

# Multi-Rate 155 Mb/s – 2.7 Gb/s 1310 nm Single mode, 5 – 50 km SFP Dual LC Connector

## Description

OptixCom's multi-rate fiber optics transceiver is designed for OC3/OC12/FC/GbE/2xFC/OC48 applications with data rate up to 2.7 Gb/s. This single mode module uses high performance 1310 nm laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 5 - 50 km of distance with standard single mode fibers and 11 - 26 dB of power budget. The products are RoHS compliant.



Lead-Free

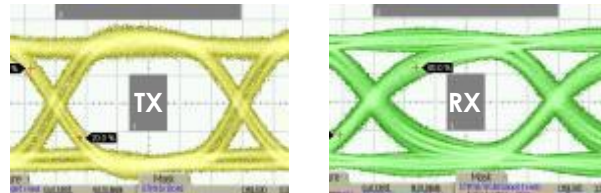
**SFP-2670LX-ATXXK**  
(XX = 5, 20, 50)



## Key Features

- 1310 nm single mode
- Multi-rate 155 Mb/s to 2.67 Gb/s
- 5 – 50 km with 11 – 26 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

2.5 Gb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



## Applications

- ✓ OC3/OC12/FC/GbE/2xFC/OC48
- ✓ High speed I/O for file server
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

## Ordering Information

**Part Number:** SFP-2670LX-ATXXK

### Description:

1310 nm single mode, multi-rate 155Mb/s - 2.7 Gb/s SFP Transceiver, XX km reach. 0 - 70°C.

## Operating Conditions

| Parameter           | Min. | Typical | Max. | Units |
|---------------------|------|---------|------|-------|
| Operate Temperature | 0    | 25      | 70   | °C    |
| Data Rate           | ---  | ---     | 2.67 | Gb/s  |
| Supply Voltage      | 3.1  | 3.3     | 3.5  | V     |

### Absolute Maximum Ratings

| Parameter                                | Symbol   | Min. | Max.     | Units |
|--|----------|------|----------|-------|
| Storage Temperature                      | $T_{st}$ | -40  | 85       | °C    |
| Supply Voltage                           | $V_{cc}$ | -0.5 | 5.0      | V     |
| Input Voltage                            | $V_{IN}$ | -0.5 | $V_{cc}$ | V     |
| Operating Current                        | $I_{op}$ | ---  | 400      | mA    |
| Output Current                           | $I_o$    | ---  | 50       | mA    |
| Soldering Temperature (10 sec. on leads) | $T_{sd}$ | ---  | 260      | °C    |

### General Transmitter Characteristics

| Parameter                                 | Symbol       | Min. | Typical | Max.     | Units |
|---|--------------|------|---------|----------|-------|
| Differential Input Voltage <sup>1</sup>   | $\Delta V_i$ | 0.4  | ---     | 2.0      | V     |
| Differential Input Impedance <sup>2</sup> | $Z$          | ---  | 100     | ---      | ohm   |
| Relative Intensity Noise                  | $RIN$        | ---  | ---     | -120     | dB/Hz |
| Rise/Fall Time (20% - 80%)                | $T_r/T_f$    | ---  | ---     | 160      | ps    |
| Total Jitter                              | $T_j$        | ---  | ---     | 0.1      | Ulp-p |
| TX Disable Asserted                       | $P_{OFF}$    | ---  | ---     | -45      | dBm   |
| TX Fault Output - High                    | $V_{FH}$     | 2.4  | ---     | $V_{cc}$ | V     |
| TX Fault Output - Low                     | $V_{FL}$     | 0    | ---     | 0.5      | V     |
| TX Disable Voltage – High                 | $V_{DH}$     | 2.4  | ---     | $V_{cc}$ | V     |
| TX Disable Voltage - Low                  | $V_{DL}$     | 0    | ---     | 0.5      | V     |
| TX Disable Assert Time                    | $T_{ass}$    | ---  | ---     | 10       | μs    |
| TX Disable Deassert Time                  | $T_{disass}$ | ---  | ---     | 1.0      | ms    |
| Time to Initialize                        | $T_{as}$     | ---  | ---     | 300      | ms    |
| TX Fault from Fault to Assertion          | $T_{fault}$  | ---  | ---     | 100      | μs    |
| TX Disable Time to Start Reset            | $T_{reset}$  | 10   | ---     | ---      | μs    |

Notes:

1. Module is designed for AC coupling. DC voltage will be filtered by internal capacitor.
2. Single ended will be 50 ohm for each signal line.

**Class 1 Laser Product**  
Complies with  
**21 CFR 1040.10 and 1040.11**



**General Receiver Characteristics**

| Parameter                                 | Symbol       | Min. | Typical | Max.     | Units   |
|---|--------------|------|---------|----------|---------|
| Differential Output Voltage <sup>1</sup>  | $\Delta V_o$ | 0.5  | ---     | 1.2      | V       |
| Differential Input Impedance <sup>2</sup> | Z            | ---  | 100     | ---      | Ohm     |
| Optical Return Loss                       | OL           | 27   | ---     | ---      | dB      |
| Rise/Fall Time                            | $T_r/T_f$    | ---  | ---     | 250      | ps      |
| RX Signal Loss Output - High              | $V_{RL+}$    | 2.4  | ---     | $V_{cc}$ | V       |
| RX Signal Loss Output - Low               | $V_{RL-}$    | 0    | ---     | 0.5      | V       |
| RX Signal Loss Assert Time                | $T_{RL+}$    | ---  | ---     | 100      | $\mu$ s |
| RX Signal Loss Deassert Time              | $T_{RL-}$    | ---  | ---     | 100      | $\mu$ s |
| Serial ID Clock Rate                      | $f_c$        | ---  | ---     | 100      | kHz     |

Notes:

1. Module is designed for AC LVPECL coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.

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**Transmitter Electro-Optical Characteristics**

| Parameter                         | Symbol          | Min. | Typical | Max. | Units |
|-----------------------------------|-----------------|------|---------|------|-------|
| Optical Output Power <sup>1</sup> | $P_o$           | -9   | ---     | -3   | dBm   |
| Optical Wavelength                | $\lambda_o$     | 1270 | 1310    | 1355 | nm    |
| Extinction Ratio                  | $ET$            | 8.2  | ---     | ---  | dB    |
| Spectral Width (rms)              | $\Delta\lambda$ | ---  | ---     | 2.5  | nm    |

**Receiver Electro-Optical Characteristics**

| Parameter                         | Symbol      | Min. | Typical | Max. | Units |
|-----------------------------------|-------------|------|---------|------|-------|
| Operating Wavelength              | $\lambda_c$ | 1260 | ---     | 1610 | nm    |
| Receiver Overload                 | $P_{max}$   | -3   | ---     | ---  | dBm   |
| Receiver Sensitivity <sup>2</sup> | $P_I$       | ---  | ---     | -20  | dBm   |
| RX Signal Loss – Asserted         | $P_{RL+}$   | ---  | ---     | -20  | dBm   |
| RX Signal Loss – Deasserted       | $P_{RL-}$   | -30  | ---     | ---  | dBm   |

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 2.5 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with IEEE 802.3z standard.
4. Maximum supply current for the transceiver from Vcc is 250 mA.

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