



### **SFP-3-OPC**

Rad® SFP-3 Compatible TAA Compliant 100Base-LX SFP Transceiver (SMF, 1310nm, 40km, LC)

#### **Features**

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 100Base Ethernet
- Access and Enterprise

#### **Product Description**

This Rad® SFP-3 compatible SFP transceiver provides 100Base-LX throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Rad® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Rad®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2.
- Immunity compatible with IEC 61000-4-3.
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2.
- RoHs compliant with 2002/95/EC 4.1&4.2 2005/747/EC.

## Absolute Maximum Ratings

| Parameter                  | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|--------|------|------|------|------|
| Maximum Supply Voltage     | Vcc    | -0.5 |      | 4.0  | V    |
| Storage Temperature        | Tstg   | -40  |      | 85   | °C   |
| Operating Humidity         | RH     | 5    |      | 85   | %    |
| Operating Case Temperature | Tc     | 0    |      | 70   | °C   |
| Data Rate                  |        |      | 155  |      | Mbps |

## Electrical Characteristics (Tc=25°C, Vcc=3.3V)

| Parameter                     | Symbol | Min. | Typ. | Max. | Unit  | Notes |
|-------------------------------|--------|------|------|------|-------|-------|
| Power Supply Voltage          | Vcc    | 3.14 | 3.3  | 3.46 | V     |       |
| Power Supply Current          | Icc    |      | 165  | 300  | mA    |       |
| Transmitter                   |        |      |      |      |       |       |
| Input Differential Impedance  | ZIN    | 85   | 100  | 120  | Ω     | 1     |
| LVPECL Inputs (Differential)  | VIN    | 500  |      | 2400 | mVp-p | 2     |
| Receiver                      |        |      |      |      |       |       |
| Output Differential Impedance | ZOUT   | 85   | 100  | 120  | Ω     |       |
| LVPECL Outputs (Differential) | VOUT   | 600  | 800  | 1600 | mVp-p | 2     |

## Notes:

1. RIN>100kΩ @ DC.
2. AC coupled.

## Optical Characteristics

| Parameter                 | Symbol | Min.                  | Typ. | Max. | Unit | Notes |
|---------------------------|--------|-----------------------|------|------|------|-------|
| Transmitter               |        |                       |      |      |      |       |
| Average Output Power      | PO     | -5                    |      | 0    | dBm  | 1     |
| Optical Wavelength        | λ      | 1275                  | 1310 | 1350 | nm   |       |
| Spectral Width (RMS)      | Δλ     |                       |      | 3    | nm   |       |
| Optical Rise/Fall Time    | Tr/Tf  |                       | 250  | 500  | ps   | 2     |
| Extinction Ratio          | ER     | 9                     |      |      | dB   | 3     |
| Output Optical Eye        |        | IUT-T G.957 Compliant |      |      |      |       |
| Receiver                  |        |                       |      |      |      |       |
| Receiver Sensitivity      | Pmin   |                       |      | -32  | dBm  | 4     |
| Receiver Overload         | Pmax   | 0                     |      |      | dBm  |       |
| Optical Center Wavelength | λC     | 1260                  |      | 1600 | nm   |       |
| LOS De-Assert             | LOSD   |                       |      | -32  | dBm  |       |
| LOS Assert                | LOSA   | -45                   |      |      | dBm  |       |
| LOS Hysteresis            |        | 0.5                   |      |      | dB   |       |

### Notes:

1. Average.
2. 20-80%.
3. Filtered, measured with a PRBS  $2^{23}-1$  test pattern @155Mbps.
4. Minimum average optical power is measured at BER less than  $1E^{-12}$  with  $2^{23}-1$  PRBS and ER=9dB.

## Pin Descriptions

| Pin | Symbol      | Name/Description                                                 | Notes |
|-----|-------------|------------------------------------------------------------------|-------|
| 1   | VeeT        | Transmitter Ground (Common with Receiver Ground).                | 1     |
| 2   | Tx_Fault    | Transmitter Fault.                                               |       |
| 3   | Tx_Disable  | Transmitter Disable. Laser output disabled on "high" or "open."  | 2     |
| 4   | MOD_DEF(2)  | Module Definition 2. Data Line for Serial ID.                    | 3     |
| 5   | MOD_DEF(1)  | Module Definition 1. Clock Line for Serial ID.                   | 3     |
| 6   | MOD_DEF(0)  | Module Definition 0. Grounded within the module.                 | 3     |
| 7   | Rate Select | No Connection Required.                                          |       |
| 8   | LOS         | Loss of Signal Indication. "Logic 0" indicates normal operation. | 4     |
| 9   | VeeR        | Receiver Ground (Common with Transmitter Ground).                | 1     |
| 10  | VeeR        | Receiver Ground (Common with Transmitter Ground).                | 1     |
| 11  | VeeR        | Receiver Ground (Common with Transmitter Ground).                | 1     |
| 12  | RD-         | Receiver Inverted Data Out. AC Coupled.                          |       |
| 13  | RD+         | Receiver Non-Inverted Data Out. AC Coupled.                      |       |
| 14  | VeeR        | Receiver Ground (Common with Transmitter Ground).                | 1     |
| 15  | VccR        | Receiver Power Supply.                                           |       |
| 16  | VccT        | Transmitter Power Supply.                                        |       |
| 17  | VeeT        | Transmitter Ground (Common with Receiver Ground).                | 1     |
| 18  | TD+         | Transmitter Non-Inverted Data In. AC Coupled.                    |       |
| 19  | TD-         | Transmitter Inverted Data In. AC Coupled.                        |       |
| 20  | VeeT        | Transmitter Ground (Common with Receiver Ground).                | 1     |

## Notes:

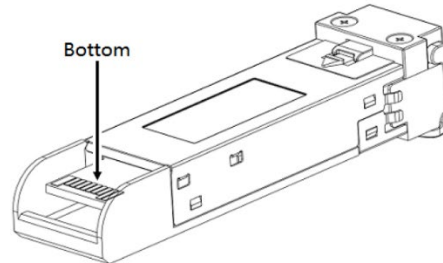
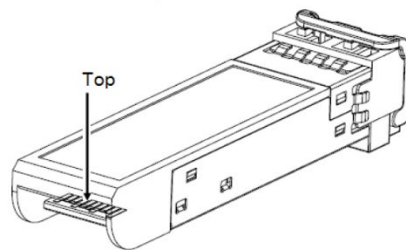
1. The circuit ground is internally isolated from the chassis ground.
2. Laser output is disabled on Tx\_Disable>2.0V or open, enabled on Tx\_Disable<0.8V.
3. Should be pulled up with 4.7kΩ-10kΩ on the host board to a voltage between 2.0V and 3.6V. MOD\_DEF(1) pulls the line low to indicate that the module is plugged in.
4. LOS is an open collector output. Should be pulled up with 4.7kΩ-10kΩ on the host board to a voltage between 2.0V and 3.6V. "Logic 0" indicates normal operation. "Logic 1" indicates a loss of signal.



Top of Board

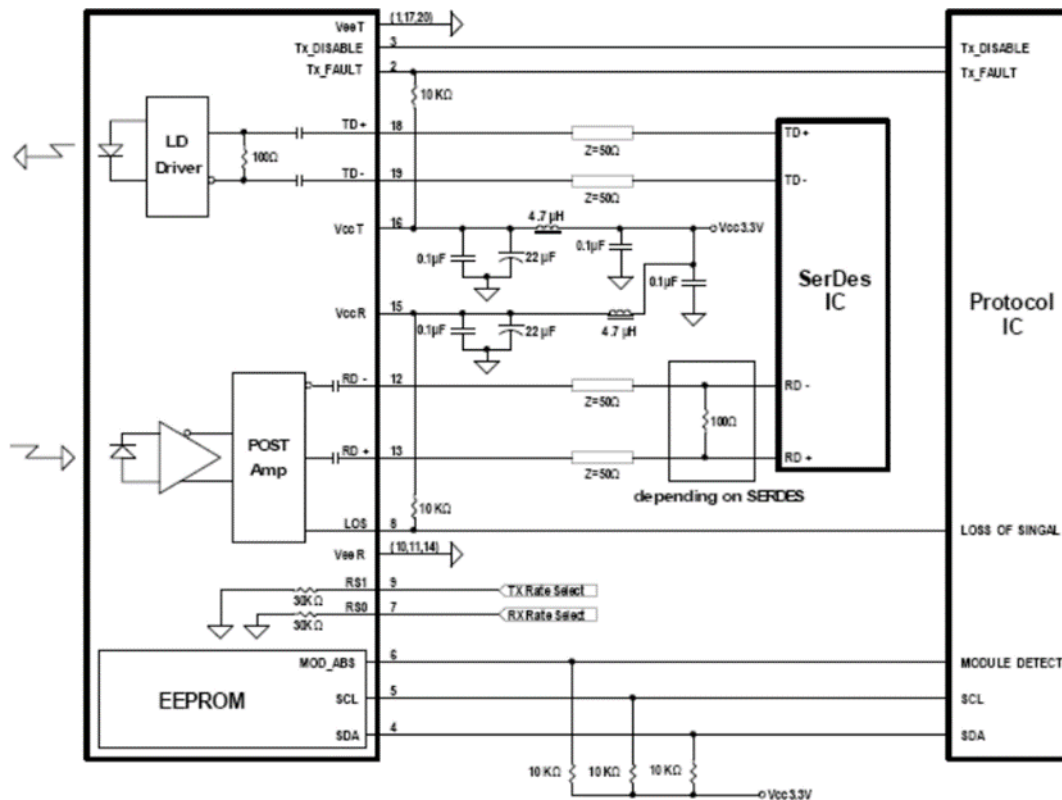


Bottom of Board



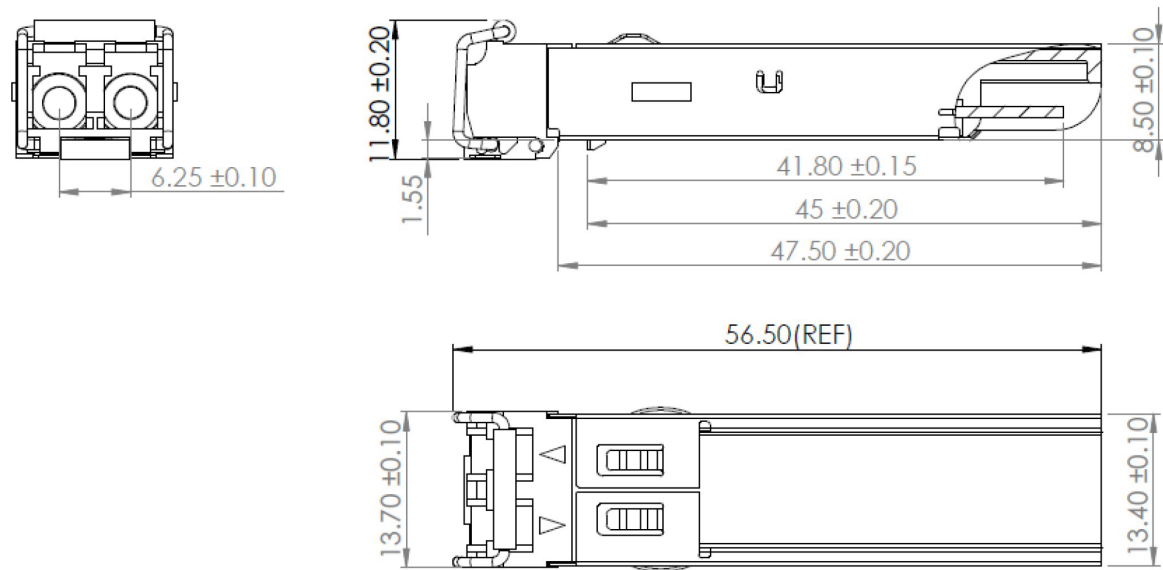
Pin-Out of Connector Block on the Host Board

## Recommended Circuit Schematic



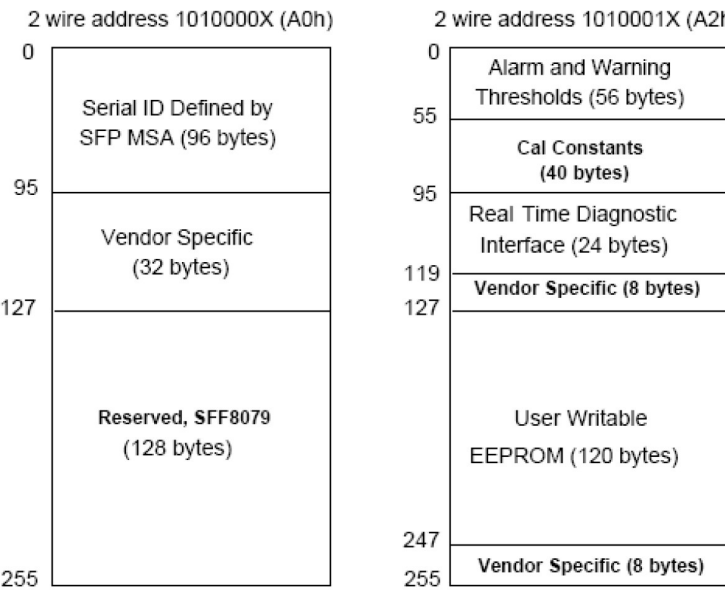
**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



**EEPROM Information**

EEPROM memory map-specific data field description is as below:



## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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