

10 Gb/s, 1310 nm Single mode, 2-20 km SFP+ Dual LC Connector



Description

OptixCom's 10 Gb/s SFP+ fiber optics transceiver is designed with advanced 1310 nm FP laser and high speed electronics to achieve the optimum performance for optical interconnect applications. It is compliant with 10G Ethernet and Fiber Channel for the datacom 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 > 6 dB power budget for 2-10 km of transmission distance with standard single mode fibers. The product is RoHS compliant. Total power consumption is < 2W.



SFP-10000LX-ATXXK
(XX = 2, 10, 20)



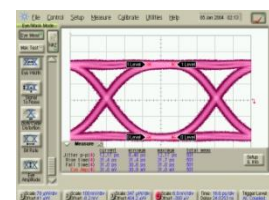
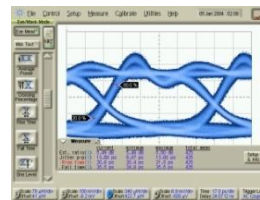
Key Features

- 1310 nm single mode, 2-10 km, 10 Gb/s
- > 6 dB power budget for 2-10 km
- > 12 dB power budget for 20 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

Applications

- ✓ Fiber Channel 1X, 2X, 4X, 8X, and 10X
- ✓ IEEE 802.3z 10 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

10 Gb/s, 2²³-1 NRZ data eye pattern
TX RX



Ordering Information

Part Number: SFP-10000LX-ATXXK

Description:

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

XX = 2, 10, 20

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	---	350	450	mA

U.S.A. Office: Optix Communications, Inc.

17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614

Tel: (949) 679-5712 Fax: (949) 420-2134

<http://www.OptixCom.com>

<http://www.OpticalTransceiver.com>

Email: Support@OptixCom.com

Germany Office: OptixCom GmbH

Freiherr vom Stein Strasse 19, 60323
Frankfurt am Main, Germany

Tel: +49 (0)69 7953-3646

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}	---	500	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	-8.2	---	0.5	dBm
Optical Wavelength	λ_o	1285	1310	1345	Nm
Relative Intensity Noise	RIN	---	---	-128	dB/Hz
OMA	OMA	-5.2	---	---	dBm
TX Disable Power	P_{TD}	---	---	-30	dBm
Side Mode Suppression Ratio	SMSR	30	---	---	dB
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 9/125 μm SMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X/8X/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	1260	---	1600	nm
Receiver Overload	P_{max}	0.5	---	---	dBm
Receiver Sensitivity ² (@10 Gb/s)	P_I	---	---	-14.4	dBm
Receiver Sensitivity ² (OMA)	P_I	---	---	-12.6	dBm
Stressed Receiver Sensitivity ² (OMA)	P_I	---	---	-10.3	dBm
Optical Return Loss	OL	12	---	---	dB
RX Signal Loss – Deasserted	P_{RL-}	-30	---	---	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-15	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).

**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	-8.2	---	+0.5	dBm
Optical Modulation Amplitude (OMA)	P_o	-5.2	---	---	dBm
Optical Wavelength	λ_o	1285	1310	1345	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}	0.5	---	---	dBm
Receiver Sensitivity ²	P_i	---	---	-14.4	dBm
Receiver Sensitivity in OMA	P_{iOMA}	---	---	-12.6	dBm
Stressed Receiver Sensitivity in OMA	P_{iS}	---	---	-10.3	dBm
Dispersion Penalty		---	---	2	dB
Signal Detect– Deasserted	P_{SD-}	-25	---	---	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-15	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).

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