LO-XP-10G-Dxx-80

10Gb/s 80km DWDM XFP Optical Transceiver

Product Features

- Compliant with ITU-T G.691 STM-64 L-64.2
- Compliant to IEEE Std 802.3-2005 10Gb
- Ethernet 10GBase-ZR/ZW
- XFP MSA Rev. 4.5 compliant
- Full digital diagnostic management interface
- XFP MSA package with duplex LC connector
- Cooled EML Transmitter
- Dual CDR from 9.95 to 11.3Gb/s bi-directional data links
- Class 1 laser safety certified
- Commercial operating temperature: 0°C to +70°C
- Up to 80km on 9/125μm SMF
- RoHS Compliant

Applications

- 80km 10Gb/s DWDM Network
- 80km 10G Ethernet 10GBASE-ZR/ZW
- 80km 10G Fiber Channel

Ordering information

Part Number	Product Description
LO-XP-10G-Dxx-80	XFP DWDM 10G 80km xxnm LC DDM SMF EML Laser (EML+APD)

Part Number	Product Description
LO-XP-10G-D18-80	XFP DWDM 10G 80km 18ch 1563.05nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D19-80	XFP DWDM 10G 80km 19ch 1562.23nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D20-80	XFP DWDM 10G 80km 20ch 1561.42nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D21-80	XFP DWDM 10G 80km 21ch 1560.61nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D22-80	XFP DWDM 10G 80km 22ch 1559.79nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D23-80	XFP DWDM 10G 80km 23ch 1558.98nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D24-80	XFP DWDM 10G 80km 24ch 1558.17nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D25-80	XFP DWDM 10G 80km 25ch 1557.36nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D26-80	XFP DWDM 10G 80km 26ch 1556.55nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D27-80	XFP DWDM 10G 80km 27ch 1555.75nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D28-80	XFP DWDM 10G 80km 28ch 1554.94nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D29-80	XFP DWDM 10G 80km 29ch 1554.13nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D30-80	XFP DWDM 10G 80km 30ch 1553.33nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D31-80	XFP DWDM 10G 80km 31ch 1552.52nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D32-80	XFP DWDM 10G 80km 32ch 1551.72nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D33-80	XFP DWDM 10G 80km 33ch 1550.92nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D34-80	XFP DWDM 10G 80km 34ch 1550.12nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D35-80	XFP DWDM 10G 80km 35ch 1549.32nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D36-80	XFP DWDM 10G 80km 36ch 1548.51nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D37-80	XFP DWDM 10G 80km 37ch 1547.72nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D38-80	XFP DWDM 10G 80km 38ch 1546.92nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D39-80	XFP DWDM 10G 80km 39ch 1546.12nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D40-80	XFP DWDM 10G 80km 40ch 1545.32nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D41-80	XFP DWDM 10G 80km 41ch 1544.53nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D42-80	XFP DWDM 10G 80km 42ch 1543.73nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D43-80	XFP DWDM 10G 80km 43ch 1542.94nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D44-80	XFP DWDM 10G 80km 44ch 1542.14nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D45-80	XFP DWDM 10G 80km 45ch 1541.35nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D46-80	XFP DWDM 10G 80km 46ch 1540.56nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D47-80	XFP DWDM 10G 80km 47ch 1539.77nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D48-80	XFP DWDM 10G 80km 48ch 1538.98nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D49-80	XFP DWDM 10G 80km 49ch 1538.19nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D50-80	XFP DWDM 10G 80km 50ch 1537.40nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D51-80	XFP DWDM 10G 80km 51ch 1536.61nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D52-80	XFP DWDM 10G 80km 52ch 1535.82nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D53-80	XFP DWDM 10G 80km 53ch 1535.04nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D54-80	XFP DWDM 10G 80km 54ch 1534.25nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D55-80	XFP DWDM 10G 80km 55ch 1533.47nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D56-80	XFP DWDM 10G 80km 56ch 1532.68nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D57-80	XFP DWDM 10G 80km 57ch 1531.90nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D58-80	XFP DWDM 10G 80km 58ch 1531.12nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D59-80	XFP DWDM 10G 80km 59ch 1530.33nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D60-80	XFP DWDM 10G 80km 60ch 1529.55nm LC DDM SMF EML Laser (EML+APD)
LO-XP-10G-D61-80	XFP DWDM 10G 80km 61ch 1528.77nm LC DDM SMF EML Laser (EML+APD)

Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	Ts	-40	85	°C
Supply Voltage	V_{CC3}	-0.5	4	V
Supply Voltage	V_{CC5}	-0.5	6	V
Operating Relative Humidity	RH	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Case Temperature	T_C	0	-	70	°C
Supply Voltage	V_{CC3}	3.135	3.3	3.465	V
Supply Voltage	V_{CC5}	4.75	5	5.25	V
Data Rate	-	9.95	-	11.3	Gb/s

Transceiver Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Supply Current	I_{CC3}	-	-	750	mA	-
Supply Current	I_{CC5}	-	-	500	mA	-
Power Dissipation	P_D	-	-	3500	mW	-
Transmitter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**	**Notes**
Input Differential Impedance	Z_{IN}	-	100	-	Ω	-
Differential Data Input Swing	$V_{IN, P-P}$	120	-	1000	mV_{P-P}	-
TX DISABLE, P Down/RST	V_{IH}	2.0	-	V_{CC3}+0.3	V	-
	V_{IL}	-0.3	-	0.8	V	-
Transmit Disable Assert Time	-	-	-	10	us	-

Receiver	Symbol	Minimum	Typical	Maximum	Unit	Notes
Output Differential Impedance	Z_O	-	100	-	Ω	-
Differential Data Output Swing	$V_{OUT, P-P}$	340	-	850	mV_{P-P}	1
Data Output Rise Time, Fall Time	t_r, t_f	24	-	-	ps	2
RX LOS, Mod NR, Interrupt	V_{OH}	V_{CCHOST}-0.5	-	V_{CCHOST}+0.3	V	3
	V_{OL}	0	-	0.4	V	3

Notes:

1. Internally AC coupled, but requires a external 100Ω differential termination.
2. 20 – 80%.
3. Loss Of Signal is an open collector output. Should be pulled up with a 4.7kΩ-10kΩ resistor on the host board.

Transmitter Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Launch Average Optical Power	Po	0	-	+4	dBm	1
Center Wavelength Range	λc	1528.77	-	1563.86	nm	-
Center Wavelength Spacing	-	-	100	-	GHz	-
Center Wavelength Tolerance	Δλc	-100	-	100	pm	-
Extinction Ratio	EX	9	-	-	dB	2
Spectral Width (-20dB)	Δλ	-	-	0.3	nm	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Average Optical Power (Laser Off)	P_{off}	-	-	-30	dBm	1
Eye Diagram	ITU-T G.691 SDH STM-64 L-64.2 compatible					2

Notes:

1. The optical power is launched into 9/125µm SMF.
2. Measured with a PRBS 2^{31}-1 test pattern @9.953Gbps.

Receiver Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Center Wavelength	λc	1528	-	1565	nm	-
Receiver Sensitivity @9.953Gb/s	S	-	-	-24	dBm	1
Receiver Sensitivity @11.1Gb/s	S	-	-	-23	dBm	2
Receiver Overload (P_{avg})	P_{OL}	-7.0	-	-	dBm	1
Path Penalty @ 1600ps @ 9.953Gb/s	PP1	-	-	2	dB	1
Path Penalty @ 1600ps @ 11.1Gb/s	PP2	-	-	3	dB	2
Optical Return Loss	ORL	27	-	-	dB	-
LOS De-Assert	LOS_D	-	-	-27	dBm	-
LOS Assert	LOS_A	-38	-	-	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-

Notes:

1. Measured with worst ER; 1550nm; PRBS 2^{31}-1 test pattern @ 9.953Gb/s, BER<10^{-12}.
2. Measured with worst ER; 1550nm; PRBS 2^{31}-1 test pattern @ 11.1Gb/s, BER<10^{-12}.

Mechanical specifications