

QDD-200G-2Q28-PDAC0-5M-SKY

MSA Compliant 200GBase-CU QSFP-DD 200G to 2xQSFP28 100G NRZ Direct Attach Cable (Passive Twinax, 0.5m)

Product Description

This is an industry standard 200GBase-CU QSFP-DD 200G to 2xQSFP28 100G NRZ direct attach cable that operates over passive copper with a maximum reach of 0.5m (1.6ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is built to comply with MSA (Multi-Source Agreement) standards. 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:

- QSFP-DD MSA Compliant
- Transmission Data Rate Up to 25.78Gbps Per Channel
- SFF-8661 Compliant
- Built-In EEPROM Functions
- Operating Temperature: 0 to 70 Celsius
- Enables 200Gbps to 2x100Gbps Transmission
- RoHS Compliant and Lead-Free



Applications:

- 200GBase Ethernet

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
Supply Voltage	Vcc	3.13	3.3	3.47	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Relative Humidity	RH	5		85	%
Data Rate			200		Gbps

Physical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Length	L			0.5	M	
AWG			30		AWG	
Jacket Material		PVC, Black				

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Resistance	Rcon			3	Ω	
Insulation Resistance	Rins			10	MΩ	
Raw Cable Impedance	Zca	95	100	110	Ω	
Mated Connector Impedance	Zmated	85	100	115	Ω	
Insertion Loss @13.28GHz	SDD21	8		22.48	dB	
Return Loss	SDD11/22	$\text{Return_loss}(f) \geq \begin{cases} 16.5-2vf & 0.05 \leq f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1 \leq f \leq 19 \end{cases}$			dB	1
Differential to Common-Mode Return Loss	SCD11/22	$\text{Return_loss}(f) \geq \begin{cases} 22-(20/25.78)f & 0.01 \leq f < 12.89 \\ 15-(6/25.78)f & 12.89 \leq f \leq 19 \end{cases}$			dB	1
Differential to Common-Mode Conversion Loss	SCD21-SDD21	$\text{Conversion_loss}(f) - \text{IL}(f) \geq \begin{cases} 10 & 0.01 \leq f < 12.89 \\ 27-(29/22)f & 12.89 \leq f < 15.7 \\ 6.3 & 15.7 \leq f \leq 19 \end{cases}$			dB	1
Minimum COM	COM	3			dB	

Notes:

1. For $0.05 \leq f \leq 19\text{GHz}$, where f is the frequency in GHz.

Pin Descriptions - QSFP-DD End

Pin	Logic	Symbol	Name/Description	Plug Sequence	Notes
1		GND	Module Ground.	1B	1
2	CML-I	Tx2n	Transmitter Inverted Data Input.	3B	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input.	3B	
4		GND	Module Ground.	1B	1
5	CML-I	Tx4n	Transmitter Inverted Data Input.	3B	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input.	3B	
7		GND	Module Ground.	1B	1
8	LVTTL-I	ModSelL	Module Select.	3B	
9	LVTTL-I	ResetL	Module Reset.	3B	
10		VccRx	+3.3V Receiver Power Supply.	2B	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	3B	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	3B	
13		GND	Module Ground.	1B	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output.	3B	
15	CML-O	Rx3n	Receiver Inverted Data Output.	3B	
16		GND	Module Ground.	1B	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output.	3B	
18	CML-O	Rx1n	Receiver Inverted Data Output.	3B	
19		GND	Module Ground.	1B	1
20		GND	Module Ground.	1B	1
21	CML-O	Rx2n	Receiver Inverted Data Output.	3B	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output.	3B	
23		GND	Module Ground.	1B	1
24	CML-O	Rx4n	Receiver Inverted Data Output.	3B	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output.	3B	
26		GND	Module Ground.	1B	1
27	LVTTL-O	ModPrsL	Module Present.	3B	
28	LVTTL-O	IntL/RxLOS	Interrupt. Optional RxLOS.	3B	
29		VccTx	+3.3V Transmitter Power Supply.	2B	2
30		Vcc1	+3.3V Power Supply.	2B	2
31	LVTTL-I	LPMode/TxDis	Low-Power Mode. Optional Tx Disable.	3B	
32		GND	Module Ground.	1B	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input.	3B	
34	CML-I	Tx3n	Transmitter Inverted Data Input.	3B	
35		GND	Module Ground.	1B	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input.	3B	
37	CML-I	Tx1n	Transmitter Inverted Data Input.	3B	
38		GND	Module Ground.	1B	1
39		GND	Module Ground.	1A	1
40	CML-I	Tx6n	Transmitter Inverted Data Input.	3A	
41	CML-I	Tx6p	Transmitter Non-Inverted Data Input.	3A	

42		GND	Module Ground.	1A	
43	CML-I	Tx8n	Transmitter Inverted Data Input.	3A	
44	CML-I	Tx8p	Transmitter Non-Inverted Data Input.	3A	
45		GND	Module Ground.	1A	
46	LVC MOS/CML-I	P/VS4	Programmable. Module Vendor-Specific 4.	3A	5
47	LVC MOS/CML-I	P/VS1	Programmable. Module Vendor-Specific 1.	3A	5
48		VccRx1	+3.3V Receiver Power Supply.	2A	2
49	LVC MOS/CML-O	P/VS2	Programmable. Module Vendor-Specific 2.	3A	5
50	LVC MOS/CML-O	P/VS3	Programmable. Module Vendor-Specific 3.	3A	5
51		GND	Module Ground.	1A	1
52	CML-O	Rx7p	Receiver Non-Inverted Data Output.	3A	
53	CML-O	Rx7n	Receiver Inverted Data Output.	3A	
54		GND	Module Ground.	1A	1
55	CML-O	Rx5p	Receiver Non-Inverted Data Output.	3A	
56	CML-O	Rx5n	Receiver Inverted Data Output.	3A	
57		GND	Module Ground.	1A	1
58		GND	Module Ground.	1A	1
59	CML-O	Rx6n	Receiver Inverted Data Output.	3A	
60	CML-O	Rx6p	Receiver Non-Inverted Data Output.	3A	
61		GND	Module Ground.	1A	1
62	CML-O	Rx8n	Receiver Inverted Data Output.	3A	
63	CML-O	Rx8p	Receiver Non-Inverted Data Output.	3A	
64		GND	Module Ground.	1A	1
65		NC	Not Connected.	3A	3
66		Reserved	For Future Use.	3A	3
67		VccTx1	+3.3V Power Supply.	2A	2
68		Vcc2	+3.3V Power Supply.	2A	2
69	LVC MOS-I	ePPS/Clock	1PPS PTP Clock or Reference Clock Input.	3A	6
70		GND	Module Ground.	1A	1
71	CML-I	Tx7p	Transmitter Non-Inverted Data Input.	3A	
72	CML-I	Tx7n	Transmitter Inverted Data Input.	3A	
73		GND	Module Ground.	1A	1
74	CML-I	Tx5p	Transmitter Non-Inverted Data Input.	3A	
75	CML-I	Tx5n	Transmitter Inverted Data Input.	3A	
76		GND	Module Ground.	1A	1

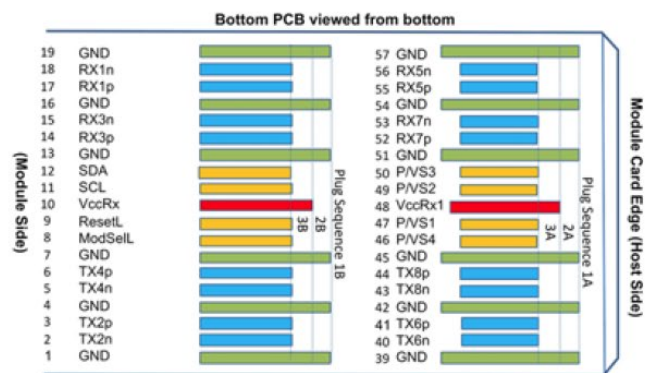
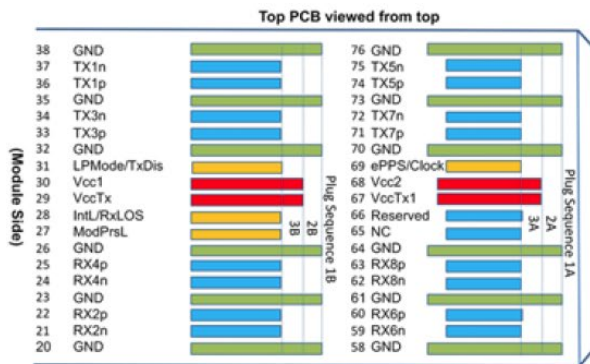
Notes:

1. QSFP-DD uses common ground (GND) for all signals and supply (power). All are common within the QSFP-DD module, and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane. Each connector GND contact is rated for maximum current of 500mA.
2. VccRx, VccRx1, Vcc1, Vcc2, VccTx, and VccTx1 shall be applied concurrently. Requirements defined for the host side of the Host Card Edge Connector are listed below. For power classes 4 and above, the

module differential loading of input voltage pads must not result in exceeding contact current limits. Each connector Vcc contact is rated for a maximum current of 1500mA.

3. Reserved and No Connect pads recommended to be terminated with 10k Ω to ground on the host. Pad 65 (No Connect) shall be left unconnected within the module.
4. Plug sequence specifies the mating sequence of the host connector and module. The sequence is 1A, 2A, 3A, 1B, 2B, and 3B. Contact sequence A will make, then break contact with additional QSFP-DD pads. Sequence 1A and 1B will then occur simultaneously, followed by 2A and 2B, followed by 3A and 3B.
5. Full definitions of P/VSx signals are currently under development. On new designs, not using P/VSx signals are recommended to be terminated on the host with 10k Ω .
6. ePPS/Clock if not used recommended to be terminated with 50 Ω to ground on the host.

Pin-Out Details - QSFP-DD End



Pin Descriptions - QSFP End

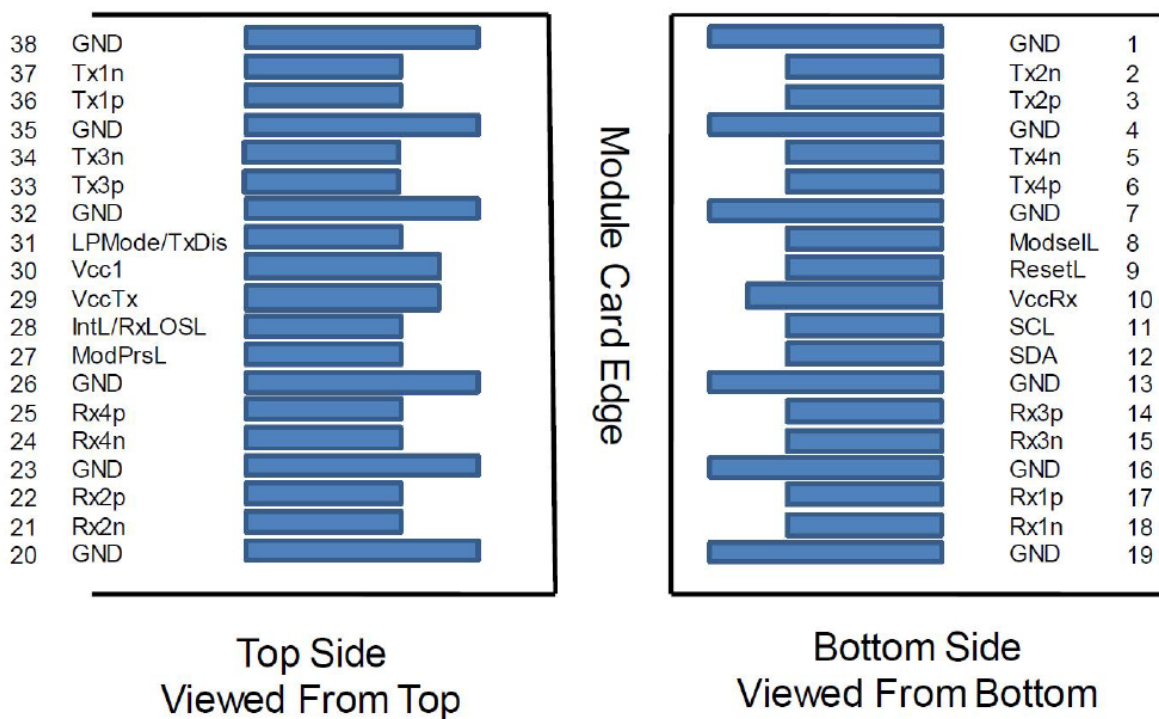
Pin	Logic	Symbol	Name/Description	Plug Sequence	Notes
1		GND	Module Ground.	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input.	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input.	3	
4		GND	Module Ground.	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input.	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input.	3	
7		GND	Module Ground.	1	1
8	LVTTL-I	ModSelL	Module Select.	3	
9	LVTTL-I	ResetL	Module Reset.	3	
10		VccRx	+3.3V Receiver Power Supply.	2	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	3	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	3	
13		GND	Module Ground.	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output.	3	
15	CML-O	Rx3n	Receiver Inverted Data Output.	3	
16		GND	Module Ground.	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output.	3	
18	CML-O	Rx1n	Receiver Inverted Data Output.	3	
19		GND	Module Ground.	1	1
20		GND	Module Ground.	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output.	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output.	3	
23		GND	Module Ground.	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output.	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output.	3	
26		GND	Module Ground.	1	1
27	LVTTL-O	ModPrsL	Module Present.	3	
28	LVTTL-O	IntL	Interrupt.	3	
29		VccTx	+3.3V Transmitter Power Supply.	2	2
30		Vcc1	+3.3V Power Supply.	2	2
31	LVTTL-I	LPMODE	Low-Power Mode.	3	
32		GND	Module Ground.	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input.	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input.	3	

35		GND	Module Ground.	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input.	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input.	3	
38		GND	Module Ground.	1	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP module, and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1, and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Electrical Pin-Out Details - QSFP

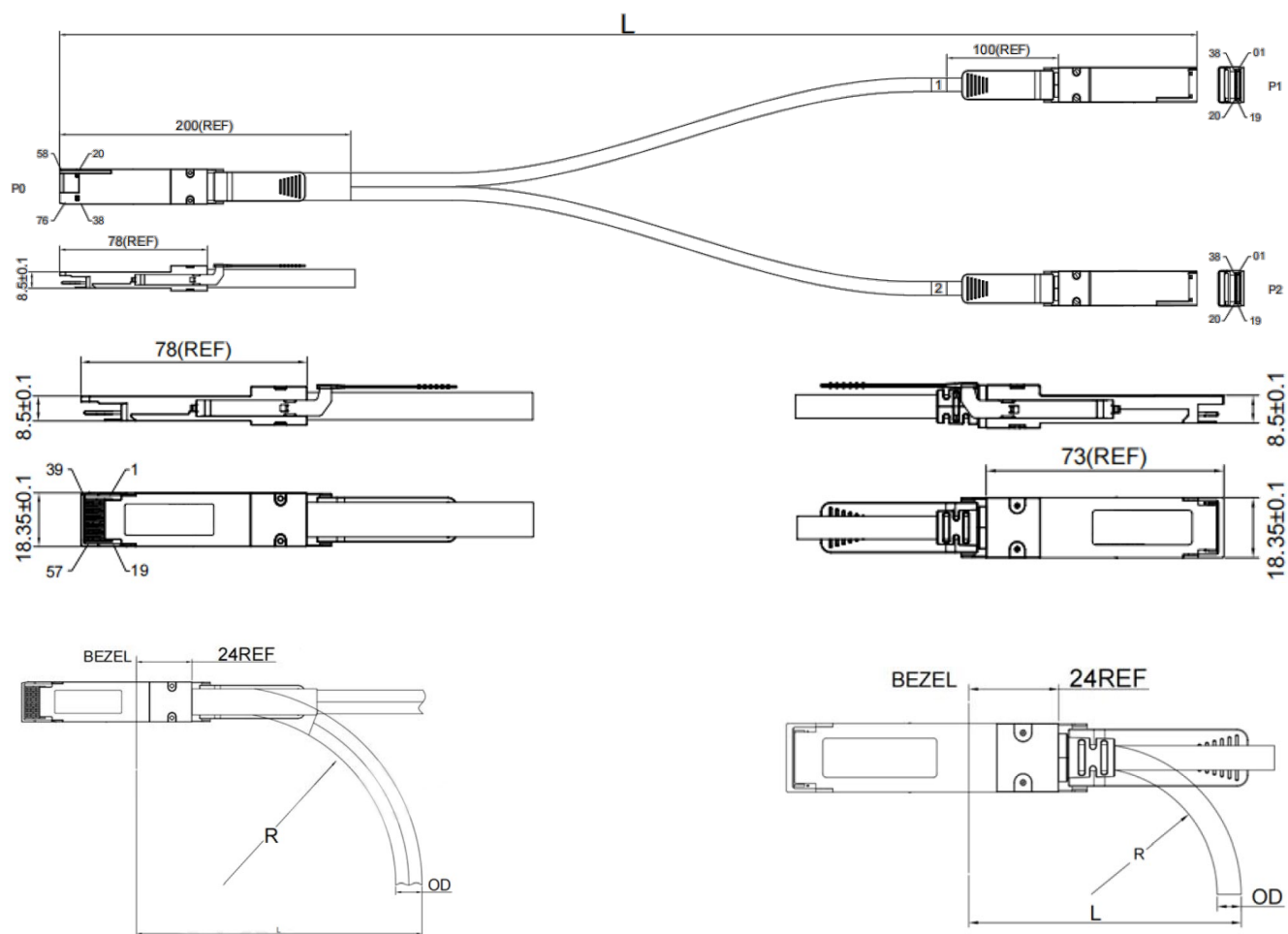


Wiring Table

WIRING DIAGRAM					
P0 END			P1&P2 END		
Pad	Signal	Px	Pad	Signal	
1	GND	P1	20	GND	
2	TX2n		21	RX2n	
3	TX2p		22	RX2p	
4	GND		20	GND	
5	TX4n	P2	21	RX2n	
6	TX4p		22	RX2p	
7	GND		23	GND	
13	GND		35	GND	
14	RX3p	P1	36	TX1p	
15	RX3n		37	TX1n	
16	GND		38	GND	
17	RX1p		36	TX1p	
18	RX1n	P2	37	TX1n	
19	GND		38	GND	
20	GND		1	GND	
21	RX2n		2	TX2n	
22	RX2p	P1	3	TX2p	
23	GND		1	GND	
24	RX4n		2	TX2n	
25	RX4p		3	TX2p	
26	GND	P2	4	GND	
32	GND		16	GND	
33	TX3p		17	RX1p	
34	TX3n		18	RX1n	
35	GND	P1	19	GND	
36	TX1p		17	RX1p	
37	TX1n		18	RX1n	
38	GND		19	GND	

WIRING DIAGRAM					
P0 END			P3&P4 END		
Pad	Signal	Px	Pad	Signal	
39	GND	P3	20	GND	
40	TX6n		21	RX2n	
41	TX6p		22	RX2p	
42	GND		20	GND	
43	TX8n	P4	21	RX2n	
44	TX8p		22	RX2p	
45	GND		23	GND	
51	GND		35	GND	
52	RX7p	P3	36	TX1p	
53	RX7n		37	TX1n	
54	GND		38	GND	
55	RX5p		36	TX1p	
56	RX5n	P4	37	TX1n	
57	GND		38	GND	
58	GND		1	GND	
59	RX6n		2	TX2n	
60	RX6p	P3	3	TX2p	
61	GND		1	GND	
62	RX8n		2	TX2n	
63	RX8p		3	TX2p	
64	GND	P4	4	GND	
70	GND		16	GND	
71	TX7p		17	RX1p	
72	TX7n		18	RX1n	
73	GND	P3	19	GND	
74	TX5p		17	RX1p	
75	TX5n		18	RX1n	
76	GND		19	GND	

Mechanical Specifications



QSFP-DD				QSFP			
Gauge	OD	Bend Radius "R"	Min. Bend Radius "L"	Gauge	OD	Bend Radius "R"	Min. Bend Radius "L"
30AWG	14MM	70MM	170MM	30AWG	7.0MM	35MM	75MM

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.

