

**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.



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



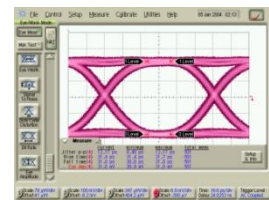
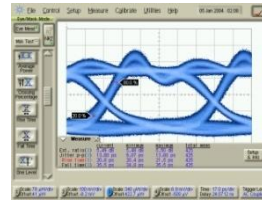
Key Features

- 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, 2²³-1 NRZ data eye pattern

TX

RX



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

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.

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

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 ¹	ΔV_i	0.2	---	0.8	V
Differential Input Impedance ²	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	ΔV_o	0.4	---	0.8	V
Differential Input Impedance ¹	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	μs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	μs

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 ¹	P_o	0	---	+3	dBm
Optical Modulation Amplitude (OMA)	P_o	-2.1	---	---	dBm
Optical Wavelength	λ_o	1530	1550	1565	nm
Extinction Ratio	ET	8.2	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	λ_c	1270	---	1600	nm
Receiver Overload	P_{max}	-1	---	---	dBm
Receiver Sensitivity ²	P_i	---	---	-15	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-}	-25	---	---	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-18	dBm

Notes:

1. Output of coupling optical power into 9/125 μ m SMF.
2. Test at 10 Gb/s, $2^{31} - 1$ PRBS data pattern, and $> 1 \times 10^{-12}$ of Bit-Error-Rate (BER).

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

