

# 100 Gb/s (4x25 Gb/s), 10 km CWDM LR4, Singlemode CFP4 Dual LC Package

## Description

OptixCom's 100 Gb/s CFPx optical transceiver is designed to operate with 4x CWDM channels for up to 10 km of transmission distance. The transceiver uses 1296, 1300, 1305 and 1309 nm EML laser wavelengths, with each wavelength running at 25 Gb/s. They are then multiplexed together into a single channel to achieve 100 Gb/s of data transmission.

On the receiver side, the 100 Gb/s data signal is demultiplexed and converted to the same 4x CWDM channels as the transmitter side. It is compliant with 100G Ethernet standard and CFP Multi-Source Agreement (MSA) with Management interface clock and data lines (MDIO) management interface.

The transceiver uses dual LC connector for single mode applications. It is hot pluggable in the z-axis with a 56-pin connector for CFP4 package. The product is RoHS compliant. Total power consumption is < 6W.

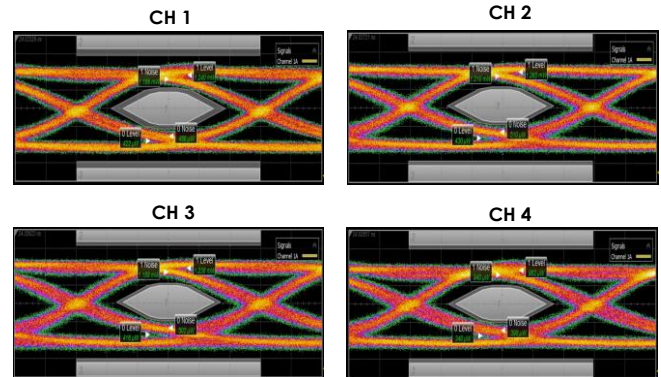


Lead-Free

## CP4-100GLX4-AT10K



4 x 25 Gb/s Channels, 2<sup>31</sup>-1 NRZ Data Eye Pattern



## Key Features

- 4x CWDM channels 1296, 1300, 1305 and 1309 nm.
- 100 Gb/s, 25 Gb/s for each LR4 wavelength
- 10 km transmission distance for SMF
- Duplex LC single mode interface connector
- Built-in CDR, no external reference clock required.
- 56-pin Z-axis hot pluggable connector
- Compliant with CFP MSA standard
- Compliant with IEEE 802.3ba, 100GBASE-LR4
- Compliant with ITU-T G.959.1, OIF CEI-28G-VSR
- Single 3.3V power supply
- RoHS compliant

## Applications

- ✓ 100G Fiber Channel and Ethernet
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

## Ordering Information

**Part Number:** CP4-100GLX4-AT10K

### Description:

CFP4, 4x CWDM LR4, 100 Gb/s, single mode, dual LC fiber optics transceiver, 10 km reach, 0-70°C

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	103	---	112	Gb/s
Supply Voltage	3.2	3.3	3.4	V
Supply Current	---	---	1800	mA

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage	$V_{cc}$	-0.3	3.6	V
Input Voltage	$V_{IN}$	$V_{cc}-0.3$	$V_{cc}+0.3$	V
Relative Humidity	$R.H.$	5	95	%

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.3	---	1.2	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power per Lane <sup>3</sup>	$P_o$	-4.3	---	4.5	dBm
Total Optical Output Power	$P_T$	---	---	10.5	dBm
Transmitter & Dispersion Penalty	$TDP$	---	---	2.2	dB
OMA Each Lane	$OMA$	-1.3	---	4.5	dBm
OMA Difference bet. Lanes	$OMA\_D$	---	---	5	dBm
Optical Wavelength 1	$\lambda_o$	1294.53	1295.56	1296.59	nm
Optical Wavelength 2	$\lambda_o$	1299.02	1300.05	1301.09	nm
Optical Wavelength 3	$\lambda_o$	1303.54	1304.58	1305.63	nm
Optical Wavelength 4	$\lambda_o$	1308.09	1309.14	1310.19	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Relative Intensity Noise	$RIN$	---	---	-130	dB/Hz
Transmitter Reflectance	$T_{ref}$	---	---	-12	dB
Extinction Ratio	$ET$	4	9	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	10	---	---	ps
TX Disable Asserted	$P_{OFF}$	---	---	-30	dBm
TX Enabled Assert Time	$T_{TAss}$	---	---	20	ms
TX Disabled Deassert Time	$T_{TDis}$	---	---	100	μs
Reset Initial Assert Time	$T_{rsass}$	---	---	2.5	s

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. Output of coupling optical power into 50/125 μm MMF.
4. Refer to OptixCom "CFP Design Reference Guide" for more design details.

**Control Signals Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
<b>3.3V LVCMOS</b>					
Input Voltage – Logic High	$V_{DH}$	2.0	---	$V_{CC}$	V
Input Voltage – Logic Low	$V_{DL}$	0	---	0.4	V
Output Voltage – Logic High	$V_{OH}$	2.0	---	$V_{CC}$	V
Output Voltage – Logic Low	$V_{OL}$	0	---	0.2	V
<b>1.2V LVCMOS</b>					
Input Voltage – Logic High	$V_{DH}$	0.9	---	1.5	V
Input Voltage – Logic Low	$V_{DL}$	0	---	0.4	V
Output Voltage – Logic High	$V_{OH}$	0.9	---	1.5	V
Output Voltage – Logic Low	$V_{OL}$	0	---	0.2	V
Output High Current	$I_{OH}$	---	---	-4	mA
Output Low Current	$I_{OL}$	4	---	---	mA
MDC Clock Rate	$f_{mdc}$	0.1	---	4	MHz
Common Mode Noise (rmv)	$V_{CMN}$	---	---	17.5	mV
Common Mode Voltage	$V_{CM}$	-0.3	---	2.8	V

Note:

1. Refer to OptixCom website for more technical details with "CFP Design Reference Guide" or "CFP MSA CFP4 Hardware Specification".

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage	$\Delta V_o$	0.3	---	1.2	V
Differential Input Impedance <sup>1</sup>	Z	---	100	---	Ohm
Operating Wavelength	$\lambda_c$	1250	---	1360	nm
Ave. Receiver Power Each Lane	$P_{ave}$	-10.6	---	4.5	dBm
RX Power Difference bet. Lanes	$P_{ave\_D}$	---	---	5.5	dBm
OMA RX Sensitivity per Lane <sup>2</sup>	$PI_{OMA}$			-8.6	dBm
Stressed RX Sensitivity in OMA	$P_{IS}$	---	---	-6.8	dBm
Receiver Reflectance	OL	---	---	-26	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	10	---	---	ps
RX Signal Loss – Asserted	$P_{SD+}$	---	---	-12	dBm
RX Signal Loss – Deasserted	$P_{SD-}$	-30	---	---	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	---	---	4	dB
RX LOS Assert Time	$T_{RL+}$	---	---	100	$\mu$ s
RX LOS Deassert Time	$T_{RL-}$	---	---	100	$\mu$ s

Notes:

1. Single ended will be 50 ohm for each signal line.
2. Test at 25 Gb/s, 2<sup>31</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).
3. Refer to OptixCom website for more technical details with “CFP Design Reference Guide” or “CFP MSA CFP4 Hardware Specification”.