

Multi-Rate 1.0625 – 10 Gb/s 850 nm Multimode, 300 m SFP+ Dual LC Connector



SFP-10000SX-AT300M

Description

OptixCom's multi-rate fiber optics transceiver is designed for 1X, 2X, 4X, 8X, 10X FC, 10 GbE, and OC48 applications with data rate up to 10 Gb/s. This multimode fiber optics transceiver is designed with high performance 850 nm VCSEL light source. Dual LC connectors are used as standard interface and the package is compliant with Small Form Pluggable Plus (SFP+) specifications. The optical connector interface is dual LC.

The module is compliant with SFP+ Multi-Source Agreement (MSA). The transceiver reaches more than 300 meters of transmission distance with high-grade multimode fibers and >5 dB of power budget. The products are RoHS compliant.



Key Features

- 850 nm multimode,
- Multi-rate from 1.0625 to 10 Gb/s
- > 5 dB power budget, 300 m reach
- Duplex LC connector optical interface
- Z-axis hot pluggable
- SFF-8431 MSA Compliant
- AC coupling LVPECL differential I/O logics
- Single 3.3 V power supply
- TTL or PECL signal detect to monitor optical signals
- RoHS compliant

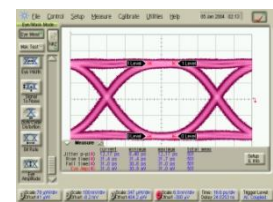
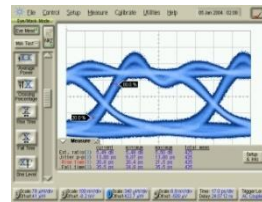
Applications

- ✓ 10G Fiber Channel, 10 Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Industrial Control Link
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

10 Gb/s, 2²³-1 NRZ data eye pattern

TX

RX



Ordering Information

Part Number: SFP-10000SX-AT300M

Description:

850 nm, 1 to 10 Gb/s, multimode, SFP+ fiber optics transceiver, 300 m reach, 0-70°C

Operating Conditions

| Parameter | Min. | Typical | Max. | Units |
|---------------------|------|---------|------|-------|
| Operate Temperature | 0 | 25 | 70 | °C |
| Data Rate | 1 | --- | 10 | Gb/s |
| Supply Voltage | 3.1 | 3.3 | 3.5 | V |
| Supply Current | --- | 200 | 250 | mA |

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Units |
|--|----------|------|----------|-------|
| Storage Temperature | T_{st} | -40 | 85 | °C |
| Supply Voltage | V_{CC} | -0.5 | 4.0 | V |
| Input Voltage | V_{IN} | -0.5 | V_{CC} | V |
| Operating Current | I_{op} | --- | 300 | mA |
| Output Current | I_o | --- | 50 | mA |
| Soldering Temperature (10 sec. on leads) | T_{sd} | --- | 260 | °C |

Transmitter Electro-Optical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Units |
|---|-----------------|------|---------|----------|-------|
| Differential Input Voltage ¹ | ΔV_i | 0.4 | --- | 1.2 | V |
| Differential Input Impedance ² | Z | --- | 100 | --- | ohm |
| Optical Output Power ³ | P_o | -6.5 | --- | -1 | dBm |
| Optical Wavelength | λ_o | 840 | 850 | 860 | nm |
| Relative Intensity Noise | RIN | --- | --- | -128 | dB/Hz |
| Extinction Ratio | ET | 4 | --- | --- | dB |
| TX Disable Power | P_{TD} | --- | --- | -30 | dBm |
| Spectral Width (-20dB) | $\Delta\lambda$ | --- | --- | 0.45 | nm |
| TX Disable Voltage – High | V_{DH} | 2.4 | --- | V_{CC} | V |
| TX Disable Voltage - Low | V_{DL} | 0 | --- | 0.5 | V |
| TX Fault Output - High | V_{FH} | 2.4 | --- | V_{CC} | V |
| TX Fault Output - Low | V_{FL} | 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. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.
3. Output of coupling optical power into OM2 50/125 μm MMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X/10X FC standards.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11



Receiver Electro-Optical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Units |
|--|---------------------|------|---------|----------|---------|
| Differential Input Impedance | Z | --- | 100 | --- | Ohm |
| Differential Output Voltage ¹ | ΔV_o | 0.3 | --- | 0.9 | V |
| Operating Wavelength | λ_c | 840 | --- | 860 | nm |
| Receiver Overload | P_{max} | -1 | --- | --- | dBm |
| Receiver Sensitivity ² | P_I | --- | --- | -11.1 | dBm |
| Receiver Sensitivity (OMA) ² | P_I | --- | --- | -7.5 | dBm |
| Optical Return Loss | OL | 12 | --- | --- | dB |
| RX Signal Loss – Deasserted | P_{RL-} | -30 | --- | --- | dBm |
| RX Signal Loss – Asserted | P_{RL+} | --- | --- | -12 | dBm |
| Signal Detect Hysteresis | $P_{RL+} - P_{RL-}$ | 1.0 | --- | --- | dB |
| RX Signal Loss Assert Time | T_{RL+} | --- | --- | 100 | μ s |
| RX Signal Loss Deassert Time | T_{RL-} | --- | --- | 100 | μ s |
| RX Signal Loss Output - High | V_{RL+} | 2.4 | --- | V_{cc} | V |
| RX Signal Loss Output - Low | V_{RL-} | 0 | --- | 0.5 | V |

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 10 Gb/s, 2²³ – 1 PRBS data pattern, and > 1x10⁻¹² of Bit-Error-Rate (BER)

Typical Transmission Distance for Multimode Fibers @ 850 nm

| Data Rate | Fiber Type | Distance (m) | Data Rate | Fiber Type | Distance (m) |
|-----------|--------------------------|--------------|-----------|--------------------------|--------------|
| 1.25 Gb/s | 50 μ m, 500 MHz*km | 550 | 10 Gb/s | 50 μ m, 2000 MHz*km | 300 |
| | 50 μ m, 400 MHz*km | 500 | | 50 μ m, 500 MHz*km | 82 |
| | 62.5 μ m, 200 MHz*km | 275 | | 62.5 μ m, 200 MHz*km | 33 |
| | 62.5 μ m, 160 MHz*km | 220 | | 62.5 μ m, 160 MHz*km | 26 |

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

