MCP7H60-W02AR26-C

Mellanox® Compatible TAA 400GBase-CU QSFP-DD to 2xQSFP56 Direct Attach Cable (Passive Twinax, 2.5m)

Features:

- Compliant with QSFP-DD MSA Specification Rev. 3.4
- SFF-8679 Electrical Interface Compliant
- SFF-8636 Management Interface Support
- Compatible with IEEE 802.3bj, IEEE 802.3by, & IEEE 802.3cd
- Supports Aggregate Data Rates of 100Gbps and 400Gbps
- Pull-to-Release Slide Latch Design
- Operating Case Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free

Applications:

- 400GBase Ethernet

Product Description

This is a Mellanox® Compatible 400GBase-CU QSFP-DD to 2xQSFP56 direct attach cable that operates over passive copper with a maximum reach of 2.5m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. We stand behind the quality of our products and proudly offer a limited lifetime warranty. This cable is TAA (Trade Agreements Act) compliant and is built to comply with MSA (Multi-Source Agreement) standards.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

TAA COMPLIANT

Rev. 011325

Mechanical Characteristics

Length	Wire Gauge	Cable OD	Cable Jacket Material	Flammability Rating
2.5m	28AWG	4.93mm	PVC	VW-1

Electrical Characteristics

Parameter	Specifications
Impedance	100Ω
Data Rate	56Gbps Per Lane (PAM4)
Voltage	3.3V DC
Current (Signal Application Only)	0.75A
Operating Temperature	-10°C to 55°C
Storage Temperature	-10°C to 55°C
High-Speed Compliant	IEEE 802.3cd

QSFP-DD to 2xQSFP Wiring Schematic

P3 QSFP-DD			P1 QSFP28	
GND	1		20	GND
TX2-	**2**	◁▷	**21**	RX2-
TX2+	**3**	◁▷	**22**	RX2+
GND	4		23	GND
TX4-	**5**	◁▷	**24**	RX4-
TX4+	**6**	◁▷	**25**	RX4+
GND	7		26	GND
ModselL	8		27	ModPrsL
ResetL	9		28	IntL
VccRx	10		29	VccTx
SCL	11		30	Vcc1
SDA	12		31	Reserved
GND	13		32	GND
RX3+	**14**	◁▷	**33**	TX3+
RX3-	**15**	◁▷	**34**	TX3-
GND	16		35	GND
RX1+	**17**	◁▷	**36**	TX1+
RX1-	**18**	◁▷	**37**	TX1-
GND	19		38	GND
GND	20		1	GND
RX2-	**21**	◁▷	**2**	TX2-
RX2+	**22**	◁▷	**3**	TX2+
GND	23		4	GND
RX4-	**24**	◁▷	**5**	TX4-
RX4+	**25**	◁▷	**6**	TX4+
GND	26		7	GND
ModPrsL	27		8	ModselL
intL	28		9	ResetL
VccTx	29		10	VccRx
Vcc1	30		11	SCL
InitMode	31		12	SDA
GND	32		13	GND
TX3+	**33**	◁▷	**14**	RX3+
TX3-	**34**	◁▷	**15**	RX3-
GND	35		16	GND
TX1+	**36**	◁▷	**17**	RX1+
TX1-	**37**	◁▷	**18**	RX1-
GND	38		19	GND

P3 QSFP-DD			P2 QSFP28	
GND	39		20	GND
TX6-	**40**	◁▷	**21**	RX2-
TX6+	**41**	◁▷	**22**	RX2+
GND	42		23	GND
TX8-	**43**	◁▷	**24**	RX4-
TX8+	**44**	◁▷	**25**	RX4+
GND	45		26	GND
Reserved	46		27	ModPrsL
VS1	47		28	IntL
VccRx1	48		29	VccTx
VS2	49		30	Vcc1
VS3	50		31	Reserved
GND	51		32	GND
RX7+	**52**	◁▷	**33**	TX3+
RX7-	**53**	◁▷	**34**	TX3-
GND	54		35	GND
RX5+	**55**	◁▷	**36**	TX1+
RX5-	**56**	◁▷	**37**	TX1-
GND	57		38	GND
GND	58		1	GND
RX6-	**59**	◁▷	**2**	TX2-
RX6+	**60**	◁▷	**3**	TX2+
GND	61		4	GND
RX8-	**62**	◁▷	**5**	TX4-
RX8+	**63**	◁▷	**6**	TX4+
GND	64		7	GND
NC	65		8	ModselL
Reserved	66		9	ResetL
VccTx1	67		10	VccRx
Vcc2	68		11	SCL
Reserved	69		12	SDA
GND	70		13	GND
TX7+	**71**	◁▷	**14**	RX3+
TX7-	**72**	◁▷	**15**	RX3-
GND	73		16	GND
TX5+	**74**	◁▷	**17**	RX1+
TX5-	**75**	◁▷	**18**	RX1-
GND	76		19	GND

QSFP-DD Pin Descriptions

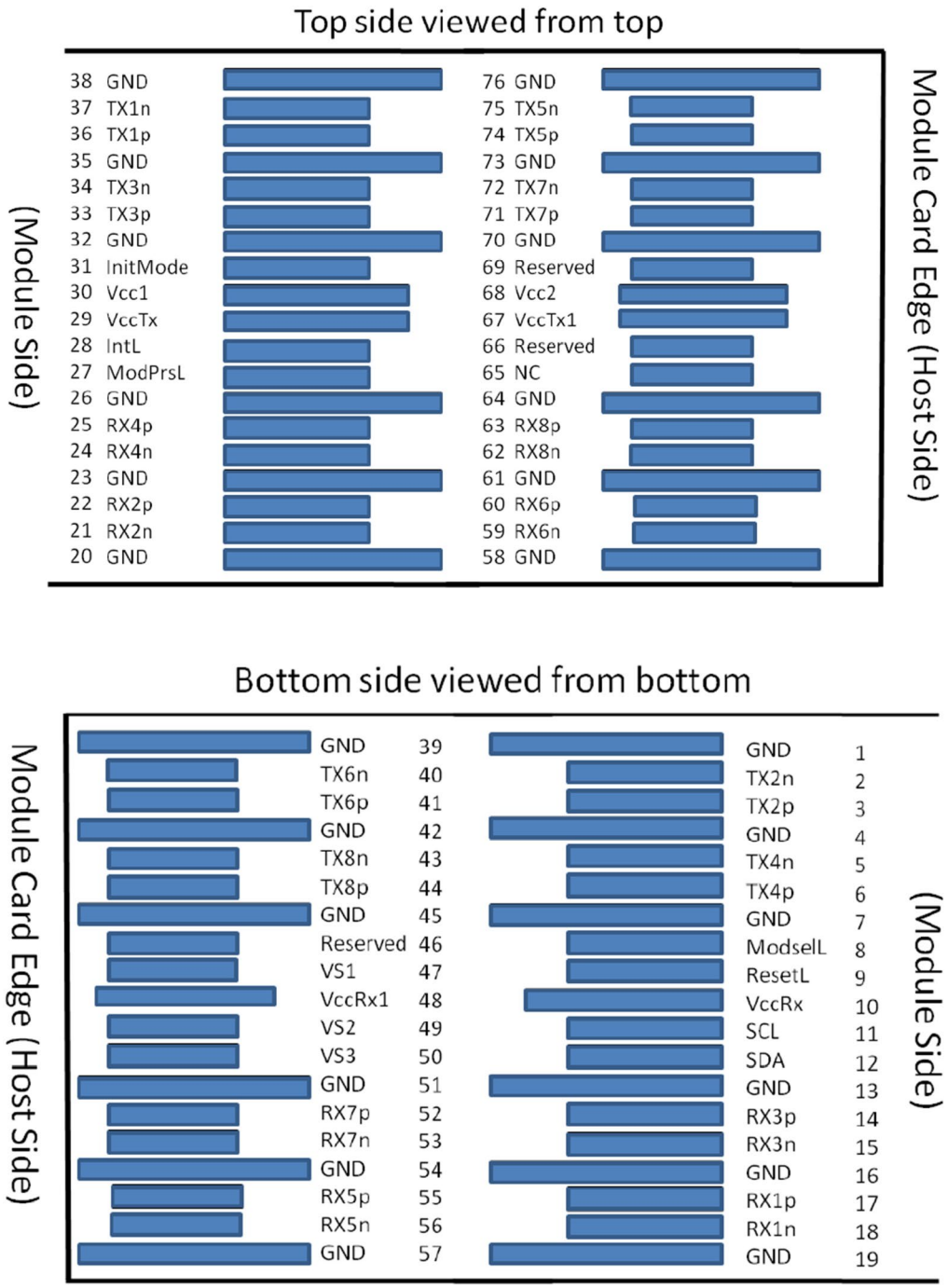
Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	
7		GND	Module Ground.	1
8	LVTTL-I	ModSelL	Module Select.	
9	LVTTL-I	ResetL	Module Reset.	
10		VccRx	+3.3V Receiver Power Supply.	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock.	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	
13		GND	Module Ground.	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	
15	CML-O	Rx3-	Receiver Inverted Data Output.	
16		GND	Module Ground.	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	
18	CML-O	Rx1-	Receiver Inverted Data Output.	
19		GND	Module Ground.	1
20		GND	Module Ground.	1
21	CML-O	Rx2-	Receiver Inverted Data Output.	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	
23		GND	Module Ground.	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27	LVTTL-O	ModPrsL	Module Present.	
28	LVTTL-O	IntL	Interrupt.	
29		VccTx	+3.3V Transmitter Power Supply.	2
30		Vcc	+3.3V Power Supply.	2
31	LVTTL-I	InitMode	Initialization Mode. In legacy QSFP applications, the InitMode pad is called LPMODE.	
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	
35		GND	Module Ground.	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	
38		GND	Module Ground.	1

Pin	Logic	Symbol	Name/Description	Notes
39		GND	Module Ground.	1
40	CML-I	Tx6-	Transmitter Inverted Data Input.	
41	CML-I	Tx6+	Transmitter Non-Inverted Data Input.	
42		GND	Module Ground.	1
43	CML-I	Tx8-	Transmitter Inverted Data Input.	
44	CML-I	Tx8+	Transmitter Non-Inverted Data Input.	
45		GND	Module Ground.	1
46		Reserved	For Future Use.	3
47		VS1	Module Vendor-Specific 1.	3
48		VccRx1	+3.3V Receiver Power Supply.	2
49		VS2	Module Vendor-Specific 2.	3
50		VS3	Module Vendor-Specific 3.	3
51		GND	Module Ground.	1
52	CML-O	Rx7+	Receiver Non-Inverted Data Output.	
53	CML-O	Rx7-	Receiver Inverted Data Output.	
54		GND	Module Ground.	1
55	CML-O	Rx5+	Receiver Non-Inverted Data Output.	
56	CML-O	Rx5-	Receiver Inverted Data Output.	
57		GND	Module Ground.	1
58		GND	Module Ground.	1
59	CML-O	Rx6-	Receiver Inverted Data Output.	
60	CML-O	Rx6+	Receiver Non-Inverted Data Output.	
61		GND	Module Ground.	1
62	CML-O	Rx8-	Receiver Inverted Data Output.	
63	CML-O	Rx8+	Receiver Non-Inverted Data Output.	
64		GND	Module Ground.	1
65		NC	Not Connected.	3
66		Reserved	For Future Use.	3
67		VccTx1	+3.3V Transmitter Power Supply.	2
68		Vcc2	+3.3V Power Supply.	2
69		Reserved	For Future Use.	3
70		GND	Module Ground.	1
71	CML-I	Tx7+	Transmitter Non-Inverted Data Input.	
72	CML-I	Tx7-	Transmitter Inverted Data Input.	
73		GND	Module Ground.	1
74	CML-I	Tx5+	Transmitter Non-Inverted Data Input.	
75	CML-I	Tx5-	Transmitter Inverted Data Input.	
76		GND	Module Ground.	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.
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. VccRx, VccRx1, Vcc1, Vcc2, VccTx, and VccTx1 may be internally connected within the module in any combination. The connector Vcc pins are each rated for a maximum current of 1000mA.
3. All Vendor-Specific, Reserved and Not Connected pins may be terminated with 50Ω to the ground on the host. Pad 65 (Not Connected) shall be left unconnected within the module. Vendor-Specific and Reserved pads shall have an impedance to GND that is greater than 10kΩ and less than 100pF.
4. Plug Sequence specifies the mating sequence of the host connector and module. The sequence is 1A, 2A, 3A, 1B, 2B, and 3B (see below for pad locations). Contact Sequence A will make, then break, contact with additional QSFP-DD pads. Sequence 1A, 1B will then occur simultaneously, followed by 2A, 2B, followed by 3A, 3B.

QSFP-DD Electrical Pin-Out Details



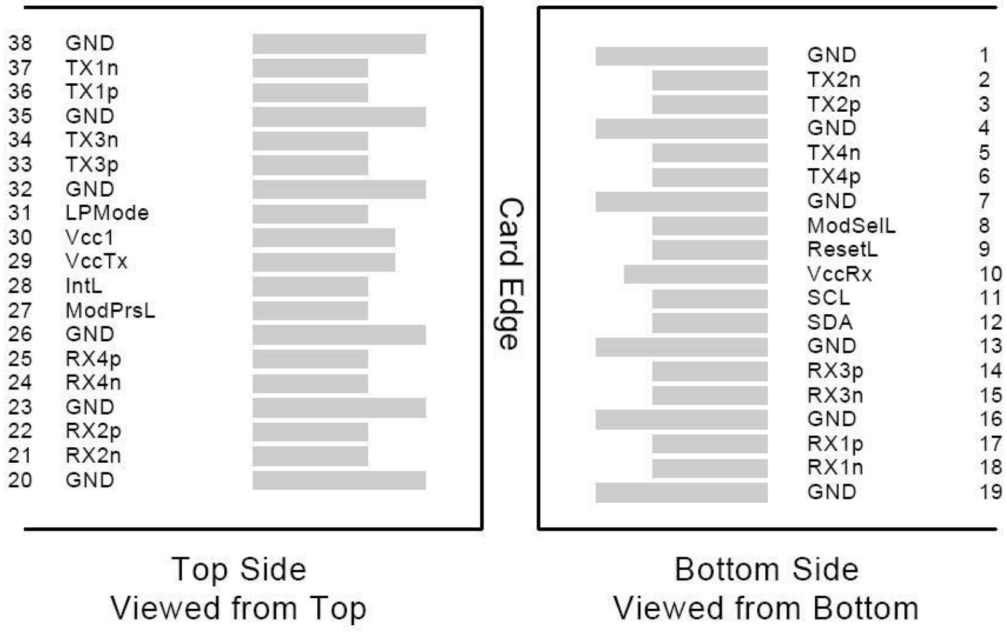
QSFP56 Pin Definitions

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	
7		GND	Module Ground.	1
8	LVTTL-I	ModSelL	Module Select.	2
9	LVTTL-I	ResetL	Module Reset.	2
10		VccRx	+3.3V Receiver Power Supply.	
11	LVCMOS-I	SCL	2-Wire Serial Interface Clock.	2
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	2
13		GND	Module Ground.	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	
15	CML-O	Rx3-	Receiver Inverted Data Output.	
16		GND	Module Ground.	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	
18	CML-O	Rx1-	Receiver Inverted Data Output.	
19		GND	Module Ground.	1
20		GND	Module Ground.	1
21	CML-O	Rx2-	Receiver Inverted Data Output.	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	
23		GND	Module Ground.	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27	LVTTL-O	ModPrsL	Module Present. Internally pulled down to the GND.	
28	LVTTL-O	IntL	Interrupt output should be pulled up on the host board.	2
29		VccTx	+3.3V Transmitter Power Supply.	
30		Vcc1	+3.3V Power Supply.	
31	LVTTL-I	LPMode	Low-Power Mode.	2
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	
35		GND	Module Ground.	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	
38		GND	Module Ground.	1

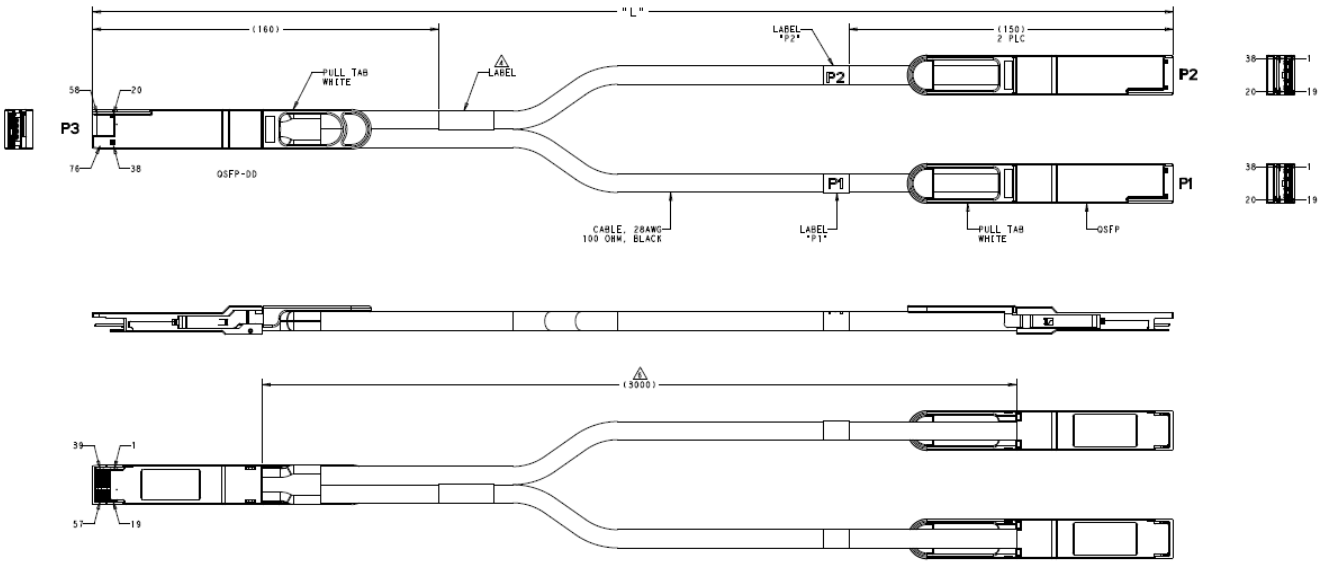
Notes:

1. The module circuit ground is isolated from the module chassis ground within the module.
2. Open collector. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 3.15V and 3.6V.

QSFP56 Electrical Pin-Out Details



Mechanical Specifications



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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