

CP2-112L431-10CL

CFP2-100GBASE-LR4 1310nm 10km

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 10km transmission on SMF
- LAN WDM DML laser and PIN receiver
- 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: -5 to +70 ° C
- Complies with IEEE802.3ba and ITU-T G.959
- Complies with EU Directive 2011/65/EU (RoHS 6/6)



Application

- 100GBASE-LR4

Absolute Maximum Ratings

Table 1 - 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	%	

Recommended Operating Conditions

Table 2- 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}	-	-	2.5	A	
Maximum 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		-	10	km	Over SMF

Optical Characteristics

Table 3- Optical Characteristics

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}	-	-	10.5	dBm	1
Average Launch Power per Lane, 100GE	P_{TX_LANE}	-4.3	-	4.5	dBm	1
OMA per Lane, 100GE	OMA	-1.3	-	4.5	dBm	1
OMA-TDP per Lane, 100GE	OMA_TDP	-2.3	-	-	dBm	
Difference in launch power between lanes	$P_{TX_DELTA_LANE}$	-	-	3.6	dB	
Total Launch Output Power, OTU4	P_{ALL}	-	-	10	dBm	1
Average Launch Power per Lane, OTU4	P_{TX_LANE}	-0.6	-	4	dBm	1
Average Output Power (Laser Turn off)	$P_{OUT-OFF}$	-	-	-30	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	

Extinction Ratio, 100GE	ER	4	-	-	dB	
Transmitter and Dispersion Penalty	TDP	-	-	2.2	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}	-10.6		4.5	dBm	3
OMA Sensitivity per Lane, 100GE	P_{OMA_LANE}	-	-	-8.6	dBm	3
Average Rx Power per Lane, OTU4	$P_{RX_AVE_LANE}$	-6.9		4	dBm	
Sensitivity per Lane, OTU4	$P_{RX_AVE_LANE}$	-	-	8.4	dBm	4
Receiver Overload	P_{IN-OL}	4.5	-	-	dBm	
Reflectance	Ref	-	-	-26	dB	
LOS Assert per lane	LOS_A	-20	-	-	dBm	
LOS De-assert	LOS_D	-	-	-12	dBm	
LOS Hysteresis	LOS_H	0.5	-	4.0	dB	

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS $2^{31}-1$ test pattern @25.78125/27.952 Gb/s, Hit ratio \leq 5E-5.
3. Measured with a PRBS $2^{31}-1$ test pattern @25.78125 Gb/s, BER \leq 1E-12.
4. Measured with a PRBS $2^{31}-1$ test pattern @27.952 Gb/s, BER \leq 1E-12(with FEC).

Electrical Characteristics

Table 4- Electrical Characteristics

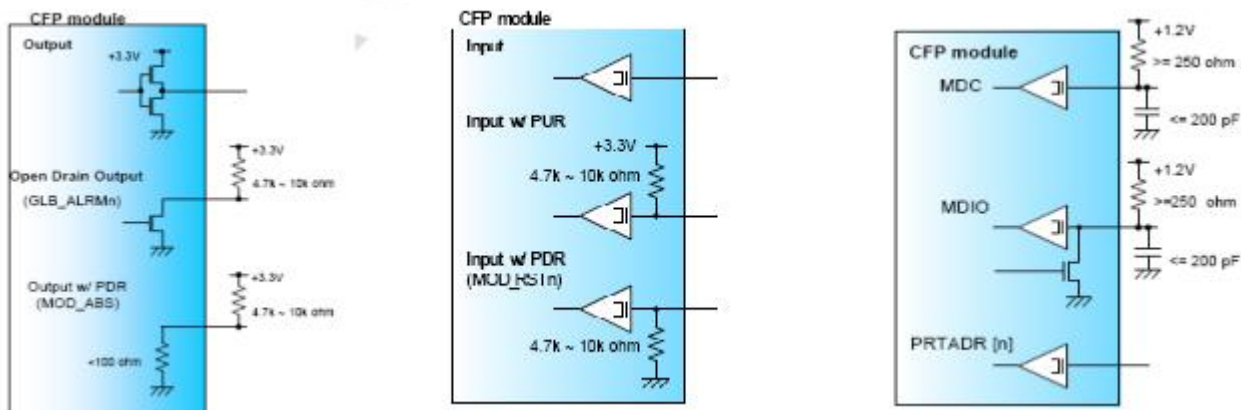
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Differential Data Input Amplitude	$V_{IN,P-P}$	85	-	900	mVpp	
Differential Termination Mismatch		-	-	10	%	
Tx Disable	Normal Operation	V_{IL}	-0.3	-	0.8	V
	Laser Disable	V_{IH}	2.0	-	$V_{CC}+0.3$	V
Receiver						
Differential Data Input Amplitude	$V_{OUT,P-P}$	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 Signa	V_{OH}	$V_{CC}-0.2$	-	-	V

Digital Diagnostics

Table 5- Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-5 to 70	± 3	$^{\circ}C$	Internal
Voltage	0 to V_{CC}	0.1	V	Internal
Tx Bias Current Per Lane	0 to 100	10%	mA	Internal
Tx Output Power Per Lane	-4.5 to 5	± 3	dBm	Internal
Rx Power (Each Lane)	-15 to 5	± 3	dBm	Internal

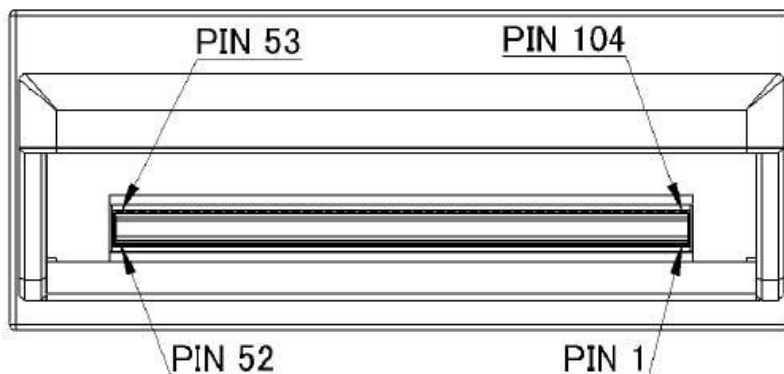
Hardware Signal Pin Electrical Specification



Note:

1. The MSA recommends host termination resistor value of 560 Ohms, which provides the best balance of performance for both open-drain and active tri-state driver in the module.

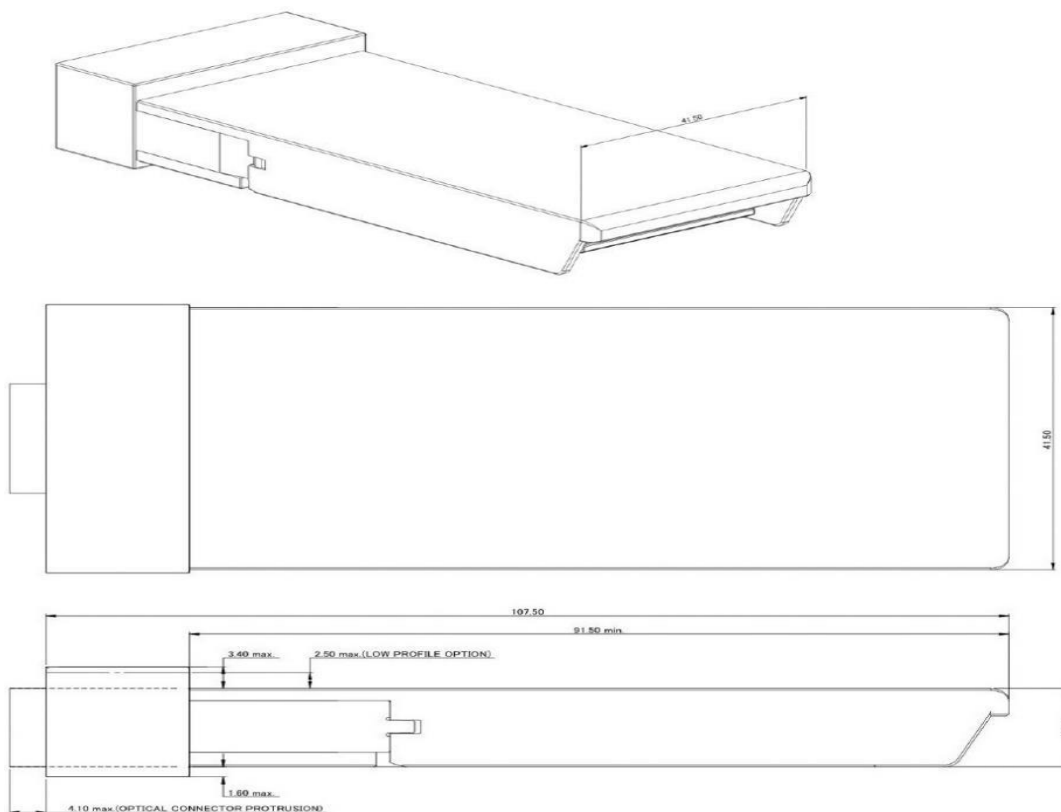
Pin Definitions



Electrical Characteristics

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

Mechanical Dimension



Ordering information

Table 6- Ordering information

Part Number	Product Description
CP2-112L431-10CL	CFP2 1310nm, 103.1Gbps/111.8Gbps, 10km, LC, -5°C ~ +70°C

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