

# 10 Gb/s, 1550 nm Single Mode, 40 and 80 km XFP Dual LC Package



10G Small Form Pluggable (XFP) Transceivers

## Description

OptixCom's 10 Gb/s XFP fiber optics transceiver is designed with advanced 1550 nm DFB laser and high speed electronics to achieve the optimum performance for optical interconnect applications. It is compliant with 10G Ethernet and Fiber Channel for datacom applications and SONET/SDH for telecom applications. It is compliant with XFP Multi-Source Agreement (MSA) INF-8077i.

The transceiver uses duplex LC connector for the optical interface. It is hot pluggable in the z-axis with a 30-pin connector. The transceiver has > 15 dB power budget for 40 km, and > 23 dB for 80 km of transmission distance with standard single mode fibers. The product is RoHS compliant. Total power consumption is < 3.5W.



Lead-Free

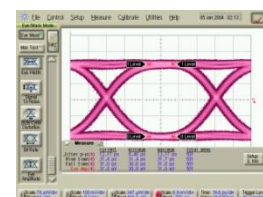
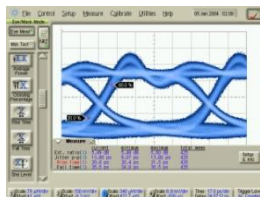
**XFP-10000EX-ATXXK**  
(XX = 40, 80)



10 Gb/s, 2<sup>23</sup>-1 NRZ data eye pattern

**TX**

**RX**



## Key Features

- 1550 nm single mode, 40/80 km, 10 Gb/s data rate
- > 15 dB power budget for 40 km
- > 23 dB power budget for 80 km
- Duplex LC connector optical interface
- 30-pin Z-axis hot pluggable connector
- AC coupling CML differential I/O logics
- Compliant with XFP MSA standard
- Compliant with IEEE 802.3ae, 10GBASE-EW/ER
- Compliant with 10G FC Fiber Channel Standard
- Multiple 3.3 and 5V power supply
- RoHS compliant

## Applications

- ✓ 10G Fiber Channel, 10 Gigabit Ethernet
- ✓ SONET OC-192/SDH STM-64
- ✓ High speed I/O for file server
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

## Ordering Information

**Part Number:** XFP-10000EX-ATXXK

### Description:

1550 nm 10 Gb/s, single mode, XFP fiber optics transceiver, XX km reach, -5 - 70°C.

XX = 40, 80.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	-5	25	70	°C
Data Rate	9.95	---	11.3	Gb/s
Supply Voltage	3.13	3.3	3.47	V
Supply Current @ 3.3V	---	---	750	mA
Supply Voltage	4.75	5.0	5.25	V
Supply Current @ 5V	---	---	500	mA

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### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage @ 3.3V	$V_{CC}$	-0.5	4.0	V
Input Voltage	$V_{IN}$	-0.5	$V_{CC}$	V
Supply Voltage @ 5V	$V_{CC}$	-0.5	6.0	V
Output Current	$I_o$	---	50	mA

### General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.2	---	0.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Transmitter & Dispersion Penalty	$TDP$	---	---	3.0	dB
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Relative Intensity Noise	$RIN$	---	---	-130	dB/Hz
TX Disable Asserted	$P_{OFF}$	---	---	-30	dBm
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	$T_{disass}$	---	---	2	ms
Time to Initialize	$T_{ini}$	---	---	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 capacitors.
2. Single ended will be 50 ohm for each signal line.
3. Refer to OptixCom "XFP Design Reference Guide" or IEEE 802.3ae for more design details.

**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	$\Delta V_o$	0.4	---	0.8	V
Differential Input Impedance <sup>1</sup>	Z	---	100	---	Ohm
Optical Return Loss	OL	27	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	40	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

Notes:

1. Single ended will be 50 ohm for each signal line.
2. Refer to OptixCom "XFP Design Reference Guide" or IEEE 802.3ae for more design details.

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**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-1	---	+2	dBm
Optical Modulation Amplitude (OMA)	$P_o$	-2.1	---	---	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1565	nm
Extinction Ratio	$ET$	8.2	---	---	dB

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1270	---	1600	nm
Receiver Overload	$P_{max}$	-1	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_i$	---	---	-16	dBm
Receiver Sensitivity in OMA	$P_{iOMA}$	---	---	-14.1	dBm
Stressed Receiver Sensitivity in OMA	$P_{iS}$	---	---	-11.3	dBm
Dispersion Penalty		---	---	2	dB
Signal Detect– Deasserted	$P_{SD-}$	-28	---	---	dBm
Signal Detect– Asserted	$P_{SD+}$	---	---	-22	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 10 Gb/s,  $2^{31} - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER).
3. Refer to OptixCom "XFP Design Reference Guide" or IEEE 802.3ae for more design details.

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