

# 10 Gb/s, 1550 nm Single mode, 40 - 80 km SFP+ Dual LC Connector



## Description

OptixCom's 10 Gb/s SFP+ 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. The optical connector interface is dual LC.

The module is compliant with SFP+ Multi-Source Agreement (MSA). 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 < 2W.



Lead-Free

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



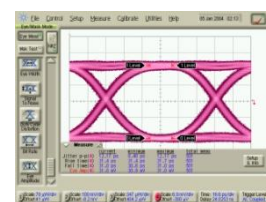
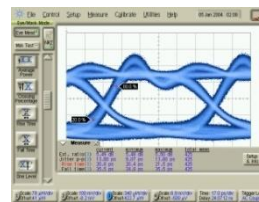
## Key Features

- 1550 nm single mode, 40 - 80 km, 10 Gb/s
- > 15 dB power budget for 40 km
- > 23 dB power budget for 80 km
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8431 MSA Compliant
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

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

TX

RX



## Ordering Information

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

### Description:

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

XX = 40, 80.

## Applications

- ✓ Fiber Channel 1X, 2X, 4X, 8X, and 10X
- ✓ IEEE 802.3z 10 Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	-5	25	70	°C
Data Rate	1	---	10	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current (40km)	---	360	450	mA
Supply Current (80km)	---	420	620	mA

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**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
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.

**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	---	0.8	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.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+4	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	$P_{max}$	-8	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-23	dBm
Receiver Sensitivity in OMA	$P_{IOMA}$	---	---	-22.1	dBm
Dispersion Penalty		---	---	3	dB
Signal Detect– Deasserted	$P_{SD-}$	-34	---	---	dBm
Signal Detect– Asserted	$P_{SD+}$	---	---	-24	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 10 Gb/s, 2<sup>31</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11

