

# Multi-Rate 1 Gb/s – 4.25 Gb/s 1310 nm Single mode, 10 km SFP Dual LC Connector

## Description

OptixCom's multi-rate fiber optics transceiver is designed for Gigabit Ethernet and 1X/2X/4X Fiber Channel applications with data rate up to 4.25 Gb/s. This single mode module uses high performance 1310 nm DFB laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 10 km of distance with standard single mode fibers and 10 dB of power budget. The products are RoHS compliant.



Lead-Free

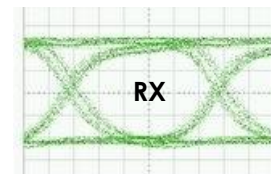
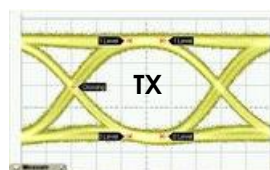
## SFP-4250LX-AT10K



## Key Features

- FC 1X, 2X, and 4X compliant
- IEEE 802.3 Gigabit Ethernet compliant
- Multi-rate 1.0625 to 4.25Gb/s
- 10 km with 10 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

4.25 Gb/s,  $2^{23}-1$  NRZ Data Eye Pattern



## Applications

- ✓ Fiber Channel 1X, 2X, and 4X
- ✓ IEEE 802.3z Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

## Ordering Information

**Part Number:** SFP-4250LX-AT10K

### Description:

1310 nm 1.0 to 4.25 Gb/s, single mode, SFP fiber optics transceiver, 10 km reach, 0 - 70°C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-4250LX-AT4K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	1	---	4.25	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	---	300	mA

**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage	$V_{cc}$	-0.5	6.0	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

**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.4	---	1.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power <sup>3</sup>	$P_o$	-8	---	0	dBm
Optical Wavelength	$\lambda_o$	1285	1310	1345	nm
Relative Intensity Noise	$RIN$	---	---	-118	dB/Hz
OMA	OMA	290	---	---	$\mu W$
TX Disable Voltage – High	$V_{DH}$	2.0	---	$V_{cc}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.8	V
TX Fault Output - High	$V_{FH}$	2.0	---	$V_{cc}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.8	V
TX Disable Assert Time	$T_{ass}$	---	---	10	$\mu s$
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	$\mu s$
TX Disable Time to Start Reset	$T_{reset}$	10	---	---	$\mu s$

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 9/125  $\mu m$  SMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X 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 <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Operating Wavelength	$\lambda_c$	1260	---	1600	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup> (@4.25 Gb/s)	$P_I$	---	---	-18	dBm
Receiver Sensitivity (@2.125 Gb/s)	$P_I$	---	---	-21	dBm
Receiver Sensitivity <sup>3</sup> (@1.0625 Gb/s)	$P_I$	---	---	-22	dBm
Optical Return Loss	OL	12	---	---	dB
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
RX Signal Loss Assert Time	$T_{RL+}$	---	---	100	$\mu$ s
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu$ s
RX Signal Loss Output - High	$V_{RL+}$	2.0	---	$V_{cc}$	V
RX Signal Loss Output - Low	$V_{RL-}$	0	---	0.8	V

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 4.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)
3. Test at 1.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)

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