MCP7H50-V001R30-C

Mellanox® MCP7H50-V001R30 Compatible TAA 200GBase-CU QSFP56 to 2xQSFP56 Infiniband HDR Direct Attach Cable (Passive Twinax, 1m, LSZH)

Features:

- PAM4 modulation
- Meet SFF-8636
- Meet IEEE802.3bj & IEEE802.3cd
- Support I2C two - line string interface, easy to control
- Low crosstalk
- Low power
- Operating case temperature: -20 to 75 Celsius
- Hot pluggable
- RoHS Compliant and Lead-Free

Applications:

- 10G/40G/100G/200GBase Ethernet
- Infiniband SDR, DDR, QDR, FDR, EDR, HDR SWITCH
- Data center, cloud server

Product Description

This is a Mellanox® MCP7H50-V001R30 Compatible 200GBase-CU QSFP56 to 2xQSFP56 Infiniband HDR LSZH direct attach cable that operates over passive copper with a maximum reach of 1m. 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

Environment Performance

Parameter	Requirement	Test Condition
Operating Temperature Range	-20°C to +75°C	Cable operating temperature range
Storage Temperature Range (In Packed Condition)	-40°C to +80°C	Cable storage temperature range in packed condition
Thermal Cycling Non-Powered	No evidence of physical damage	EIA-364-32D, method A, -25 to 90C, 100 cycles, 15 min. dwells
Salt Spraying	48 hours salt spraying after shell corrosive area less than 5%	EIA-364-26
Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing (for connector only)	EIA-364-35 Class II, 14 days
Temperature Life	No evidence of physical damage	EIA-364-17C w/RH, damp heat 90℃ at 85% RH for 500 hours then return to ambient
Cable Cold Bend	4H, no evidence of physical damage	Condition: -20℃±2℃, mandrel diameter is 6 times the cable diameter
Low-Level Contact Resistance	70milliΩ maximum from initial	EIA-364-23: apply a maximum voltage of20mV and a current of 100mA
Insulation Resistance	10MΩ (minimum)	EIA364-21: AC 300V 1 minute
Dielectric Withstanding Voltage	No disruptive discharge	EIA-364-20: apply a voltage of 300 VDC for 1 minute between adjacent terminals and between adjacent terminals and ground

Electrical Performance

Parameter		Requirement	Test Condition
Differential Impedance	**Cable Impedance**	105+5/-10Ω	Rise time of 25ps (20-80%)
	Paddle Card Impedance	100±10Ω	Rise time of 25ps (20-80%)
	Cable Termination Impedance	100±15Ω	Rise time of 25ps (20-80%)
Differential (Input/Output) Return Loss SDD11/SDD22		Return_loss(f)≥ {$16.5-2\sqrt{f}$ $0.05 \le f < 4.1$ $10.66-14\log10(f/5.5)$ $4.1 \le f \le 19$} Where f is the frequency in GHz Return_loss(f) is the return loss at frequency f	10MHz≤f ≤19GHz
Differential to Common-Mode (Input/Output) Return Loss SCD11/SCD22		Return_loss(f)≥ {$22-(20/25.78)f$ $0.01 \le f < 12.89$ $15-(6/25.78)f$ $12.89 \le f \le 19$} Where f is the frequency in GHz Return_loss(f) is the Differential to common-mode return loss at frequency f	10MHz≤f ≤19GHz
Common-Mode to Common-Mode (Input/Output) Return Loss SCC11/SCC22		*Return_loss(f)*≥2dB 0.2≤f≤19 Where f is the frequency in GHz Return_loss(f) is the common-mode to common-mode return loss at frequency f	10MHz≤f ≤19GHz
Differential Insertion Loss (SDD21 Maximum)		(Differential Insertion Loss Maximum for TPa to TPb Excluding Test Fixture)	10MHz≤f ≤19GHz

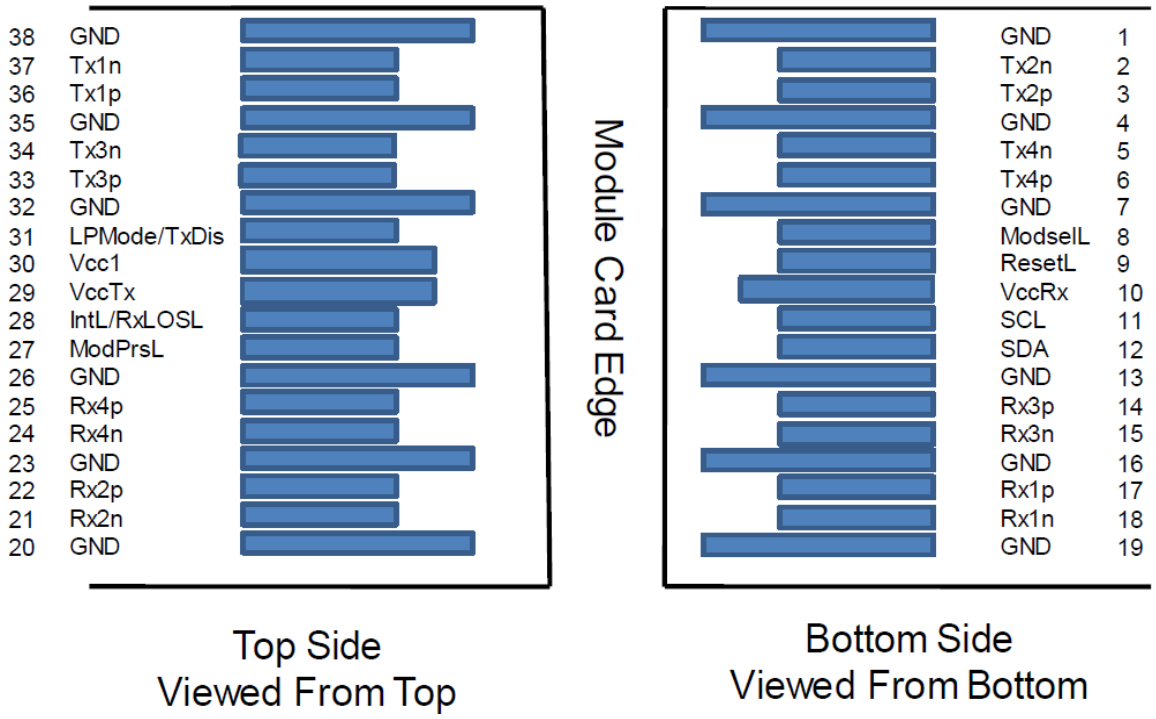
F AWG	1.25GHz	2.5GHz	5.0GHz	7.0GHz	10Ghz	12.89Ghz
30 (1m) Max.	4.5dB	5.4dB	6.3dB	7.5dB	8.5dB	10.5dB
30/28 (3m) Max.	7.5dB	9.5dB	12.2dB	14.8dB	18.0dB	21.5dB
26 (3m) Max.	5.7dB	7.2dB	9.9 dB	11.9dB	14.1dB	16.5dB
26/25 (5m) Max.	7.8dB	10.0dB	13.5dB	16.0dB	19.0dB	22.0dB

Insertion Loss Deviation	-0.176*f - 0.7 ≤ILD ≤0.176* f + 0.7	50MHz≤f ≤19GHz
Differential to Common-Mode Conversion Loss-Differential Insertion Loss (SCD21-SDD21)	Conversion _loss(f) – IL(f)≥ { 10 $0.01 \leqslant f < 12.89$ $27-(29/22)f$ $12.89 \le f < 15.7$ 6.3 $15.7 \le f \le 19$ } Where f is the frequency in GHz Conversion_loss(f) is the cable assembly differential to common-mode conversion loss IL(f) is the cable assembly insertion loss	10MHz≤f ≤19GHz
MDNEXT (Multiple Disturber Near-End Crosstalk)	≥26dB @12.89GHz	10MHz≤f ≤19GHz
Intra Skew	15ps/m	10MHz≤f ≤19GHz

Mechanical and Physical Characteristics

Parameter	Requirement	Test Condition
Vibration	Pass electrical tests per 3.1 after stressing	Clamp & vibrate per EIA-364-28E, TC-VII, test condition letter – D, 15 minutesin X, Y & Z axis.
Cable Flex	No evidence of physicaldamage	Flex cable 180° for 20 cycles (±90° from nominal position) at 12 cycles per minutewith a 1.0kg load applied to the cable jacket. Flex in the boot area 90º in each direction from vertical. Per EIA-364-41C.
Cable Plug Retention in Cage	90N Minimum No evidence of physicaldamage	Force to be applied axially with no damageto cage. Per SFF-8661 Rev. 2.1. Pull on cable jacket approximately 1 ft behind cable plug. No functional damage to cable plug below 90N. Per SFF-8432 Rev. 5.0.
Cable Retention in Plug	90N Minimum No evidence of physicaldamage	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B.
Mechanical Shock	Pass electrical tests per 3.1 after stressing	Clamp and shock per EIA-364-27B, TC-G, 3 times in 6 directions, 100g, 6ms.
Cable Plug Insertion	40N Maximum (QSFP56)	Per SFF-8661 Rev. 2.1.
Cable plug Extraction	30N Maximum (QSFP56)	Place axial load on de-latch to de-latch plug. Per SFF8661 Rev. 2.1.
Durability	50 cycles, no evidence ofphysical damage	EIA-364-09, perform plug & un-plug cycles: plug and receptacle mate rate: 250times/hour. 50 times for QSFP28/SFP28 module (connector to PCB).

Electrical Pin-Out Details



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		Vcc1	+3.3V Power Supply.	2
31	LVTTL-I	LPMode	Low-Power Mode.	
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

Note:

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.

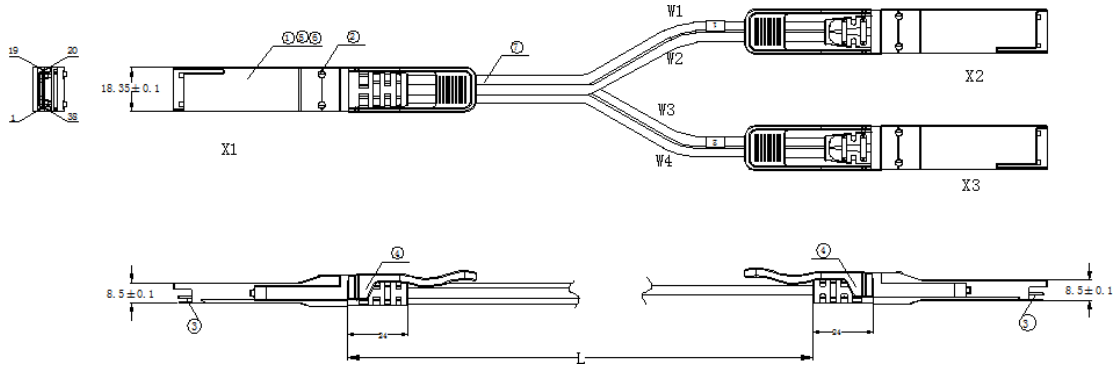
2. VccRx, Vcc1, and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Wiring Diagram

wire	Starting signal	Starting	End	End signal
W1	RX1+	X1.17	X2.36	TX1+
	RX1-	X1.18	X2.37	TX1-
	GND	X1.19	X2.38	GND
	TX1+	X1.36	X2.17	RX1+
	TX1-	X1.37	X2.18	RX1-
	GND	X1.38	X2.19	GND
W2	GND	X1.20	X2.1	GND
	RX2-	X1.21	X2.2	TX2-
	RX2+	X1.22	X2.3	TX2+
	GND	X1.1	X2.20	GND
	TX2-	X1.2	X2.21	RX2-
	TX2+	X1.3	X2.22	RX2+

wire	Starting signal	Starting	End	End signal
W3	RX3+	X1.14	X3.36	TX1+
	RX3-	X1.15	X3.37	TX1-
	GND	X1.16	X3.38	GND
	TX3+	X1.33	X3.17	RX1+
	TX3-	X1.34	X3.18	RX1-
	GND	X1.35	X3.19	GND
W4	GND	X1.23	X3.1	GND
	RX4-	X1.24	X3.2	TX2-
	RX4+	X1.25	X3.3	TX2+
	GND	X1.4	X3.20	GND
	TX4-	X1.5	X3.21	RX2-
	TX4+	X1.6	X3.22	RX2+

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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