



### **FSFIBER-SFP-60K-OPC**

Sixnet® FSFIBER-SFP-60K Compatible TAA Compliant 100Base-LX SFP Transceiver (SMF, 1550nm, 60km, 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 Sixnet® FSFIBER-SFP-60K compatible SFP transceiver provides 100Base-LX throughput up to 60km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Sixnet® 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 Sixnet®, 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.

## Absolute Maximum Ratings

| Parameter                    | Symbol | Min. | Typ. | Max. | Unit |
|------------------------------|--------|------|------|------|------|
| Maximum Supply Voltage       | Vcc    | -0.5 |      | 4.0  | V    |
| Storage Temperature          | TS     | -40  |      | 85   | °C   |
| Operating Humidity           | RH     | 5    |      | 95   | %    |
| Case Operating Temperature   | Tc     | 0    |      | 70   | °C   |
| Data Rate (Gigabit Ethernet) |        |      | 155  |      | Mbps |
| 9/125µm G.652 SMF            | Lmax2  |      |      | 80   | km   |

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

| Parameter                      | Symbol   | Min.    | Typ. | Max.    | Unit | Notes |
|--------------------------------|----------|---------|------|---------|------|-------|
| Power Supply Voltage           | Vcc      | 3.13    | 3.30 | 3.47    | V    | 1     |
| Power Supply Current           | Icc      |         |      | 250     | mA   |       |
| Transmitter                    |          |         |      |         |      |       |
| Input differential impedance   | Rin      |         | 100  |         | Ω    | 1     |
| Single ended data input swing  | Vin, pp  | 250     |      | 1200    | mV   |       |
| TX Disable-High                |          | Vcc-1.3 |      | Vcc     | V    |       |
| TX Disable-Low                 |          | Vee     |      | Vee+0.8 | V    |       |
| TX Fault-High                  |          | Vcc-0.5 |      | Vcc     | V    |       |
| TX Fault-Low                   |          | Vee     |      | Vee+0.5 | V    |       |
| Receiver                       |          |         |      |         |      |       |
| Single ended data output swing | Vout, pp | 300     | 400  | 800     | mV   | 2     |
| Data output rise time          | tr       |         |      | 1500    | ps   | 3     |
| Data output fall time          | tf       |         |      | 1500    | ps   | 3     |
| LOS-High                       |          | Vcc-0.5 |      | Vcc     | V    |       |
| LOS-Low                        |          | Vee     |      | Vee+0.5 | V    |       |

### Notes:

1. AC coupled.
2. Into 100 ohm differential termination.
3. 20% - 80%

## Optical Characteristics

| Parameter                                | Symbol             | Min. | Typ. | Max.  | Unit | Notes |
|------------------------------------------|--------------------|------|------|-------|------|-------|
| <b>Transmitter</b>                       |                    |      |      |       |      |       |
| Output Opt. Power                        | PO                 | -5   |      | 0     | dBm  | 1     |
| Optical Wavelength                       | $\lambda$          | 1530 | 1550 | 1570  | nm   |       |
| Spectral Width                           | $\sigma$           |      |      | 1     | nm   |       |
| Optical Rise/Fall Time                   | tr/tf              |      |      | 1500  | ps   | 2     |
| Total Jitter Transmitter Jitter          | J <sub>TXp-p</sub> |      |      | 0.07  | UI   | 3     |
| Total Generated Transmitter Jitter (rms) | J <sub>TXrms</sub> |      |      | 0.007 | UI   |       |
| Optical Extinction Ratio                 | ER                 | 10   |      |       | dB   |       |
| <b>Receiver</b>                          |                    |      |      |       |      |       |
| RX Sensitivity @155Mbs                   | RSENS              |      |      | -34.5 | dBm  | 4     |
| Maximum Received Power                   | RX <sub>MAX</sub>  | 0    |      |       | dBm  |       |
| Optical Center Wavelength                | $\lambda_C$        | 1270 |      | 1600  | nm   |       |
| LOS De-Assert                            | LOSD               |      |      | -35   | dBm  |       |
| LOS Assert                               | LOSA               | -45  |      |       | dBm  |       |
| LOS Hysteresis                           |                    | 0.5  |      | 5     | dB   |       |

### Notes:

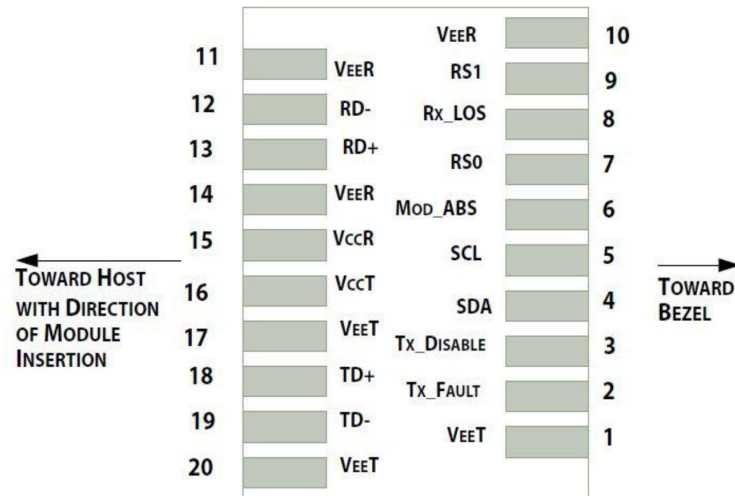
1. Class 1 Laser Safety.
2. Unfiltered, 20%-80%. Complies with OC-3 eye masks when filtered.
3. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and  $\Delta DJ$
4. Measured with PRBS 2<sup>23</sup>-1 at 10<sup>-10</sup> BER.

## Pin Descriptions

| Pin | Symbol      | Name/Descriptions                                              | Ref. |
|-----|-------------|----------------------------------------------------------------|------|
| 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    |

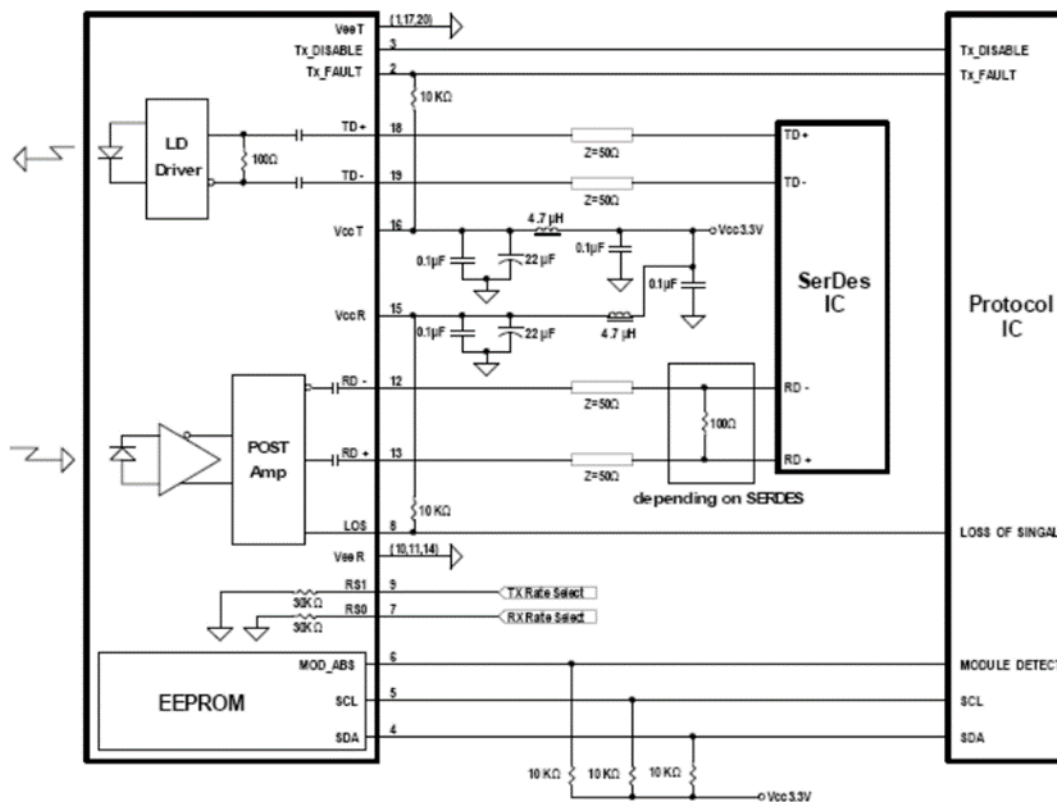
## Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable <0.8V.
3. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. MOD\_DEF (0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



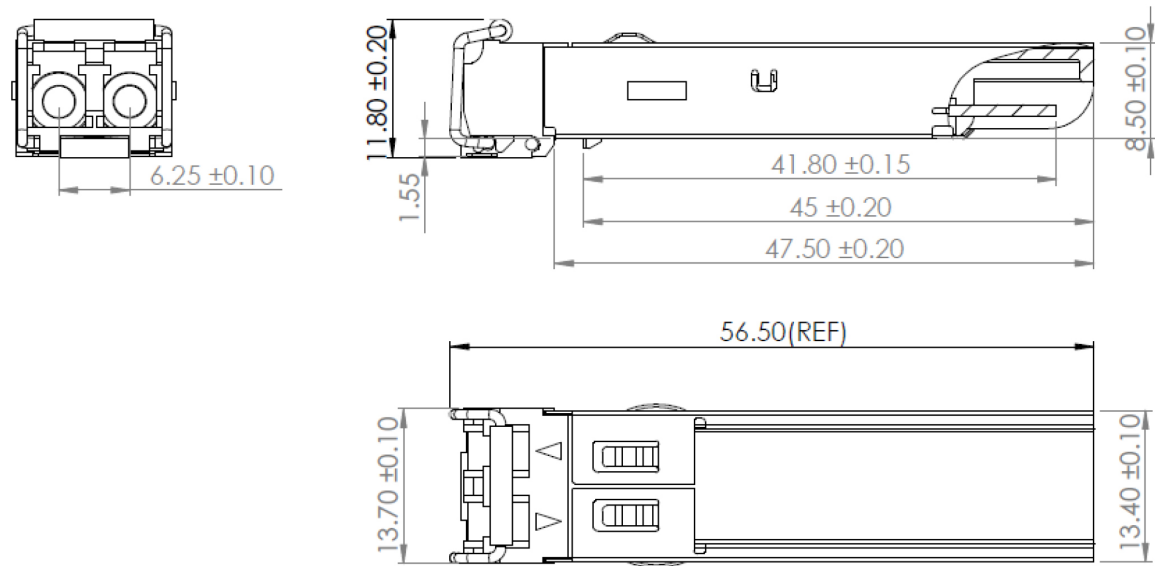
Pin-out of connector Block on Host board

### Recommended Circuit Schematic



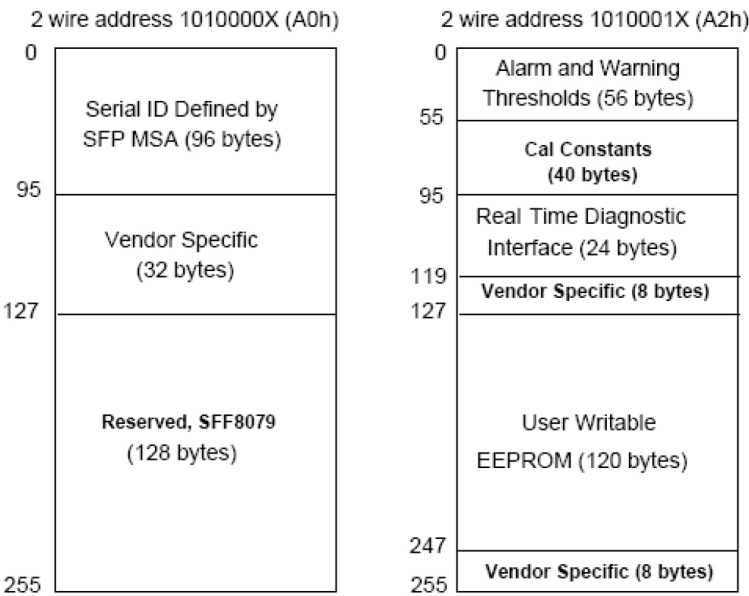
**Mechanical Specifications**

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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