

LCP2-112ER4

100G CFP2 ER4 40km Dual

PRODUCT FEATURES

- Supports multi-rate (100GBASE 100GE and OTU4)
- from 103.1Gb/s to 111.8Gb/s aggregate
- Lane bit rate 25.78 Gb/s 100GE, 27.95 Gb/s OTU4
- Up to 40km transmission on SMF
- LAN WDM laser and PIN receiver with SOA
- High speed I/O electrical interface (CAUI-4)
- MDIO interface with integrated Digital Diagnostic monitoring
- CFP2 MSA package with duplex LC connector
- Single +3.3V power supply
- Typical power consumption 6W
- Operating case temperature: 0 to +70 °C
- Complies with IEEE802.3bm and ITU-T G.959
- Complies with EU Directive 2015/863/EU

APPLICATIONS

- 100GBASE-ER4

Ordering Information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI
LCP2-112ER4	103.1Gbps 111.8Gbps	LWDM	SMF	40km	LC	0~70C	Y

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	T _S	-40	-	+85	°C	
Supply Voltage	V _{CC}	-0.5	-	+4.0	V	
Operating Relative Humidity	RH	-	-	+85	%	

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T _C	-5	-	+70	°C	
Power Supply Voltage	V _{CC}	3.13	3.3	3.47	V	
Power Supply Current	I _{CC}	-	1.8	-	A	
Typical Power Dissipation	P _D	-	6	-	W	
Aggregate Bit Rate	BR _{AVE}	-	103.125	111.808	Gb/s	
Lane Bit Rate	BR _{LANE}	-	25.78125	27.952	Gb/s	
Transmission Distance	TD		-	40	km	Over SMF

III. Electrical Characteristics

High-Speed Signal: Compliant to CAUI-4 (IEEE 802.3bm)

Low-Speed Signal: Compliant to CFP2 MSA Hardware Specification v 1.0

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter (Module Input)						
Differential Data Input Amplitude	V _{IN,P-P}	85	-	900	mVpp	
Differential Termination Mismatch		-	-	10	%	
Tx_Disable	Normal Operation	V _{IL}	-0.3	-	0.8	V
	Laser Disable	V _{IH}	2.0	-	V _{CC} +0.3	V
Receiver (Module Output)						
Differential Data Output Amplitude	V _{OUT,P-P}	200	-	900	mVpp	
Differential Termination Mismatch (1MHZ)		-	-	10	%	
Output Rise/Fall Time, 20%~80%	T _R	12	-	-	ps	
Rx_LOS	Normal Operation	V _{OL}	-	-	0.2	V
	Lose Signal	V _{OH}	V _{CC} -0.2	-	-	V

IV. Optical Specification

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Center Wavelength Lane 0	λ_0	1294.53	1295.56	1296.59	nm	
Center Wavelength Lane 1	λ_1	1299.02	1300.05	1301.09	nm	
Center Wavelength Lane 2	λ_2	1303.54	1304.58	1305.63	nm	
Center Wavelength Lane 3	λ_3	1308.09	1309.14	1310.19	nm	
Total Launch Power, 100GE	P_{ALL}	-	-	8.9	dBm	1
Average Launch Power per Lane, 100GE	P_{TX_LANE}	-2.9	-	2.9	dBm	1
OMA per Lane, 100GE	OMA	0.1	-	4.5	dBm	1
OMA-TDP per Lane, 100GE	OMA_TDP	-	-	-	dBm	
Difference in launch power between lanes	$P_{TX_DELTA_LANE}$	-	-	3.6	dB	
Total Launch Output Power, OTU4	P_{ALL}	-	-	8.9	dBm	1
Average Launch Power per Lane, OTU4	P_{TX_LANE}	-2.7	-	2.9	dBm	1
Average Output Power (Laser Turn off)	$P_{OUT-OFF}$	-	-	-30	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Extinction Ratio, 100GE	ER	8	-	-	dB	
Transmitter and Dispersion Penalty	TDP	-	-	3.5	dB	2
Optical Return Loss Tolerance	ORLT	-	-	20	dB	
Optical Eye Mask, 100GE	Compliant with IEEE 802.3ba					2
Optical Eye Mask, OTU4	Compliant with ITU-T G.959.1					2
Receiver						
Center Wavelength Lane 0	λ_0	1294.53	1295.56	1296.59	nm	
Center Wavelength Lane 1	λ_1	1299.02	1300.05	1301.09	nm	
Center Wavelength Lane 2	λ_2	1303.54	1304.58	1305.63	nm	
Center Wavelength Lane 3	λ_3	1308.09	1309.14	1310.19	nm	
Average Rx Power per Lane, 100GE	P_{RX_LANE}	-20.9	-	4.5	dBm	3
OMA Sensitivity per Lane, 100GE	P_{OMA_LANE}	-	-	-21.4	dBm	3
Average Rx Power per Lane, OTU4	$P_{RX_AVE_LANE}$	-20.7	-	4.5	dBm	
Sensitivity per Lane, OTU4	$P_{RX_AVE_LANE}$	-	-	-23.2	dBm	4
Receiver Overload	P_{IN-OL}	4.5	-	-	dBm	
Reflectance	Ref	-	-	-26	dB	
LOS Assert per lane	LOS _A	-40	-	-	dBm	
LOS De-assert	LOS _D	-	-	-26	dBm	
LOS Hysteresis	LOS _H	0.5	-	-	dB	

Notes:

- The optical power is launched into SMF.
- Measured with a PRBS 2³¹-1 test pattern @25.78125/27.952 Gb/s, Hit ratio≤5E-5.
- Measured with a PRBS 2³¹-1 test pattern @25.78125 Gb/s, BER≤1E-12.
- Measured with a PRBS 2³¹-1 test pattern @27.952 Gb/s, BER≤1E-12(with FEC).

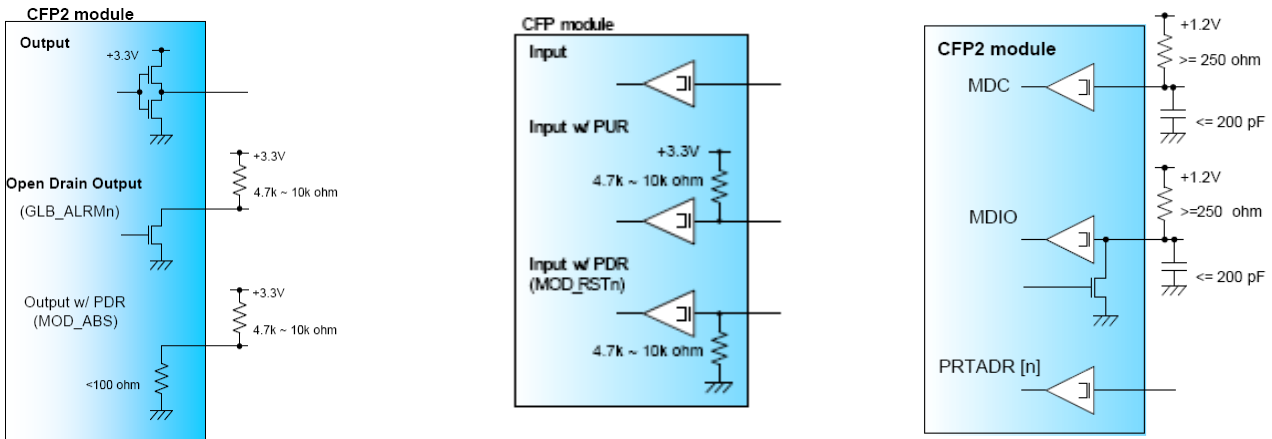
V. Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-5 to 70	±3	°C	Internal
Voltage	0 to V _{CC}	0.1	V	Internal
Tx Bias Current Per Lane	0 to 100	10%	mA	Internal
SOA Bias Current	0 to 130	10%	mA	Internal
Tx Output Power Per Lane	-3 to 3	±3	dBm	Internal
Rx Power (Each Lane)	-25 to 5	±3	dBm	Internal

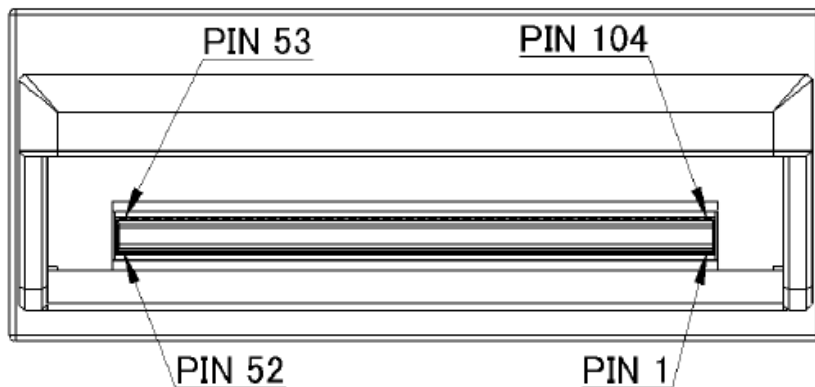
VI. Hardware Signal Pin Electrical Specification

Reference 3.3V LVCOMS output/input termination

Reference MDIO Interface Termination

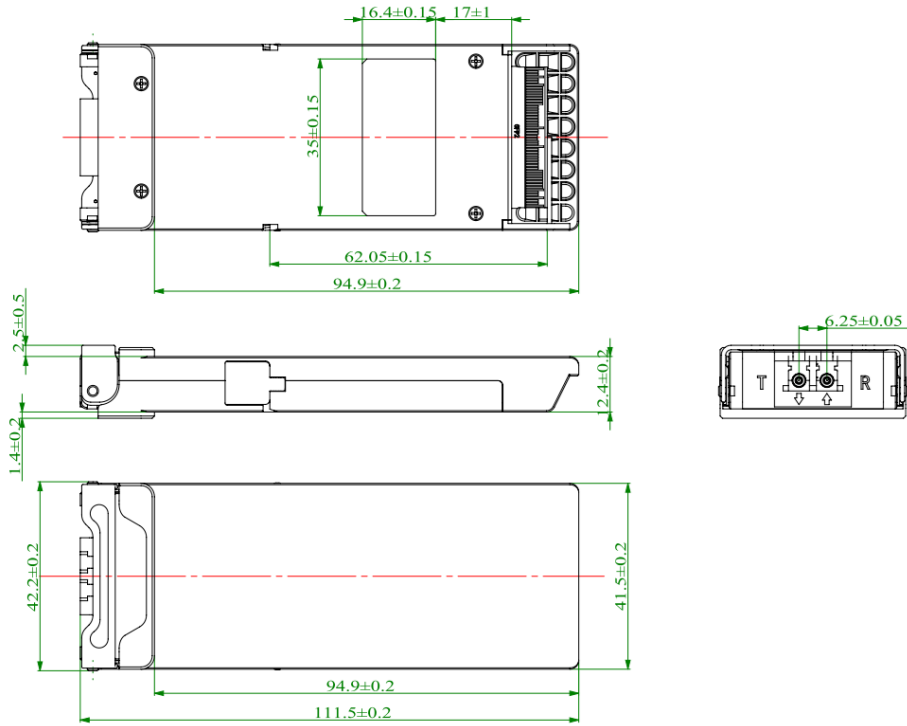


VII. Pin Definitions



Bottom (Nx25G)		Top (4x25G)	
1	GND	104	GND
2	(TX_MCLKn)	103	N.C.
3	(TX_MCLKp)	102	N.C.
4	GND	101	GND
5	N.C.	100	TX3n
6	N.C.	99	TX3p
7	3.3V_GND	98	GND
8	3.3V_GND	97	TX2n
9	3.3V	96	TX2p
10	3.3V	95	GND
11	3.3V	94	N.C.
12	3.3V	93	N.C.
13	3.3V_GND	92	GND
14	3.3V_GND	91	N.C.
15	VND_IO_A	90	N.C.
16	VND_IO_B	89	GND
17	PRG_CNTL1	88	TX1n
18	PRG_CNTL2	87	TX1p
19	PRG_CNTL3	86	GND
20	PRG_ALRM1	85	TX0n
21	PRG_ALRM2	84	TX0p
22	PRG_ALRM3	83	GND
23	GND	82	N.C.
24	TX_DIS	81	N.C.
25	RX_LOS	80	GND
26	MOD_LOPWR	79	(REFCLKn)
27	MOD_ABS	78	(REFCLKp)
28	MOD_RSTn	77	GND
29	GLB_ALRMn	76	N.C.
30	GND	75	N.C.
31	MDC	74	GND
32	MDIO	73	RX3n
33	PRTADR0	72	RX3p
34	PRTADR1	71	GND
35	PRTADR2	70	RX2n
36	VND_IO_C	69	RX2p
37	VND_IO_D	68	GND
38	VND_IO_E	67	N.C.
39	3.3V_GND	66	N.C.
40	3.3V_GND	65	GND
41	3.3V	64	N.C.
42	3.3V	63	N.C.
43	3.3V	62	GND
44	3.3V	61	RX1n
45	3.3V_GND	60	RX1p
46	3.3V_GND	59	GND
47	N.C.	58	RX0n
48	N.C.	57	RX0p
49	GND	56	GND
50	(RX_MCLKn)	55	N.C.
51	(RX_MCLKp)	54	N.C.
52	GND	53	GND

VIII. Mechanical Diagram



Revision History

Version No.	Date	Description
1.0	June 24, 2020	Preliminary datasheet