Product Specification Sheet

OLXP311XL-CD10

RoHS Compliant 10Gbps XFP Optical Transceiver, 10km Reach

PRODUCT FEATURES

- Supports 9.95Gbps to 11.1Gbps bit rates
- Maximum link length of 10km with SMF
- 1310nm Un-cooled DFB laser
- XFP MSA package with duplex LC connector
- Very low EMI and excellent ESD protection
- High transmission margin

- +3.3V single power supply
- Below <1W power consumption
- Temperature range 0°C to 70°C

APPLICATIONS

- SDH STM I-64.1 at 9.953Gbps
- 10GBASE-LR/LW 10G Ethernet
- 1200-SM-LL-L 10G Fibre Channel
- 10GE over G.709 at 11.09Gbps
- OC192 over FEC at 10.709Gbps
- Other optical links, up to 11.1Gbps

PRODUCT DESCRIPTIONS

PG-LINK OLXP311XL-CD10 is compliant with the 10G Small Form-Factor Pluggable (XFP) Multi-Source Agreement (MSA), supporting data-rate of 10.3125Gbps(10GBASE-LR) or 9.910GBASE-LW), and transmission distance up to 10km on SMF.

The transceiver module comprises a transmitter with 1310nm un-cooled DFB laser and a receiver with a PIN photodiode. Transmitter and receiver are separate within a wide temperature range of 0℃ to +70℃ and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	Vcc	-0.5	4.0	V	
Storage Temperature		-40	85	°C	
Relative Humidity			85	%	

Note: Stress in excess of the maximum absolute ratings can cause permanent damage to the module

GERERAL OPERATING CHARACTERISTICS

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Data Rate	Ethernet			10.3125		Gb/s	
	Fiber Channel			10.518			
Supply Voltage		Vcc	3.13	3.3	3.47	V	
		Vcc				V	
Supply Current		Icc$_5$				mA	
		Icc$_3$			400	mA	
Operating Case Temp.		Tc	0		70	°C	

ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

● **Transmitter**

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff. input voltage swing			120		820	mVpp	1
Tx Disable input	H	VIH	2.0		Vcc+0.3	V	
	L	VIL	0		0.8		
Tx Fault output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		
Input Diff. Impedance		Zin		100		Ω	

● **Receiver**

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff. output voltage swing			340	650	800	mVpp	3
Rx LOS Output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		

Note 1) TD+/- are internally AC coupled with 100Ω differential termination inside the module.
Note 2) Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7k to 10kΩ resistors on the host board.
Pull up voltage between 2.0V and Vcc+0.3V.
Note 3) RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

OPTICAL CHARACTERISTICS

● **Transmitter**

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Operating Wavelength		1260		1355	nm	
Ave. output power (Enabled)	Po	-6		0	dBm	1
Extinction Ratio	ER	4			dB	1
RMS spectral width	Δλ			0.45	nm	

Rise/Fall time (20%~80%)	Tr/Tf			45	ps	2
Optical modulation amplitude	OMA			-2.8	dBm	
Dispersion penalty				3.9	dB	
Output Optical Eye	IEEE 802.3-2005 Compliant					

● **Receiver**

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Operating Wavelength		1260		1600	nm	
Sensitivity	Psen			-14.4	dBm	3
Min. overload	Pimax	0.5			dBm	
LOS Assert	Pa	-25			dBm	
LOS De-assert	Pd			-16	dBm	
LOS Hysteresis	Pd-Pa	0.5		4	dB	

Note 1) Measured at 10.3125b/s with PRBS 2^{31} – 1 NRZ test pattern.
Note 2) 20%~80%
Note 3) Under the ER worst case, measured at 10.3125 Gb/s with PRBS 2^{31} - 1 NRZ test pattern for BER < 1×10^{-12}

PIN DEFINITIONS AND FUNCTIONS
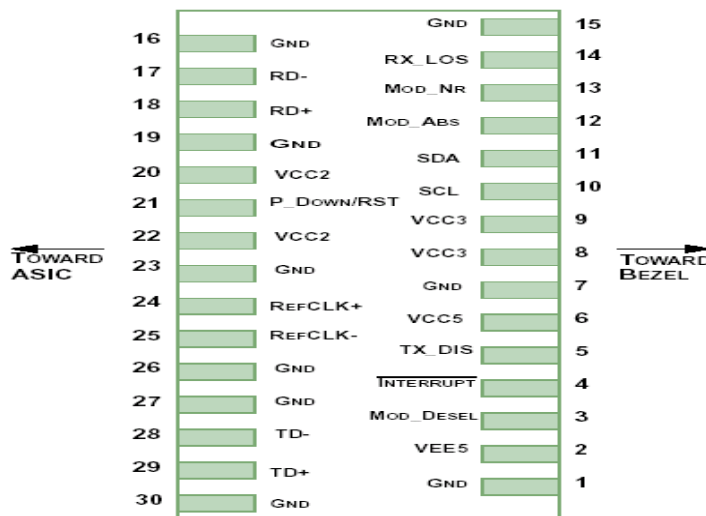
PIN #	Name	Function	Name/Description	Notes
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply (Not requireed)	
3	LVTTL-I	MOD_DESEL	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTL-O	INTb	Interrupt; Indicates presence of an important condition which can be read	2

|			via the 2-wire serial interface	
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply (Not required)	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I/O	SCL	2-Wire Serial Interface Clock	2
11	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTL-O	MOD_Abs	Indicates Module is not present. Grounded in the Module	2
13	LVTTL-O	MOD_NR	Module Not Ready; Indicating Module Operational Fault	2
14	LVTTL-O	RX_LOS	Receiver Loss Of Signal Indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RDN	Receiver Inverted Data Output	
18	CML-O	RDP	Receiver Non-Inverted Data Output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply (Not required).	
21	LVTTL-I	P_DOWN/RST	Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode.	
21	LVTTL-I	P_DOWN/RST	Reset; The falling edge initiates a complete reset of the module including the2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply (Not required)	
23		GND	Module Ground	1
24	PECL-I	REFCLKP	Not used, internally terminated to 50ohm (100ohm diff).	3
25	PECL-I	REFCLKN	Not used, internally terminated to 50ohm (100ohm diff).	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TDN	Transmitter Inverted Data Input	
29	CML-I	TDP	Transmitter Non-Inverted Data Input	
30		GND	Module Ground	1

Notes:

1. Module circuit ground is isolated from module chassis ground within the module.

2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

3. Reference Clock input is not required.

Management Interface

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions   by the 2-wire serial interface (SCL, SDA).

The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented.
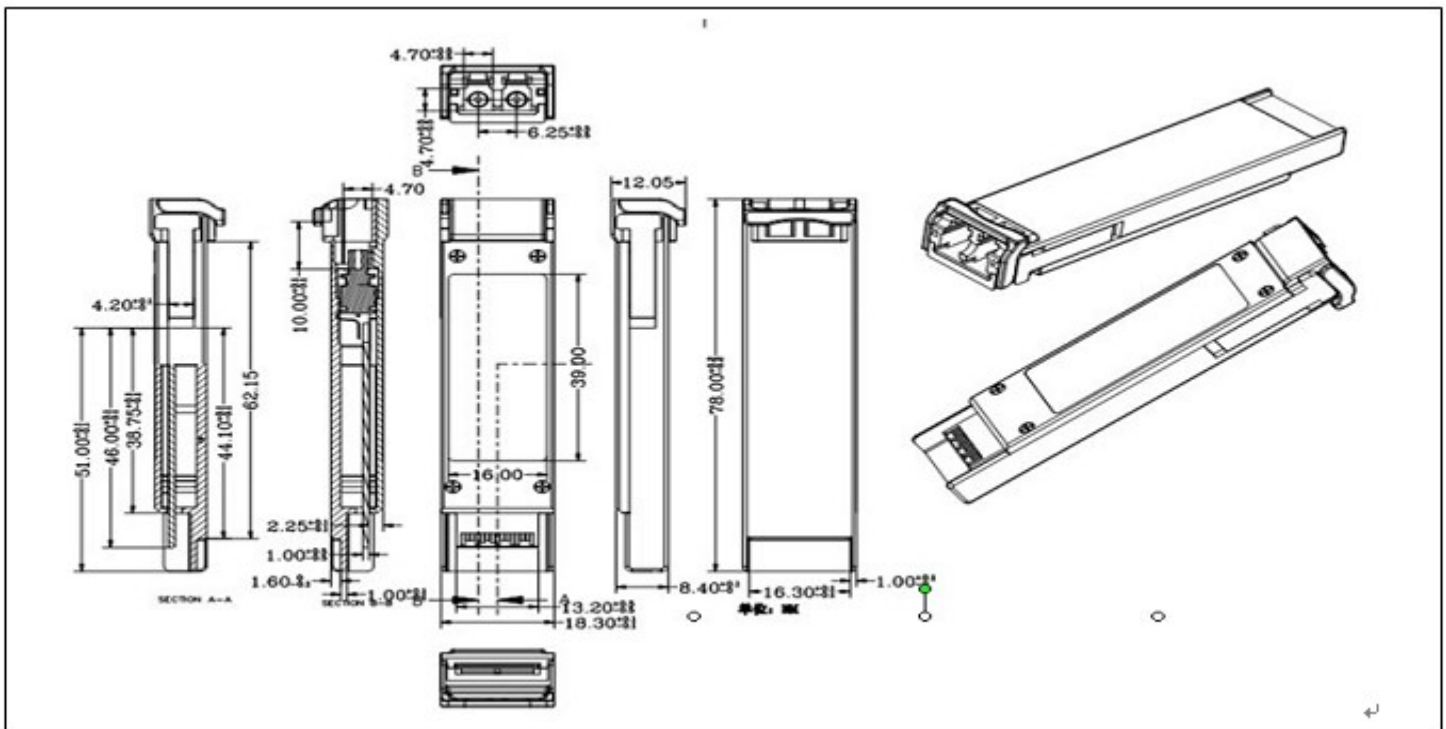
The digital diagnostic memory map specific data field defines as following.
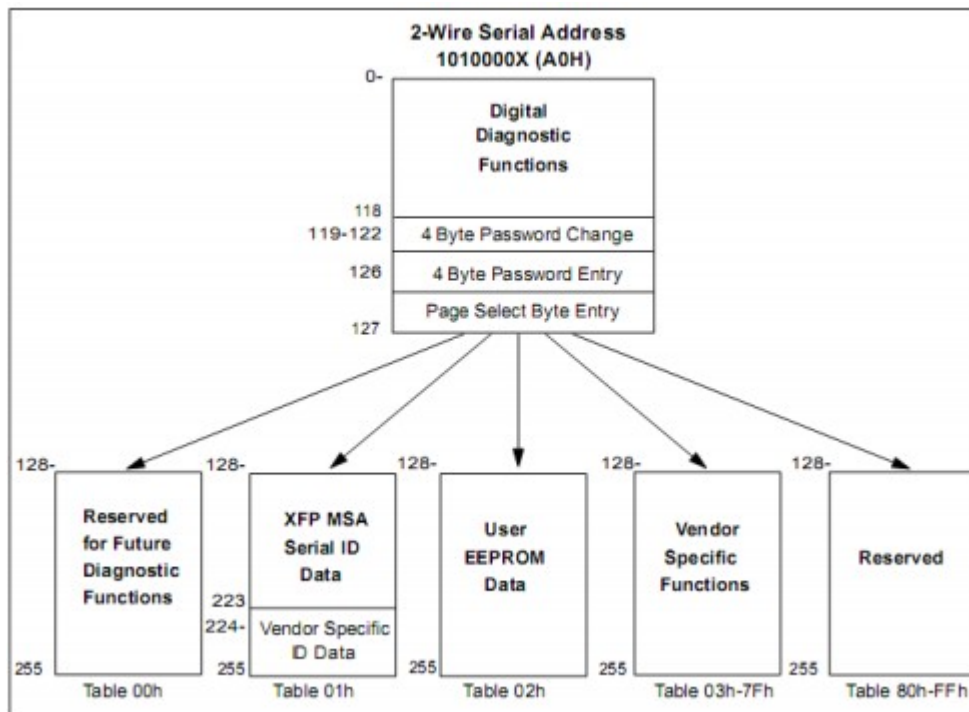
TYPICAL INTERFACE CIRCUIT
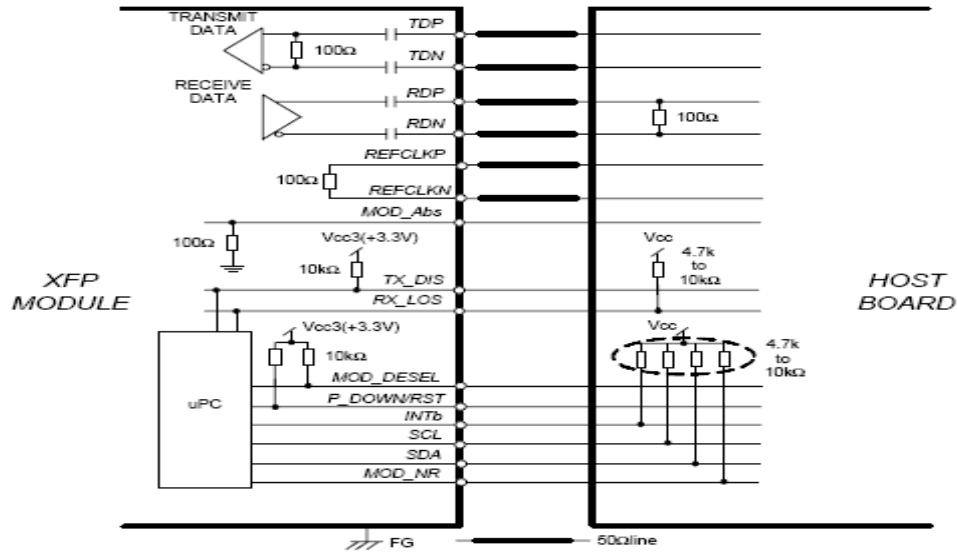
PACKAGE DIMENSIONS

ORDERING INFORMATION

Part Number	Description
OLXP311XL-CD10	XFP,10.3125Gbps, 1310nm, 10km, 0~70℃, with DDM