

CP2-100L431-10CL

CFP2-100GBASE-LR4 1310nm 10km

Features

- Supports single-rate 103.1Gb/s aggregate(100GE)
- Lane bit rate 25.78 Gb/s 100GbE
- 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 9 W
- Operating case temperature: -5 to +70 ° C
- Complies with IEEE802.3bm
- Complies with EU Directive 2011/65/EU (RoHS 6/6)



Applications

- 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		
Average Output Power (Laser Turn off)	P _{OUT-OFF}	-	-	-30	dBm	1	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	1	
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 802.3bm						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
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	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 $\leq 1E-12$.

Electrical Characteristics

Table 4- Electrical Characteristics

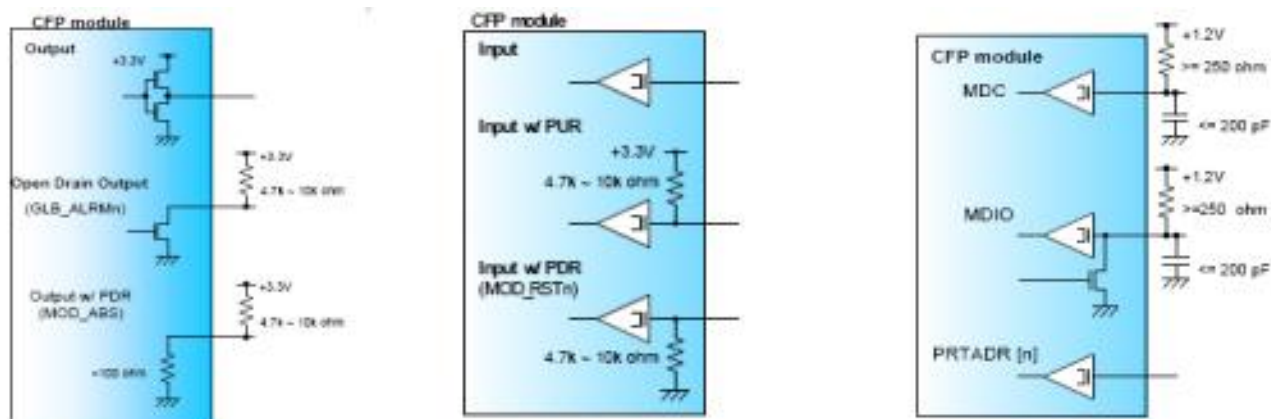
Parameter		Symbol	Min	Typical	Max	Unit	Notes
Transmitter							
Differential Data Input Amplitude		$V_{IN,P-P}$	85	-	900	mVpp	
Differential Termination Mismatch			-	-	10	%	
Tx Disable	Normal Operation	V_{IL}	-0.3	-	0.8	V	
	Laser Disable	V_{IH}	2.0	-	$V_{CC}+0.3$	V	
Receiver							
Differential Data Input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

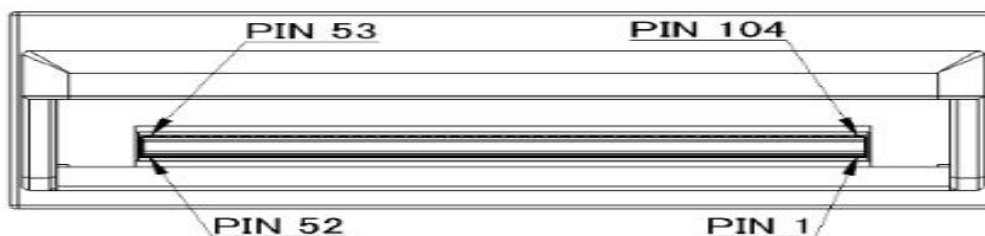
Hardware Signal Pin Electrical Specification



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.

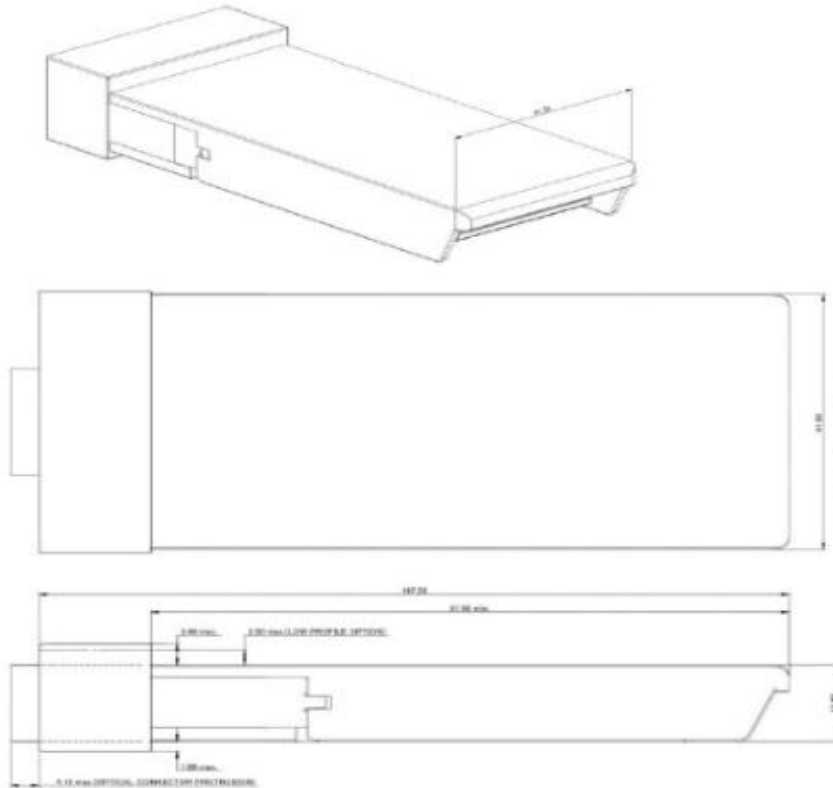
Pin Definitions



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
CP2-100L431-10CL	CFP2 1310nm, 103.1Gbps, 10km, LC, -5°C ~ +70°C

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