

## 100Gbps CFP Optical Transceiver, LR4, 10km



### Features

- Supports 103Gbps and 112Gbps aggregate bit rates
- Single 3.3V Power Supply and Power dissipation < 16W
- Up to 10km transmission on SMF
- Hot-Pluggable CFP Footprint Duplex LC Connector Interface
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- RoHS6 Compliant
- Compliant with CFP MSA Specification
- MDIO interface with integrated Digital Diagnostic Monitoring
- CAUI electrical interface

### Applications

- OTU4 4I1-9D1F
- 100GBASE-LR4

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Operating Case Temperature	Tc	-10	+75	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	-10		+75	°C
Power Supply Voltage	Vcc	3.2	3.3	3.4	V
Power Supply Current	Icc		4000		mA

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
<b>Transmitter</b>						
Output Impedance (Differential)	Vin			1050	mVpp	Internally AC coupled
Input Impedance (Differential)	Zin	80	100	120	ohms	Rin > 100 kohms @ DC
<b>Receiver</b>						
Output Impedance (Differential)	Vout	360		770	mVpp	Internally AC coupled
Output Impedance (Differential)	Zout	80	100	120	ohms	
Output Rise/Fall Time	tr/tf	24			ps	20%~80%

## Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
<b>Transmitter</b>					
Signaling Speed per Lane	BR <sub>AVE</sub>		27.95		Gbps
Lane_0 Center Wavelength	$\lambda_{c0}$	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	$\lambda_{c1}$	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	$\lambda_{c2}$	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	$\lambda_{c3}$	1308.09	1309.14	1310.19	nm
Total Average Output Power	P <sub>o</sub>	-		8.9	dBm
Average Launch Power per Lane	P <sub>each</sub>	-2.5		2.9	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Optical Return Loss Tolerance				20	dB
Extinction Ratio*(Note1)	ER	7			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}*(Note1)		G.959.1 Compliant			
TX Disable Assert Time	t <sub>off</sub>			100	us
<b>Receiver</b>					
Signaling Speed per Lane	BR <sub>AVE</sub>		27.95		Gbps
Lane_0 Center Wavelength	$\lambda_{c0}$	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	$\lambda_{c1}$	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	$\lambda_{c2}$	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	$\lambda_{c3}$	1308.09	1309.14	1310.19	nm
Average Receive Power per Lane*(Note2)	R <sub>pow1</sub>	-10.6		4	dBm
Average Receive Power per Lane*(Note3)	R <sub>pow</sub>	-8.8		2.9	dBm
Receive Sensitivity per Lane*(Note4)	P <sub>min1</sub>			-10.6	dBm
Receive Sensitivity per Lane*(Note5)	P <sub>min2</sub>			-10.3	dBm
Receiver Overload per Lane	P <sub>max</sub>	4.5			dBm
Optical Return Loss	ORL			-26	dB
LOS Assert	LOSA	-21			dBm
LOS De-Assert	LOSD			-11	dBm
LOS Hysteresis		0.5			dB

Note1: Measured with a PRBS 2<sup>31</sup>-1 test pattern @27.95Gbps

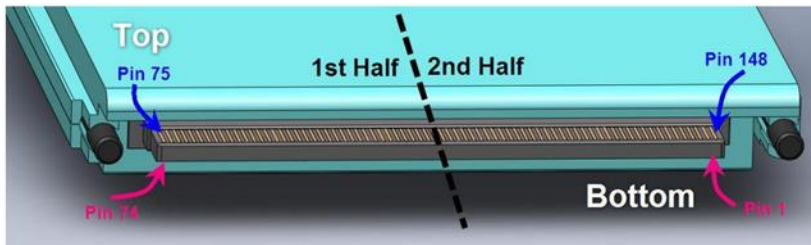
Note2: CFP transceiver works in 100GBASE-LR4 mode.

Note3: CFP transceiver works in OTU4 4I1-9D1F mode.

Note4: Minimum average optical power measured at BER less than 1E-12, with a 2<sup>31</sup>-1 PRBS@25.78Gbps.

Note5: Minimum average optical power measured at BER less than 1E-12, with a 2<sup>31</sup>-1 PRBS@27.95Gbps.

## PIN Definitions



	Top Row (2nd Half)		Bottom Row (2nd Half)
148	GND	1	3.3V_GND
147	REFCLKn	2	3.3V_GND
146	REFCLKp	3	3.3V_GND
145	GND	4	3.3V_GND
144	(S1_REFCLKn)	5	3.3V_GND
143	(S1_REFCLKp)	6	3.3V
142	GND	7	3.3V
141	N.C.	8	3.3V
140	N.C.	9	3.3V
139	GND	10	3.3V
138	(S1_TX3n)	11	3.3V
137	(S1_TX3p)	12	3.3V
136	GND	13	3.3V
135	(S1_TX2n)	14	3.3V
134	(S1_TX2p)	15	3.3V
133	GND	16	3.3V_GND
132	(S1_TX1n)	17	3.3V_GND
131	(S1_TX1p)	18	3.3V_GND
130	GND	19	3.3V_GND
129	(S1_TX0n)	20	3.3V_GND
128	(S1_TX0p)	21	VND_IO_A
127	GND	22	VND_IO_B
126	N.C.	23	GND
125	N.C.	24	(TX_MCLKn)
124	GND	25	(TX_MCLKp)
123	TX3n	26	GND
122	TX3p	27	VND_IO_C
121	GND	28	VND_IO_D
120	TX2n	29	VND_IO_E
119	TX2p	30	PRG_CNTL1
118	GND	31	PRG_CNTL2
117	TX1n	32	PRG_CNTL3
116	TX1p	33	PRG_ALRM1
115	GND	34	PRG_ALRM2
114	TX0n	35	PRG_ALRM3
113	TX0p	36	TX_DIS
112	GND	37	MOD_LOPWR

	Top Row (1st Half)		Bottom Row (1st Half)
111	GND	38	MOD_ABS
110	(S1_RX_MCLKn)	39	MOD_RSTn
109	(S1_RX_MCLKp)	40	RX_LOS
108	GND	41	GLB_ALRMn
107	N.C.	42	PRTADR4
106	N.C.	43	PRTADR3
105	GND	44	PRTADR2
104	(S1_RX3n)	45	PRTADR1
103	(S1_RX3p)	46	PRTADR0
102	GND	47	MDIO
101	(S1_RX2n)	48	MDC
100	(S1_RX2p)	49	GND
99	GND	50	VND_IO_F
98	(S1_RX1n)	51	VND_IO_G
97	(S1_RX1p)	52	GND
96	GND	53	VND_IO_H
95	(S1_RX0n)	54	VND_IO_J
94	(S1_RX0p)	55	3.3V_GND
93	GND	56	3.3V_GND
92	N.C.	57	3.3V_GND
91	N.C.	58	3.3V_GND
90	GND	59	3.3V_GND
89	RX3n	60	3.3V
88	RX3p	61	3.3V
87	GND	62	3.3V
86	RX2n	63	3.3V
85	RX2p	64	3.3V
84	GND	65	3.3V
83	RX1n	66	3.3V
82	RX1p	67	3.3V
81	GND	68	3.3V
80	RX0n	69	3.3V
79	RX0p	70	3.3V_GND
78	GND	71	3.3V_GND
77	(RX_MCLKn)	72	3.3V_GND
76	(RX_MCLKp)	73	3.3V_GND
75	GND	74	3.3V_GND

## Ordering information

Part Number	Product Description
CFP-LR4	100Gbps CFP LR4, 10km, -10°C to 75°C