

CP2-112L431-80CL

100Gbps CFP2 Transceiver, Single Mode, 80km Reach

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);



Application

- 100GBASE-ER4;

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 Environment

Table 2 - Recommended Operating Environment

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	
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		-	80	km	Over SMF with FEC

Optical and Electrical Characteristics

CP2-112L431-80CL: (LAN WDM EML and PIN, 80km Reach)

Table 3 - Optical and Electrical Characteristics

Transmitter						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
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}	-	-	12.5	dBm	1
Average Launch Power per Lane, 100GE	P _{TX_LANE}	-	-	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
Receiver						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
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	

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	

Note:

- 1.The optical power is launched into SMF.
- 2.Measured with a PRBS 231-1 test pattern @25.78125, Hit ratio \leq 5E-5.
- 3.Measured with a PRBS 231-1 test pattern @25.78125 Gb/s, BER \leq 5E-5.

Electrical Characteristics

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

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

Table 4 - Electrical Characteristics

Transmitter (Module Input)							
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes	
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	-	$V_{CC}+0.3$	V	
Receiver (Module Output)							
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes	
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	

Bottom (Nx25G)	
1	GND
2	(TX_MCLKn)
3	(TX_MCLKp)
4	GND
5	N.C.
6	N.C.
7	3.3V_GND
8	3.3V_GND
9	3.3V
10	3.3V
11	3.3V
12	3.3V
13	3.3V_GND
14	3.3V_GND
15	VND_IO_A
16	VND_IO_B
17	PRG_CNTL1
18	PRG_CNTL2
19	PRG_CNTL3
20	PRG_ALRM1
21	PRG_ALRM2
22	PRG_ALRM3
23	GND
24	TX_DIS
25	RX_LOS
26	MOD_LOPWR
27	MOD_ABS
28	MOD_RSTn
29	GLB_ALRMn
30	GND
31	MDC
32	MDIO
33	PRTADR0
34	PRTADR1
35	PRTADR2
36	VND_IO_C
37	VND_IO_D
38	VND_IO_E
39	3.3V_GND
40	3.3V_GND
41	3.3V
42	3.3V
43	3.3V
44	3.3V
45	3.3V_GND
46	3.3V_GND
47	N.C.
48	N.C.
49	GND
50	(RX_MCLKn)
51	(RX_MCLKp)
52	GND

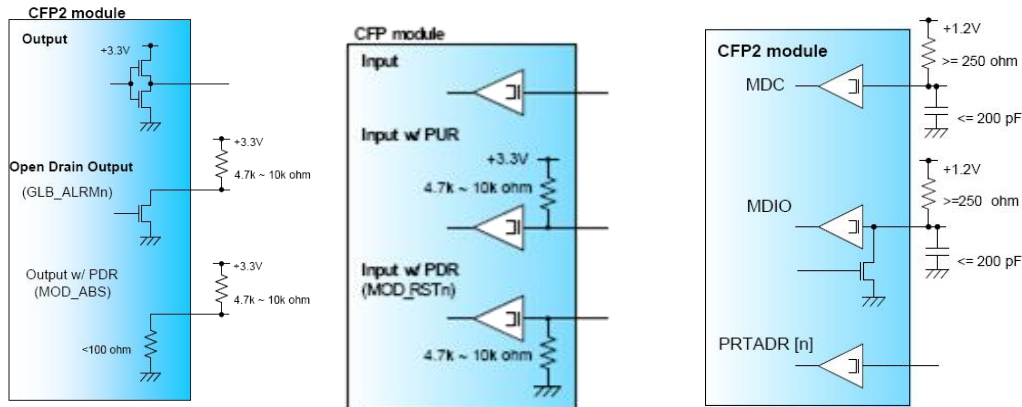
Top (4x25G)	
104	GND
103	N.C.
102	N.C.
101	GND
100	TX3n
99	TX3p
98	GND
97	TX2n
96	TX2p
95	GND
94	N.C.
93	N.C.
92	GND
91	N.C.
90	N.C.
89	GND
88	TX1n
87	TX1p
86	GND
85	TX0n
84	TX0p
83	GND
82	N.C.
81	N.C.
80	GND
79	(REFCLKn)
78	(REFCLKp)
77	GND
76	N.C.
75	N.C.
74	GND
73	RX3n
72	RX3p
71	GND
70	RX2n
69	RX2p
68	GND
67	N.C.
66	N.C.
65	GND
64	N.C.
63	N.C.
62	GND
61	RX1n
60	RX1p
59	GND
58	RX0n
57	RX0p
56	GND
55	N.C.
54	N.C.
53	GND

Diagnostics

Table 5 – Diagnostics Specification

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

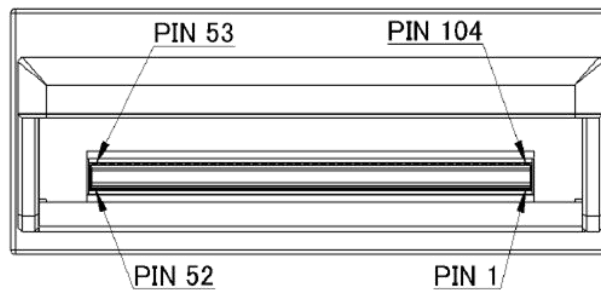
Hardware Signal Pin Electrical Specification



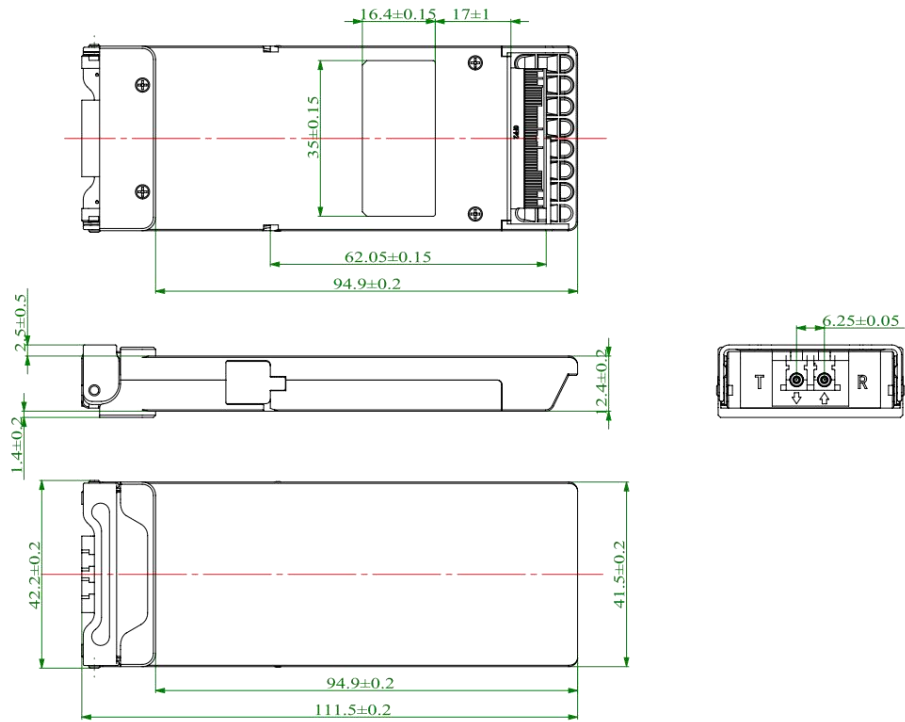
Note: The MSA recommends host termination resistor value of 560 Ohms, which provides the best balance of performance for both open-drain and active tri-state driver in the module.

Pin Assignment

Pin Diagram



Mechanical Dimension



Order Information

Table 6- Order Information

Part Number	Description
CP2-112L431-80CL	103.1Gbps, LWDM, 80km, LC, LC, 0~70C,

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E-mail: sales@ascentoptics.com

Web : <http://www.ascentoptics.com>