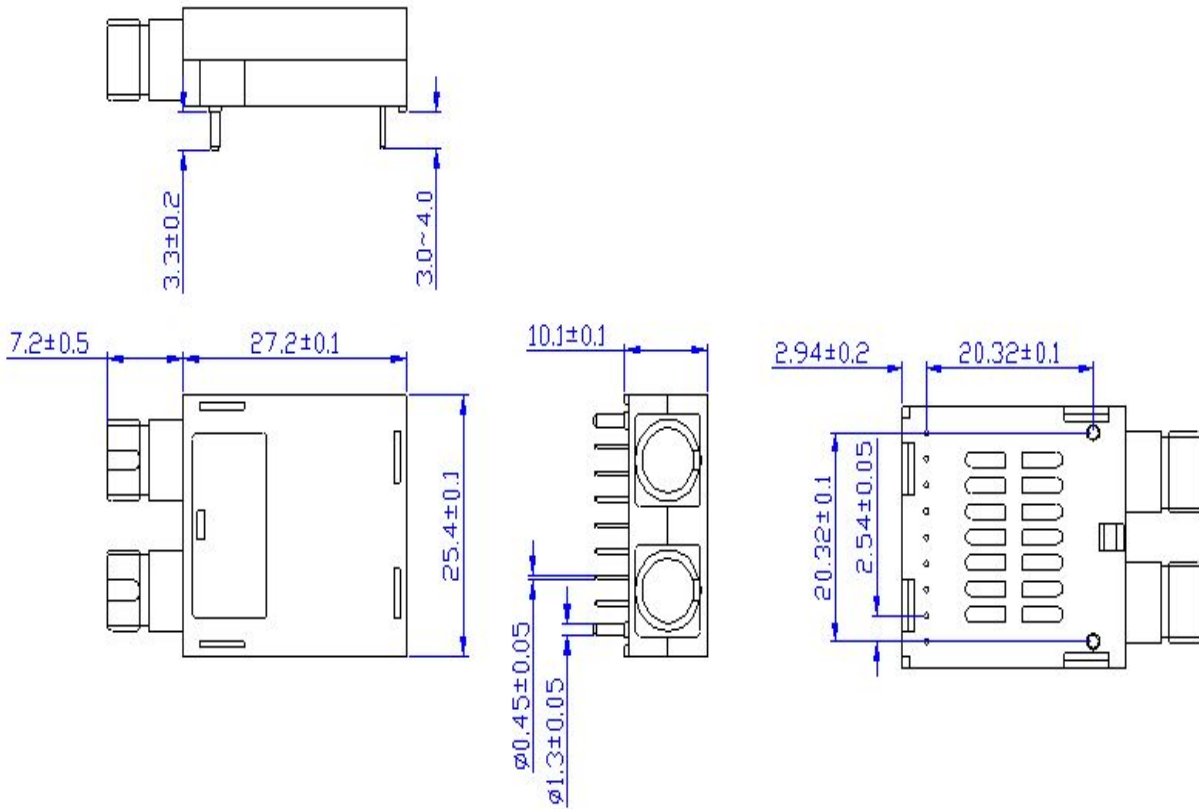
- C1=C2=10uF
- C3=C4=C6=0.1uF
- L1=L2=1uH

Package Diagram

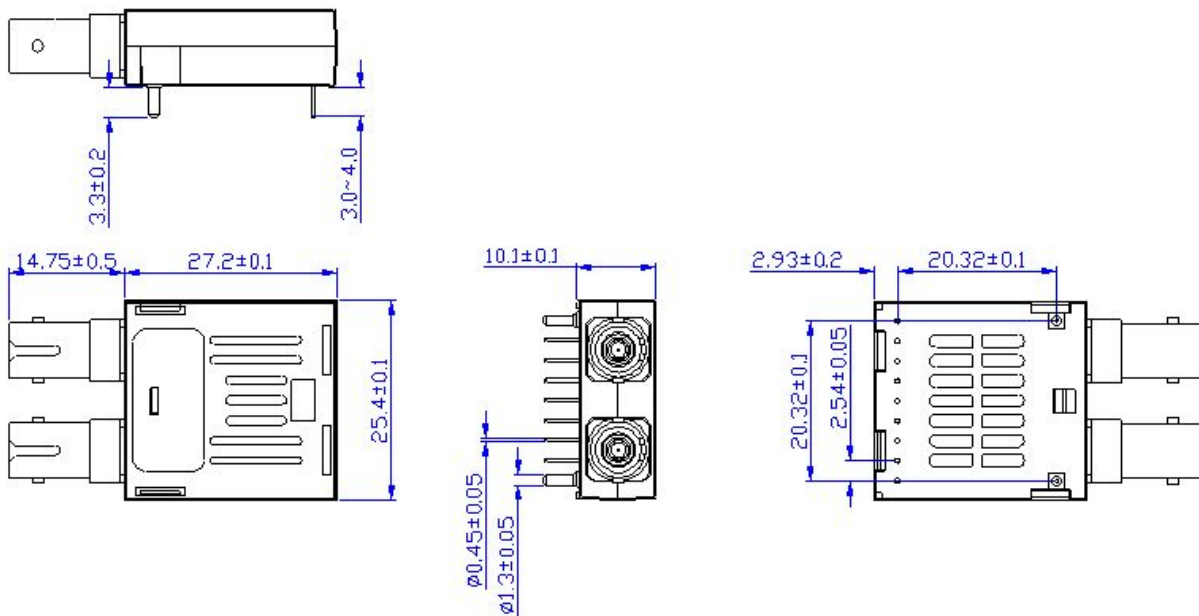
▶ SC Interface



➤ **FC Interface**



➤ **ST Interface**



Unit:mm

Order Information

| R | TR | 1 | - | 3F | 00 | - | 1 | * | * | * | * | |
|------|-----|------------------------------|---|-----------------|---------------------|---|-------------------|---|-------------|---|--|-------------------------|
| REON | 1X9 | 1=DUAL Fiber Interface | - | 3F=1310nm FP | 00=DC~ 2 Mbps | - | -15~- 8 dBm | C | 0~+70 °C | 2=SC/PC 3=SC/APC 4=FC/PC 5=FC/APC 6=ST/PC 7=ST/APC | 3=3.3V TTL signal/TTL alarm 7=5V TTL signal /TTL alarm | Customer Information |

| P/N | Package | Fiber Type | Data Rate (bps/Hz) | Reach | Tx(nm) | Rx | Temperature (°C) | Connector Type | Voltage |
|----------------|---------|------------|--------------------|---------|---------|-----|------------------|----------------|---------|
| RTR1-3F00-1C23 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | SC | 3.3V |
| RTR1-3F00-1C27 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | SC | 5V |
| RTR1-3F00-1C43 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | FC | 3.3V |
| RTR1-3F00-1C47 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | FC | 5V |
| RTR1-3F00-1C63 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | ST | 3.3V |
| RTR1-3F00-1C67 | 1x9 | SM | DC~2M | 10~20km | 1310 FP | PIN | 0~+70 | ST | 5V |

For more information:

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