

100G-CFP2-ER4

100G CFP2 ER4 Dual Rate

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;
- Maximum power consumption 9W;
- Operating case temperature: -5 to +70 °C;
- Complies with IEEE802.3bm and ITU-T G.959;
- Complies with EU Directive 2015/865/EU (RoHS 6/6);

Application

100GBASE-ER4;

Order Information

Table 1- order information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI
100G-CFP2-ER4	103.1Gbps 111.8Gbps	1310nm	SMF	40km	LC	-5~70C	Y

Absolute Maximum Ratings

Table 2-Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	Ts	-40	-	+85	°C	
Supply Voltage	Vcc	-0.5	-	+4.0	V	
Operating Relative Humidity	RH	-	-	+85	%	

Recommended Operating Conditions

Table 3-Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	Tc	-5	-	+70	°C	
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc	-	-	2.7	A	
Maximum Power Dissipation	PD	-	-	9	W	
Aggregate Bit Rate	BR _{AVE}	-	103.125	-	Gb/s	
Lane Bit Rate	BR _{LANE}	-	25.78	-	Gb/s	
Transmission Distance	TD		-	40	km	Over SMF

Optical Characteristics

Table 4-Optical 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}	-	-	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}	-2.9	-	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

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	
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:

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

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

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

Table 5-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}	2.0	-	$V_{CC}+0.3$	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

Digital Diagnostics

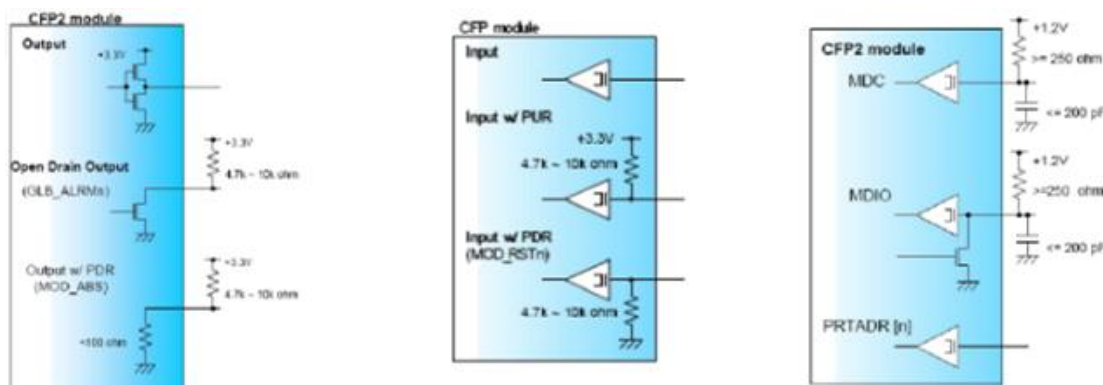
Table 6-Digital Diagnostics

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
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

Table 7-Reference 3.3V LVCOMS output/input termination

Reference MDIO Interface Termination



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 Definitions

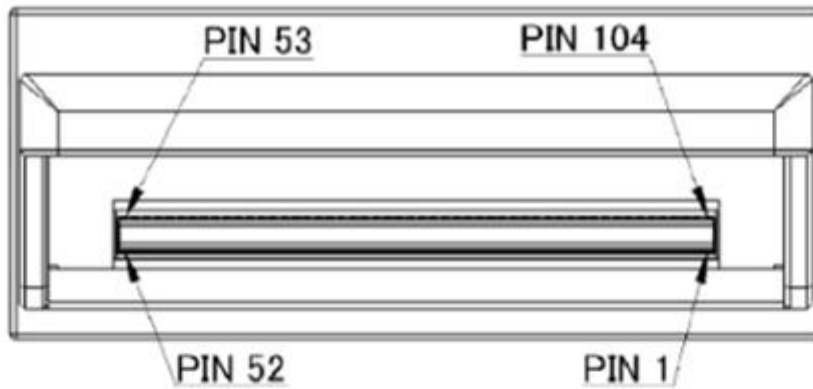
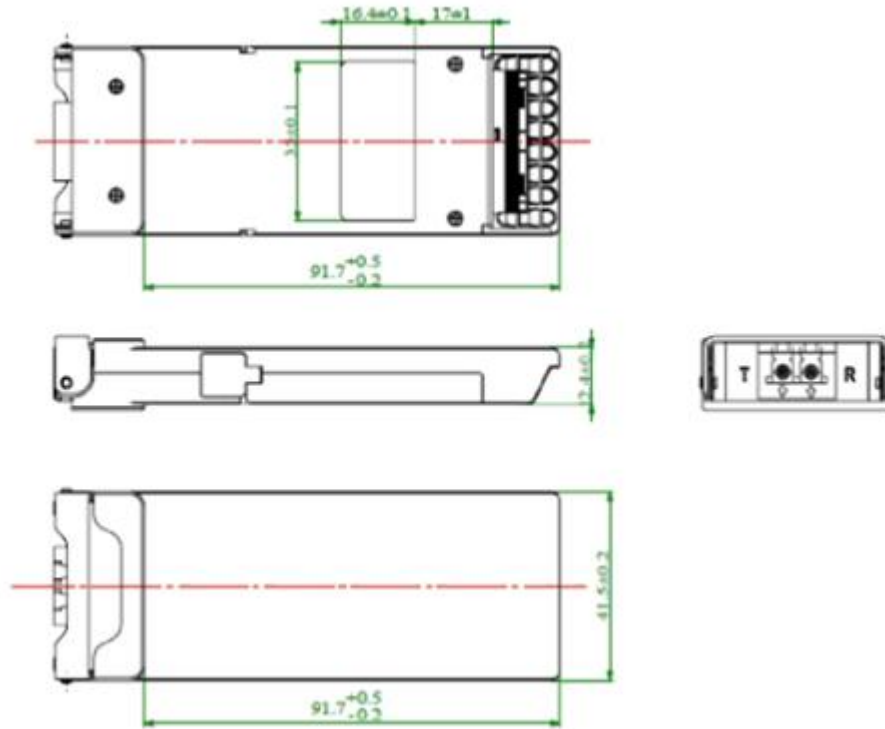


Table 8-Electrical Characteristics

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_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

Mechanical Dimension



Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures. **Laser Safety:** Taalink transceiver uses a semiconductor laser system and is a laser class1 product acc. FDA, complies with 21CFR1040.10 and 1040.11. Also this product is a laser class1 product acc. IEC 60825-1.