

## MCP1600-E004E26-C

Mellanox® MCP1600-E004E26 Compatible TAA Compliant 56G/100GBase-CU QSFP28 Direct Attach Cable (Passive Twinax, 4m)

### Features:

- QSFP Module Compliant to SFF-8661
- Transmission Data Rate up to 25.78Gbps Per Channel
- Enable 100Gbps Transmission
- Wire Gauge: 26AWG
- Operating Temperature: 0 to 70 Celsius
- Built-In EEPROM Functions
- RoHS Compliant and Lead-Free



### Applications:

- 100GBase Ethernet
- Serial Data Transmission
- Infiniband

### Product Description

This is a Mellanox® MCP1600-E004E26 compatible 56G/100GBase-CU QSFP28 to QSFP28 direct attach cable that operates over passive copper with a maximum reach of 4.0m (13.1ft). 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 TAA (Trade Agreements Act) compliant, and 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.

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.")



## General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Storage Temperature	Tstg	-40		85	°C
Operating Temperature	Tc	0		70	°C
Relative Humidity	RH	5		85	%
Data Rate			100		Gbps

## Physical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Length	L			3	M
AWG				26	AWG
Jacket Material		LSZH, Black			
Relative Humidity	RH	VW-1			

## Electrical Characteristics

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 @12.89GHz	SDD21			16.74	dB	
Common-Mode Return Loss @50MHz to 26GHz	SCC22			-2		
Return Loss @12.89GHz	SDD11/22	Return_Loss(f) ≤	$\begin{cases} -9.5+0.37f & 0.5 \leq f < 8 \\ -4.75+7.4 \cdot \lg(f/14) & 8 \leq f \leq 26 \end{cases}$		dB	1
Differential to Common-Mode Return Loss	SCD11/22	Reflection(f) ≤	$\begin{cases} 22-(20/25.78)f & 0.01 \leq f \leq 12.89 \\ -15+(6/25.78)f & 12.89 \leq f \leq 26 \end{cases}$		dB	1
Differential to Common-Mode Conversion Loss	SCD21-SDD21	Deviation(f) ≤	$\begin{cases} 0.75 & 0.01 \leq f < 5 \\ (0.26)(f-5)+0.75 & 5 \leq f < 15.5 \\ 3.5 & 15.5 \leq f \leq 19.5 \end{cases}$		dB	2

### Notes:

- For  $0.05 \leq f \leq 26$ GHz, where "f" is the frequency in GHz.
- For  $0.01 \leq f \leq 19.5$ GHz, where "f" is the frequency in GHz.

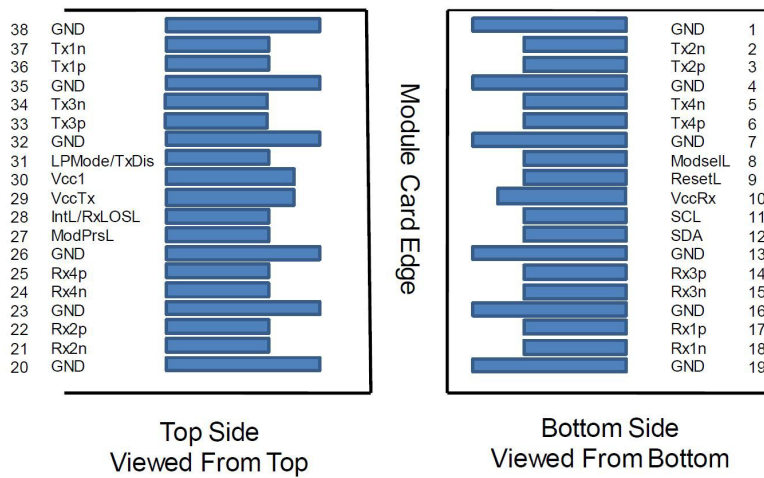
## Pin Descriptions

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

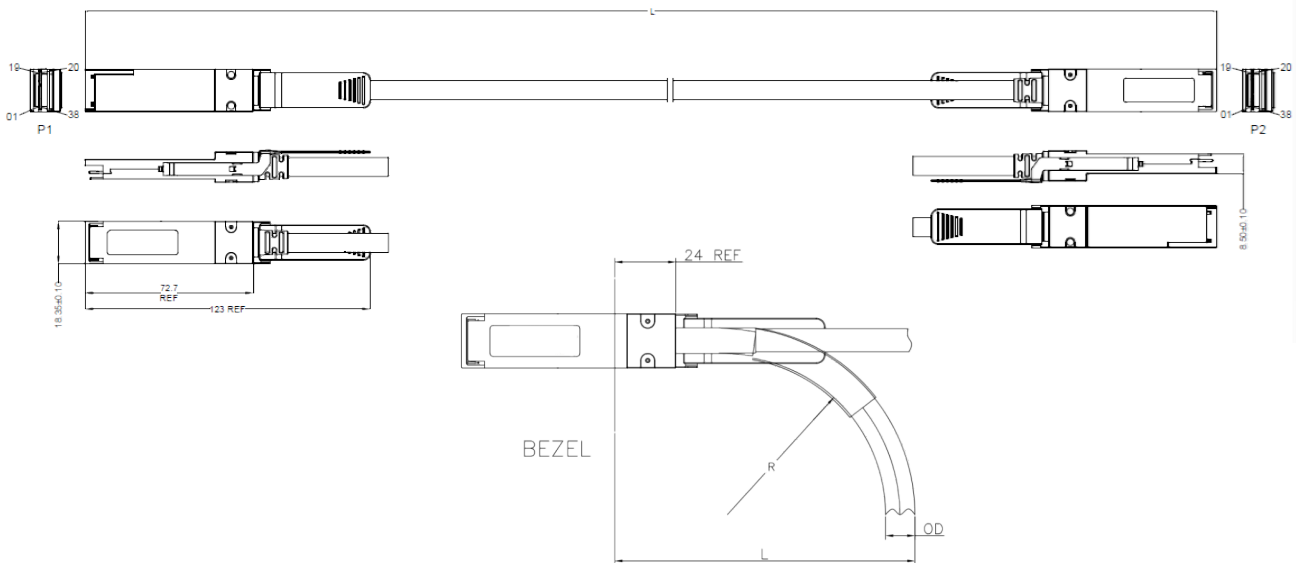
**Notes:**

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 references to this potential unless otherwise noted. Connect the 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. Requirements defined for the host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the QSFP+ module in any combination. The connector pins are each for a maximum current of 500mA.

**Electrical Pin-Out Details**



**Mechanical Specifications**



## About ProLabs

Our extensive experience comes as standard. For over 20 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 more than 100 optical switching and transport platforms.

## A 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 1.6T 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.

## The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. 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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