



C2Q00000C00DD44

Cisco® Compatible 100GBase-Converter QSFP28 Transceiver (CFP2 to QSFP28 Converter, ER4)

Product Description

This Cisco® QSFP28 to QSFP28 converter provides conversion from CFP2 to QSFP28 form factors. It is guaranteed to be 100% compatible with the equivalent Cisco® converter. This easy to install, hot swappable converter has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- Compatible with CFP2 MSA Specification
- Single 3.3V Power Supply and Power Dissipation < 1.8W
- Compatible with QSFP28 MSA Specification
- Hot Pluggable 104-Pin Connector
- 4x 25G CFP2 Electrical Plug Interface Provided
- Case Temperature Range: 0 to 70
- 4x 25G QSFP28 Electrical Socket Interface Provided
- RoHS compliant and Lead Free
- Management and Control via MDIO 2-Wire Interface



Applications:

- CFP2 to QSFP28
- Access and Enterprise

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Power Supply Current	Icc			550	mA	
Aggregate Bit Rate	BRave		103.125	111.8	Gbps	
Lane Bit Rate	BRlane		25.78	27.95	Gbps	

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.135	3.3	3.465	V	
Transmitter							
Differential Input Amplitude		VIN	150		1000	mVp-p	1
Differential Input Impedance		ZIN	85	100	115	Ω	2
Tx_Disable	Disable	VIH	2		Vcc+0.3	V	
	Enable	VIL	0		0.8	V	
Receiver							
Differential Output Amplitude		VOUT	340		400	mVp-p	3
Differential Output Impedance		ZOUT	85	100	115	Ω	
Output Rise/Fall Time		Tr/Tf	24			ps	4
Rx_LOS	LOS	VOH	2.4		Vcc+0.3	V	
	Normal	VOL	0		0.8	V	

Notes:

1. AC coupled inputs.
2. RIN > 100kΩ @ DC.
3. AC coupled outputs.
4. 20-80%.

1.2V MDIO Interface Specifications

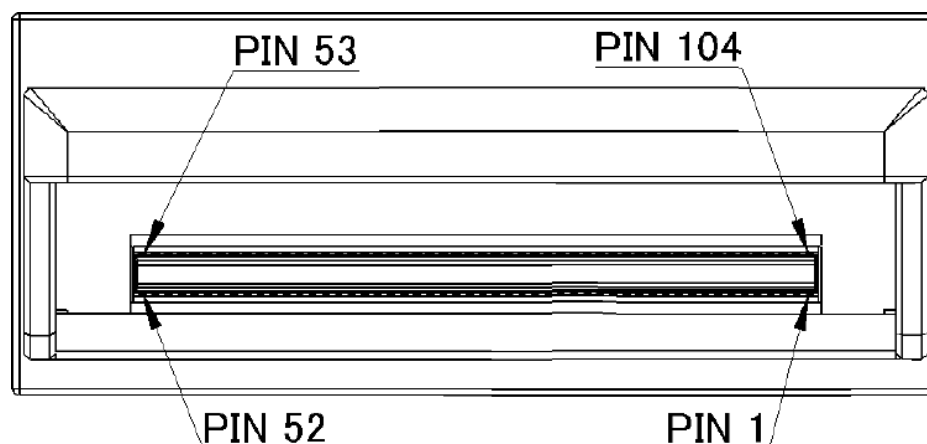
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Input Voltage	VIH	0.84		1.5	V	
	VIL	-0.3		0.36	V	
Input Leak Current	IIN	-100		100	uA	
Output Voltage	VOH	1.0		1.5	V	
	VOL	-0.3		0.2	V	
Input Capacitance	CI			10	pF	
Input MDC Clock	fMDC	0.1		4	MHz	
MDC Clock Period	tMDC	250		10000	ns	
MDIO Hold Time	Thold	10			ns	
MDIO Setup Time	Tsetup	10			ns	
GLB_ALM	Tglb_alm_ass			150	ms	
	Tglb_alm_dea			150	ms	

CFP2 Pin Function Definitions

Bottom			Top
1	GND	53	GND
2	(TX_MCK_N)	54	N.C.
3	(TX_MCK_P)	55	N.C.
4	GND	56	GND
5	N.C.	57	Rx0+
6	N.C.	58	Rx0-
7	3.3V_GND	59	GND
8	3.3V_GND	60	Rx1+
9	3.3V	61	Rx1-
10	3.3V	62	GND
11	3.3V	63	N.C.
12	3.3V	64	N.C.
13	3.3V_GND	65	GND
14	3.3V_GND	66	N.C.
15	VND_IO_A	67	N.C.
16	VND_IO_B	68	GND
17	PRG_CNTL1	69	Rx2+
18	PRG_CNTL2	70	Rx2-
19	PRG_CNTL3	71	GND
20	PRG_ALARM1	72	Rx3+
21	PRG_ALARM2	73	Rx3-
22	PRG_ALARM3	74	GND
23	GND	75	N.C.

24	Tx_Disable	76	N.C.
25	Rx_LOS	77	GND
26	MOD_LOPWR	78	(REFCLKp)
27	MOD_ABS	79	(REFCLKp)
28	MOD_RSTn	80	GND
29	GLB_ALRMn	81	N.C.
30	GND	82	N.C.
31	MDC	83	GND
32	MDIO	84	Tx0+
33	PRTADR0	85	Tx0-
34	PRTADR1	86	GND
35	PRTADR2	87	Tx1+
36	VND_IO_C	88	Tx1-
37	VND_IO_D	89	GND
38	VND_IO_E	90	N.C
39	3.3V_GND	91	N.C.
40	3.3V_GND	92	GND
41	3.3V	93	N.C
42	3.3V	94	N.C
43	3.3V	95	GND
44	3.3V	96	Tx2+
45	3.3V_GND	97	Tx2-
46	3.3V_GND	98	GND
47	N.C.	99	Tx3+
48	N.C.	100	Tx3-
49	GND	101	GND
50	(RX_MCK_N)	102	N.C
51	(RX_MCK_P)	103	N.C.
52	GND	104	GND

CFP2 Electrical Pad Layout



Bottom Row Pin Descriptions

Pin	Symbol	Function	Notes
1	GND		
2	(TX_MCK_N)	O CML	1
3	(TX_MCK_P)	O CML	1
4	GND		
5	N.C.		
6	N.C.		
7	3.3V_GND		
8	3.3V_GND		
9	3.3V		2
10	3.3V		2
11	3.3V		2
12	3.3V		2
13	3.3V_GND		
14	3.3V_GND		
15	VND_IO_A		3
16	VND_IO_B		4
17	PRG_CNTL1		5
18	PRG_CNTL2		6
19	PRG_CNTL3		7
20	PRG_ALARM1		8
21	PRG_ALARM2		9
22	PRG_ALARM3		10
23	GND		
24	Tx_Disable	I LVCMOS	11
25	Rx_LOS	O LVCMOS	12
26	MOD_LOPWR	I LVCMOS	13
27	MOD_ABS	O GND	14
28	MOD_RSTn	I LVCMOS	15
29	GLB_ALARMn	O LVCMOS	16
30	GND		
31	MDC	I 1.2V CMOS	17
32	MDIO	I/O 1.2V CMOS	18
33	PRTADR0	I 1.2V CMOS	19
34	PRTADR1	I 1.2V CMOS	20
35	PRTADR2	I 1.2V CMOS	21

36	VND_IO_C	I/O	22
37	VND_IO_D	I/O	23
38	VND_IO_E	I/O	24
39	3.3V_GND		
40	3.3V_GND		
41	3.3V		2
42	3.3V		2
43	3.3V		2
44	3.3V		2
45	3.3V_GND		
46	3.3V_GND		
47	N.C.		25
48	N.C.		25
49	GND		
50	(RX_MCK_N)	O CML	1
51	(RX_MCK_P)	O CML	1
52	GND		

Notes:

1. For optical waveform testing. Not for normal use.
2. 3.3V module supply voltage.
3. Module Vendor I/O A. Do not connect.
4. Module Vendor I/O B. Do not connect.
5. Programmable control 1 set over MDIO. MSA default: TRXIC_RSTn/TX&RX ICs reset. "0" is reset, and "1" or "NC" means enabled/not used.
6. Programmable Control 2 set over MDIO. MSA default: Hardware Interlock LSB. "00" is $\leq 3W$, "01" is $\leq 6W$, "10" is $\leq 9W$, and "11" or NC is $\leq 12W$ which is not used.
7. Programmable Control 3 set over MDIO. MSA default: Hardware Interlock MSB. "00" is $\leq 3W$, "01" is $\leq 6W$, "10" is $\leq 9W$, and "11" or NC is $\leq 12W$ which is not used.
8. Programmable Alarm 1 set over MDIO. MSA default: HIPWR_ON. "1" indicates that the module power-up is complete, and "0" indicates that the module is not high powered-up.
9. Programmable Alarm 2 set over MDIO. MSA default: MOD_READY. "1" is ready, and "0" is not ready.
10. Programmable Alarm 3 set over MDIO. MSA default: MOD_FAULT (fault detected). "1" is fault, and "0" is not fault.
11. Transmitter disables for all lanes. "1" or NC is transmitter disabled, and "0" is transmitter enabled.
12. Receiver loss of optical signal. "1" is low optical signal, and "0" is normal condition.
13. Module low-power mode. "1" or NC is module in low-power (safe) mode, and "0" is power-on enabled.
14. Module Absent. "1" or NC is module absent, and "0" is module present. Pull-up resistor on the host.
15. Module Reset. "0" resets the module, and "1" or NC is module enabled. Pull-down resistor in the module.
16. Global Alarm. "0" is the alarm condition in any MDIO alarm register, and "1" is no alarm condition. Open Drain. Pull-up resistor on the host.

17. Management Data Clock.
18. Management Data I/O Bi-Directional Data.
19. MDIO Physical Port Address Bit 0.
20. MDIO Physical Port Address Bit 1.
21. MDIO Physical Port Address Bit 2.
22. Module Vendor I/O C. Do not connect.
23. Module Vendor I/O D. Do not connect.
24. Module Vendor I/O E. Do not connect.
25. Not Connected.

Top Row Pin Descriptions

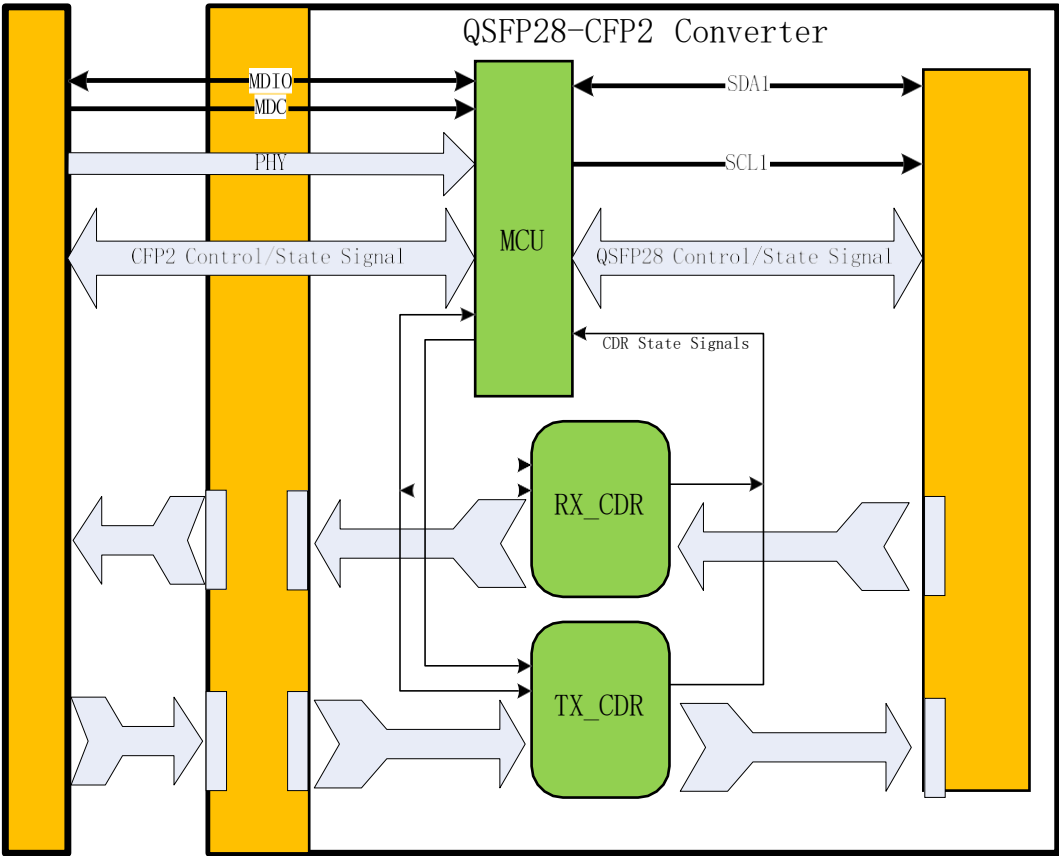
Pin	Symbol	Function	Notes
53	GND		
54	N.C.		
55	N.C.		
56	GND		
57	Rx0+	Lane 0 Rx Output O	1
58	Rx0-	Lane 0 Rx Output O	1
59	GND		
60	Rx1+		1
61	Rx1-		1
62	GND		
63	N.C.		
64	N.C.		
65	GND		
66	N.C.		
67	N.C.		
68	GND		
69	Rx2+	Lane 2 Rx Output O	1
70	Rx2-	Lane 2 Rx Output O	1
71	GND		
72	Rx3+	Lane 3 Rx Output O	1
73	Rx3-	Lane 3 Rx Output O	1
74	GND		
75	N.C.		
76	N.C.		
77	GND		
78	(REFCLKn)	Reference Clock I	2

79	(REFCLKp)	Reference Clock I	2
80	GND		
81	N.C.		
82	N.C.		
83	GND		
84	Tx0+	Lane 0 Tx Input I	3
85	Tx0-	Lane 0 Tx Input I	3
86	GND		
87	Tx1+	Lane 1 Tx Input I	3
88	Tx1-	Lane 1 Tx Input I	3
89	GND		
90	N.C.		
91	N.C.		
92	GND		
93	N.C.		
94	N.C.		
95	GND		
96	Tx2+	Lane 2 Tx Input I	3
97	Tx2-	Lane 2 Tx Input I	3
98	GND		
99	Tx3+	Lane 3 Tx Input I	3
100	Tx3-	Lane 3 Tx Input I	3
101	GND		
102	N.C.		
103	N.C.		
104	GND		

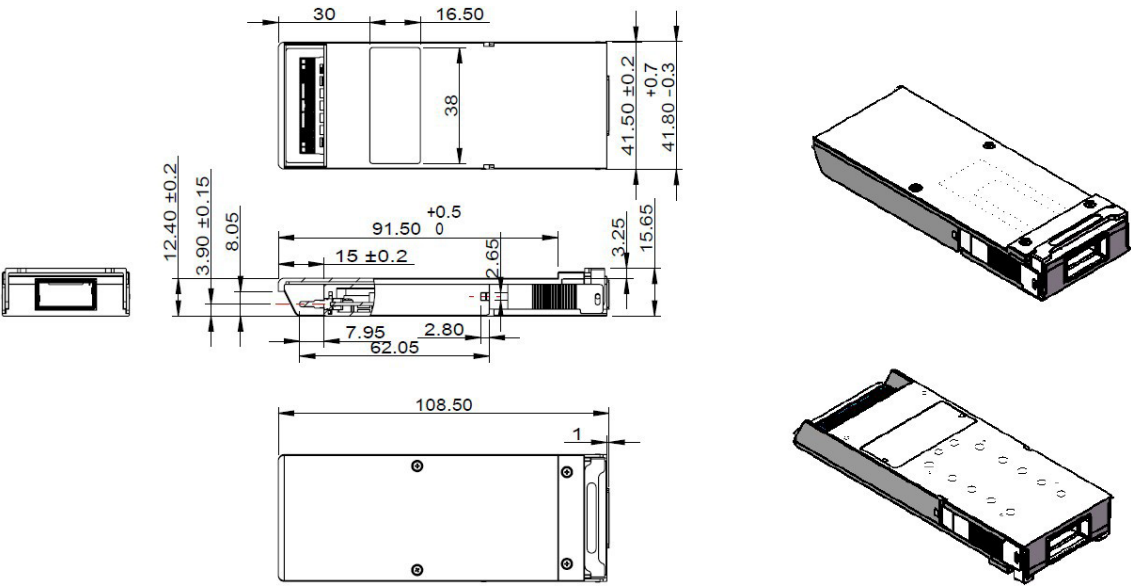
Notes:

1. CML Output.
2. Reference Clock Input.
3. CML Input.
4. Ground connections are common for Tx and Rx.
5. Each connector contact is rated at 0.5A.
6. MDIO and MDC timing must comply with IEEE 802.3ae clause 45.3.
7. Converter will be MSA compliant when no signals are present on the vendor-specific pins.

Block Diagram



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

