10 Gb/s, 1550 nm Single Mode, 40 and 80 km X2 Dual SC Package

OptixCom
Connect with Light
10G X2 Optical Transceivers

Lead-Free

X2-10000EX-AT*XX*K
(*XX* = 40, 80)

Description

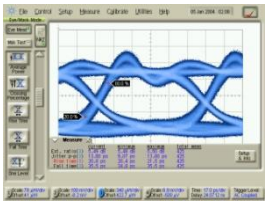
OptixCom's X2 fiber optics transceiver is designed with advanced 1550 nm EA-DFB laser and high speed electronics to achieve the optimum performance for optical interconnect applications. It is compliant with the X2 Multi-Source Agreement (MSA).

X2 uses the same 70-pin electrical connector as XENPAK and supports implementations of XENPAK's four lane XAUI (10 Gigabit attachment unit interface) at both Ethernet (3.125 Gb/sec) and/or Fiber Channel (3.1875 Gb/sec) rates.

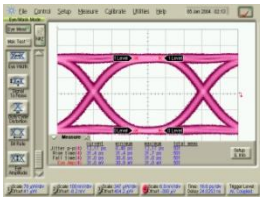
The transceiver uses duplex SC connector for the optical interface and is hot pluggable in the z-axis. The transceiver has >15 dB of power budget for 40 km and >24 dB for 80 km of transmission distance with single mode fibers. The product is RoHS compliant. Total power consumption is < 4W.

10 Gb/s, 2^{31}-1 NRZ data eye pattern

TX



RX



Key Features

- Standard XAUI interface with 3Gb/s per channel
- 1550 nm single mode, 40/80 km, 10 Gb/s data rate
- > 15 dB power budget for 40 km
- > 24 dB power budget for 80 km
- Duplex SC connector optical interface
- 70-pin Z-axis hot pluggable connector
- AC coupling CML differential I/O logics
- Compliant with X2 MSA standard
- Compliant with IEEE 802.3ae, 10GBASE-ER/ZR
- Compliant with 10G FC Fiber Channel Standard
- RoHS compliant

Ordering Information

Part Number: X2-10000EX-AT***XX***K

Description:

1550 nm 10 Gb/s, single mode, X2 fiber optics transceiver, ***XX*** km reach, 0-70°C.

XX = 40, 80.

Applications

- ✓ 10G Fiber Channel & Ethernet
- ✓ OC192/STM-64 for SONET/SDH
- ✓ 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

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	9.95	---	11.3	Gb/s
Supply Voltage (3.3V)	3.1	3.3	3.5	V
Supply Voltage (5V)	4.75	5	5.25	V
Adaptable Power Supply	1.15	1.2	1.25	V
Module Power Dissipation	---	---	4	W

Phone: (949) 679-5712 Fax: (949) 420-2134
17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

http://www.OptixCom.com
http://www.OpticalTransceiver.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-20	85	°C
Supply Voltage @ 3.3V	*Vcc3*	-0.5	4.0	V
Supply Voltage @ 5V	*Vcc5*	-0.5	6.0	V
Supply Voltage (APS)	*Vaps*	0	1.5	V
Humidity	*R.H.*	0	85	%

General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
XAUI Data Rate	*XDR*	---	3.125	---	Gb/s
XAUI Baud Rate Tolerance	*XBRT*	-100	---	+100	ppm
Differential Input Voltage [1]	*ΔVi*	0.2	---	1.6	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Optical Wavelength	λo	1530	---	1565	nm
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage	*ΔVo*	0.8	---	1.6	V
Operating Wavelength	λc	1260	---	1600	nm
Differential Input Impedance [2]	*Z*	---	100	---	Ohm
Rise/Fall Time (20% - 80%)	*Tr/Tf*	---	---	40	ps

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 "X2 Design Reference Guide" or IEEE 802.3ae for more design details.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Electrical Signal Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
1.2 V CMOS					
Input High Voltage	$V_{IL(MAX)}$	---	---	0.36	V
Input Low Voltage	$V_{IH(MIN)}$	0.84	---	1.25	V
Capacitance		---	---	320	pF
Pull Up Resistance	R_{pull}	10k	---	22k	Ohm
MDIO I/O					
Output Low Voltage	V_{OL}	-0.3	---	0.2	V
Output Low Current	I_{OL}	---	---	4	mA
Input High Voltage	V_{IH}	0.84	---	1.5	V
Input Low Voltage	V_{IL}	-0.3	---	0.36	V
Pull-Up Supply Voltage	V_{PULL}	1.14	1.2	1.26	
Input Capacitance	C_{IN}	---	---	10	pF
Load Capacitance	C_{LOD}	---	---	470	pF
External Pull-Up Resistance	E_{pull}	200	---	---	Ohm

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+4	dBm
Optical Wavelength	λ_O	1530	1550	1565	nm
Extinction Ratio	*ET*	9	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Receiver Sensitivity [2]	*PI*	-24	---	-7	dBm
Receiver Sensitivity in OMA [2]	*PIOMA*	---	---	-22	dBm
RX Stressed Sensitivity in OMA [2]	*PSOMA*	---	---	-19	dBm
Reflectance	*Rrx*	---	---	-26	dB

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 10 Gb/s, 2^{31} – 1 PRBS data pattern, and > $1x10^{-12}$ of Bit-Error-Rate (BER).
3. Refer to OptixCom "X2 Design Reference Guide" or IEEE 802.3ae for more design details.

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