# OPT2-851XXXR

Ultra-Low Data Rate TTL 1x9 Fiber Optical Transceiver, Multi-Mode, 2Mbps, 1km

## Features

- SC/ST/FC receptacle multi-mode optical interface
- Single +3.3V or +5V Power Supply
- 1x9 SIP package
- Operating wavelength 850nm
- Super low power consumption design, applied to some special require
- Optional transmission bit rate with down to 0bps and up to 2Mbps
- Standard TTL data output with signal detect indication
- Compliant with RS485 function
- RoHS Compliance
- Operating case temperature:
  Standard: 0 to +70°C
  Extended: -10 to +85°C
  Industrial: -40 to +85°C

## Applications

- Industrial Ethernet Applications: industrial Ethernet switches,Ethernet media converters and fiber converters
- Serial Communications over fiber: Industrial RS-232/RS-422/RS-485 serial to fiber media converter,industrial RS-232 to RS-422 and RS-485 Adapters
- RS232/RS485/RS422 optical-electrical converter for electric power control, industrial control,industrial computing

## Description

The OPT2-851xxxR family of optical transceivers from Optcore provide the system designer and manufacturers with products to implement a range of industrial control, special low data rate Ethernet designs at the 0Mb/s-2Mb/s rate. This series fiber optic transceiver are all supplied in the industry standard 1x9 SIP package. The transceivers are high performance, cost effective modules with TTL data interface that supporting data-rate of 0~2Mbps and 1km transmission distance over multi-mode fiber cable (MMF).

The OPT2-851xxxR series transceiver optics help you convert copper signals to optical fiber. They are usually used for serial communications over fiber like RS-232/422/485 serial to fiber media converter and industrial Ethernet networks to fiber networks communications like industrial fiber optic converters and industrial Ethernet switches.

The OPT2-851xxxR series features a duplex SC or ST or FC connector receptacle, which provide the choice of different connector for client. They provide 3 types operating temperature for different applications:

- Standard type (0~70ºC) for commonly commercial application, provided with lowest cost
- Extended type (-10~85ºC) for extended temperature application, provides wider operating temperature
- Industrial grade (-40~85ºC) is made with robust and reliable components, to meet the needs of Industrial Ethernet application under hardened environmental conditions. It is designed for industrial media converter, Industrial Ethernet Switches, rugged switch and other industrial fiber connection equipment.

## Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Supply Voltage | Vcc | 0 | 6.0 | V |
| Storage Temperature | Ts | -40 | +85 | °C |
| Operating Humidity | - | 5 | 95 | % |

## Recommended Operating Conditions

| Parameter | | Symbol | Min | Typical | Max | Unit |
|---|---|---|---|---|---|---|
| Operating Case Temperature | Standard | Tc | 0 | | +70 | °C |
| | Extended | | -10 | | +85 | °C |
| | Industrial | | -40 | | +85 | °C |
| Power Supply Voltage | | Vcc | 4.75 | 5.0 | 5.25 | V |
| | | Vcc | 3.14 | 3.3 | 3.47 | V |
| Power Supply Current | | $I_{TX}+I_{RX}$ | | | 100 | mA |
| Data Rate | | | 0 | | 2 | Mbps |

## Optical Characteristics

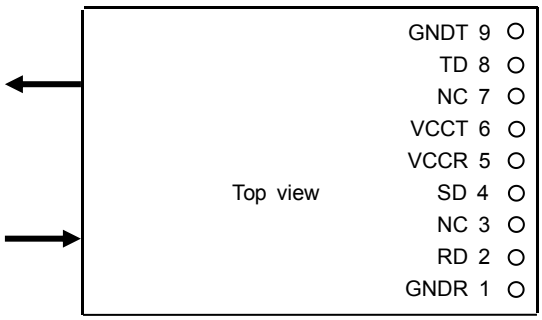
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| Centre Wavelength | λ | 830 | 850 | 860 | nm | |
| Spectral Width | Δλ | | | 1 | nm | |
| Average Output Power | Pout | -12 | -9 | -6 | dBm | |
| Extinction Ratio | ER | 9 | | | dB | |
| **Receiver** | | | | | | |
| Receiver Sensitivity | | | | -16 | dBm | |
| Receiver Overload | | -6 | | | dBm | |
| LOS De-Assert | $LOS_D$ | | | -18 | dBm | |
| LOS Assert | $LOS_A$ | -30 | | | dBm | |

## Pin Definitions

| Pin | Signal Name | Remark | Description |
|---|---|---|---|
| 1 | GNDR | | Receiver section grounded |
| 2 | RD | TTL/LVTTL | Date output of receiver section |
| 3 | NC | | No connect |
| 4 | SD | TTL/LVTTL | Optical alarm of receiver section, low level when no light |
| 5 | VccR | | Positive power of receiver section, normally +5V and 3.3V |
| 6 | VccT | | Positive power of transmitter section, normally +5V and 3.3V |
| 7 | NC | | No connect |
| 8 | TD | TTL/LVTTL | Date input of transmitter section |

| | | | |
|---|---|---|---|
| 9 | GNDT | | Transmitter section grounded |

## Topview diagram




## Mechanical Dimensions

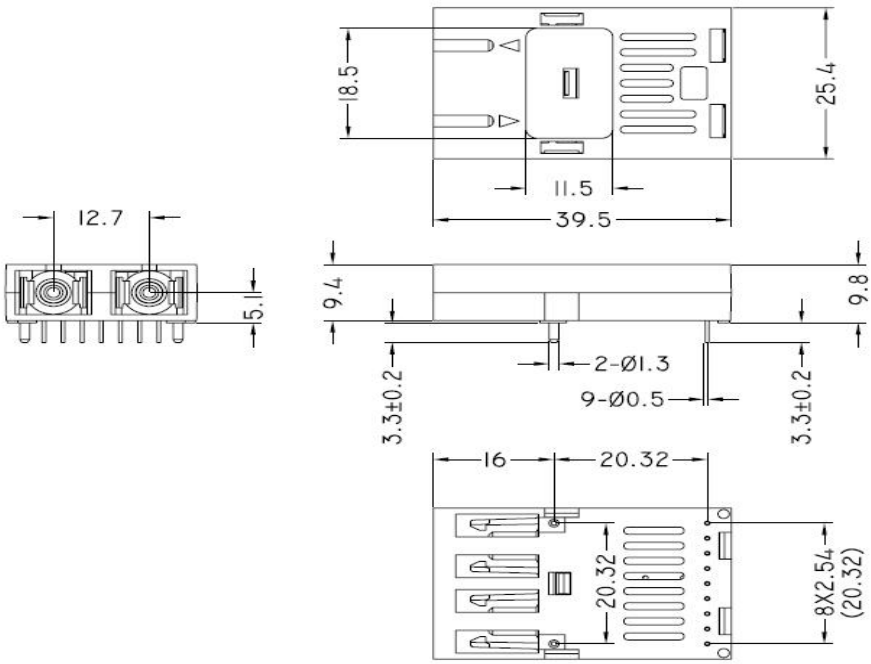



Figure 1. SC Connector

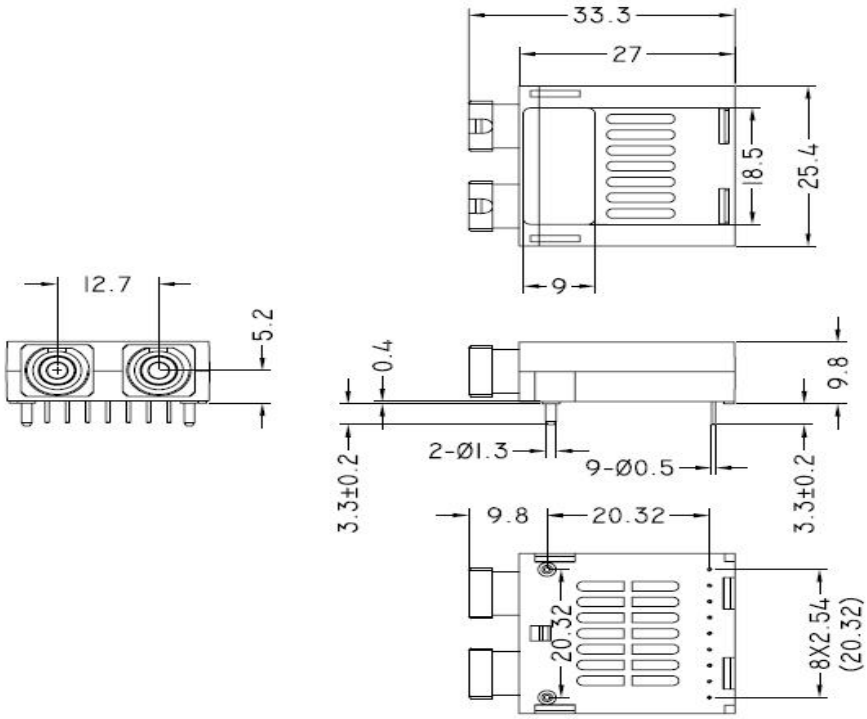



Figure 2. FC Connector

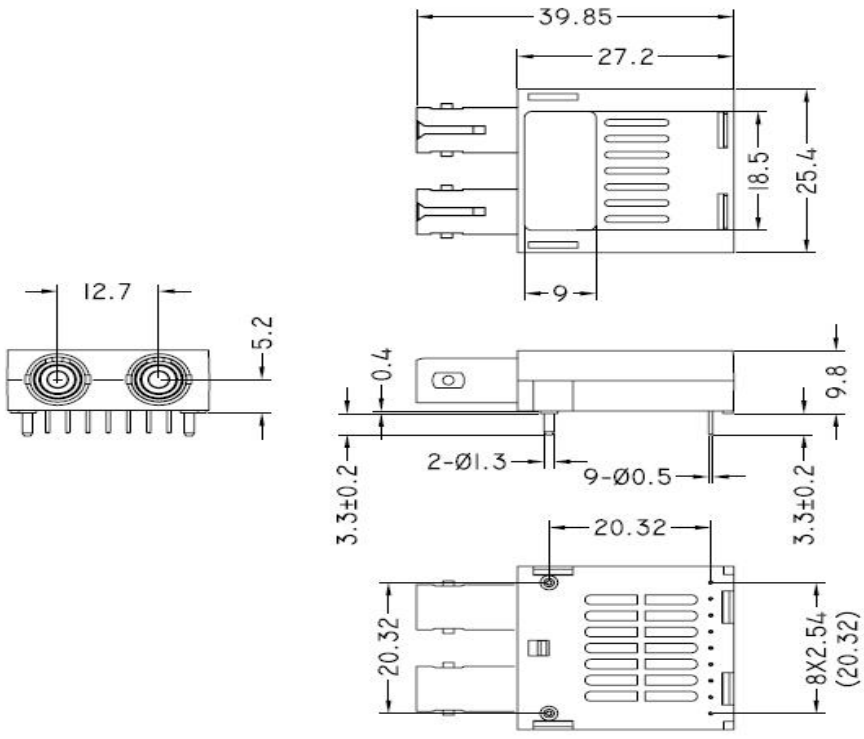



Figure 3. ST Connector

## Ordering information

**0~2Mbps 1x9 TTL multimode 850nm 1km Transceiver (Commercial Temperature)**

| Part number | Voltage | Connector | Operating Temperature |
|---|---|---|---|
| OPT2-8515SCR | 5V | Duplex SC | 0~70 ℃ |

| | | | |
|---|---|---|---|
| OPT2-8515TCR | 5V | Duplex ST | 0~70 ºC |
| OPT2-8515FCR | 5V | Duplex FC | 0~70 ºC |
| OPT2-8515PCR | 5V | Duplex FC pigtail | 0~70 ºC |
| OPT2-8513SCR | 3.3V | Duplex SC | 0~70 ºC |
| OPT2-8513TCR | 3.3V | Duplex ST | 0~70 ºC |
| OPT2-8513FCR | 3.3V | Duplex FC | 0~70 ºC |
| OPT2-8513PCR | 3.3V | Duplex FC pigtail | 0~70 ºC |

**0~2Mbps 1x9 TTL multimode 850nm 1km Transceiver (Extended Temperature)**

| Part number | Voltage | Connector | Operating Temperature |
|---|---|---|---|
| OPT2-8515SER | 5V | Duplex SC | -10~85 ºC |
| OPT2-8515TER | 5V | Duplex ST | -10~85 ºC |
| OPT2-8515FER | 5V | Duplex FC | -10~85 ºC |
| OPT2-8515PER | 5V | Duplex FC pigtail | -10~85 ºC |
| OPT2-8513SER | 3.3V | Duplex SC | -10~85 ºC |
| OPT2-8513TER | 3.3V | Duplex ST | -10~85 ºC |
| OPT2-8513FER | 3.3V | Duplex FC | -10~85 ºC |
| OPT2-8513PER | 3.3V | Duplex FC pigtail | -10~85 ºC |

**0~2Mbps 1x9 TTL multimode 850nm 1km Transceiver (Industrial Temperature)**

| Part number | Voltage | Connector | Operating Temperature |
|---|---|---|---|
| OPT2-8515STR | 5V | Duplex SC | -40~85 ºC |
| OPT2-8515TTR | 5V | Duplex ST | -40~85 ºC |
| OPT2-8515FTR | 5V | Duplex FC | -40~85 ºC |
| OPT2-8515PTR | 5V | Duplex FC pigtail | -40~85 ºC |
| OPT2-8513STR | 3.3V | Duplex SC | -40~85 ºC |
| OPT2-8513TTR | 3.3V | Duplex ST | -40~85 ºC |
| OPT2-8513FTR | 3.3V | Duplex FC | -40~85 ºC |
| OPT2-8513PTR | 3.3V | Duplex FC pigtail | -40~85 ºC |

## Warnings

***Process plug***

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles.It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

***Handling Precautions***

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

***Laser Safety***

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

For more product information, visit us on the web at www.optcore.net

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