

# LCP2-100ZR4

## 100G CFP2 ZR4 80km Single

### PRODUCT FEATURES

- Supports 100GBASE ,103.1Gb/s
- Lane bit rate 25.78 Gb/s
- Up to 80km transmission on SMF
- LAN WDM EML 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
- Maximum power consumption 9W
- Operating case temperature: 0 to +70 °C
- Complies with IEEE802.3bm and ITU-T G.959
- Complies with EU Directive 2015/863/EU (RoHS 6/6)

### APPLICATIONS

- 100GBASE-ZR4

## Ordering Information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI
LCP2-100ZR4	103.1Gbps	LWDM	SMF	80km	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	$I_{CC}$	-	-	2.6	A	
Typical Power Dissipation	$P_D$	-	-	9	W	
Aggregate Bit Rate	$BR_{AVE}$	-	103.125	-	Gb/s	
Lane Bit Rate	$BR_{LANE}$	-	25.78	-	Gb/s	
Transmission Distance	TD	-	-	80	km	Over SMF with FEC

## 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
<b>Transmitter (Module Input)</b>						
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
<b>Receiver (Module Output)</b>						
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
<b>Transmitter</b>						
Center Wavelength Lane 0	$\lambda_0$	1294.53	1295.56	1296.59	nm	
Center Wavelength Lane 1	$\lambda_1$	1299.02	1300.05	1301.09	nm	
Center Wavelength Lane 2	$\lambda_2$	1303.54	1304.58	1305.63	nm	
Center Wavelength Lane 3	$\lambda_3$	1308.09	1309.14	1310.19	nm	
Total Launch Power, 100GE	$P_{ALL}$	-	-	12.5	dBm	1
Average Launch Power per Lane, 100GE	$P_{TX\_LANE}$	1	-	6.5	dBm	1
Difference in launch power between lanes	$P_{TX\_DELTA\_LANE}$	-	-	3	dB	
Average Output Power (Laser Turn off)	$P_{OUT-OFF}$	-	-	-30	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Extinction Ratio, 100GE	ER	8	-	-	dB	
Optical Eye Mask, 100GE	Compliant with IEEE 802.3ba					2
<b>Receiver</b>						
Center Wavelength Lane 0	$\lambda_0$	1294.53	1295.56	1296.59	nm	
Center Wavelength Lane 1	$\lambda_1$	1299.02	1300.05	1301.09	nm	
Center Wavelength Lane 2	$\lambda_2$	1303.54	1304.58	1305.63	nm	
Center Wavelength Lane 3	$\lambda_3$	1308.09	1309.14	1310.19	nm	
Receiver Overload	$P_{IN-OL}$	4.5	-	-	dBm	
Average Rx Power per Lane	$P_{RX\_LANE}$	-28	-	4.5	dBm	3
OMA Sensitivity per Lane	$P_{OMA\_LANE}$	-	-	-26	dBm	3
LOS Assert per lane	$LOS_A$	-40	-	-	dBm	
LOS De-assert	$LOS_D$	-	-	-29	dBm	
LOS Hysteresis	$LOS_H$	0.5	-	6	dB	

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS  $2^{31}-1$  test pattern @25.78125, Hit ratio $\leq 5E-5$ .
3. Measured with a PRBS  $2^{31}-1$  test pattern @25.78125 Gb/s, BER $\leq 5E-5$ .

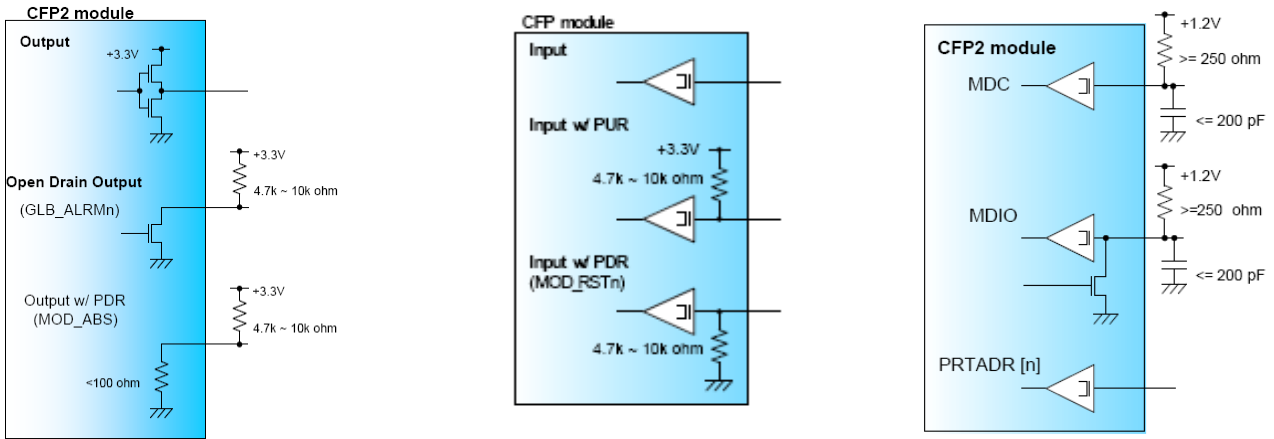
## V. Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-5 to 70	$\pm 3$	$^{\circ}C$	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	$\pm 3$	dBm	Internal
Rx Power (Each Lane)	-25 to 5	$\pm 3$	dBm	Internal

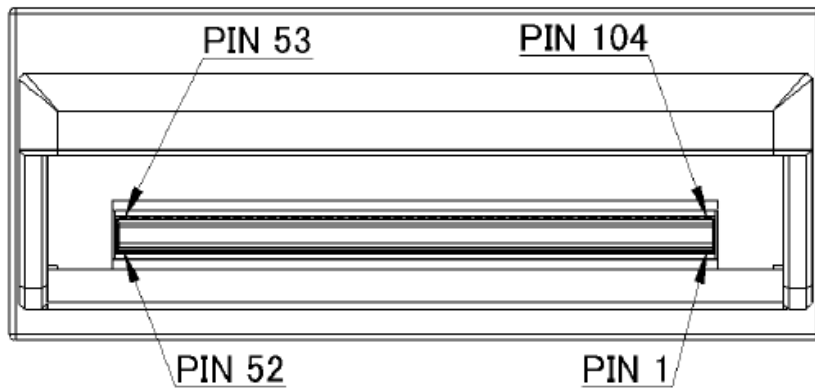
## VI. Hardware Signal Pin Electrical Specification

Reference 3.3V LVCOMS output/input termination

Reference MDIO Interface Termination

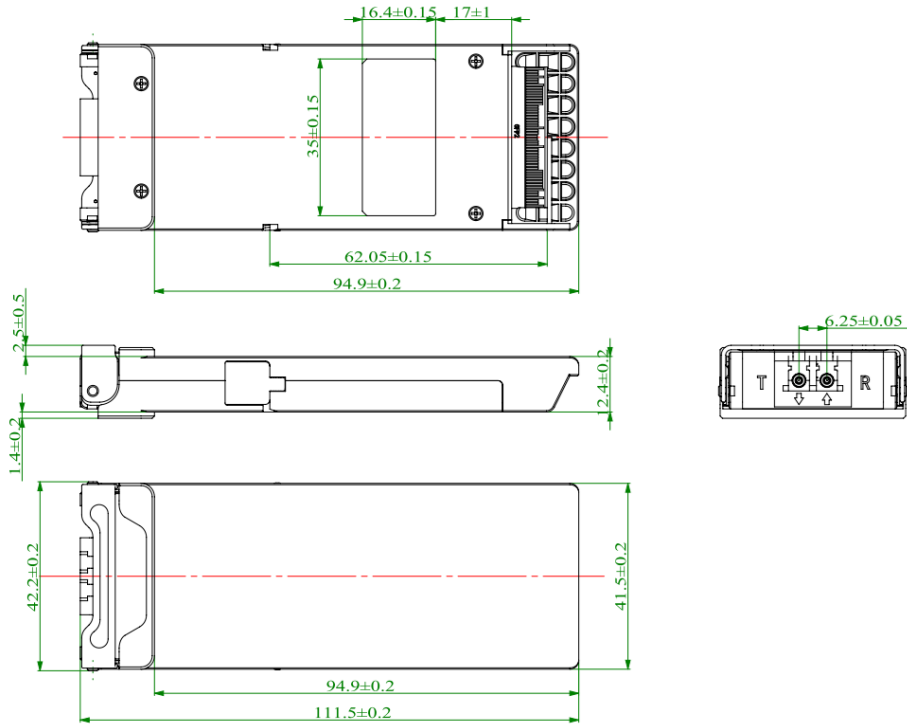


## VII. Pin Definitions



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_ALARM1	85	TX0n
21	PRG_ALARM2	84	TX0p
22	PRG_ALARM3	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