

### **SFP-10GB-PDAC4MLZ-C**

MSA and TAA 10GBase-CU SFP+ to SFP+ Direct Attach Cable (Passive Twinax, 4m, 28AWG, LSZH)

#### **Features:**

- SFF-8431/8432 and INF-8074i Compliant
- Up to 10.3125Gbps
- IEEE802.3ba Standard
- 28AWG
- Passive copper
- Operating Temperature 0 to 70 Celsius
- RoHS 2.0 compliant and lead-free



#### **Applications:**

- 10GBase-CU

#### **Product Description**

This is an MSA compliant 10GBase-CU SFP+ to SFP+ LSZH 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.")



## Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2.
- Immunity: compatible with IEC 61000-4-3.
- EMI: compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety: compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1, 2.
- RoHS: compliant with 2002/95/EC 4.1&4.2 2005/747/EC.

## 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   |
| Humidity                   | RH     | 5    |      | 85   | %    |
| Data Rate                  |        |      | 10   |      | Gbps |

## Physical Characteristics

| Parameter       | Symbol      | Min. | Typ. | Max. | Unit |
|-----------------|-------------|------|------|------|------|
| Length          | L           |      |      | 4    | M    |
| AWG             |             |      |      | 28   | AWG  |
| Jacket Material | LSZH, Black |      |      |      |      |

## Electrical Characteristics

| Parameter                  | Symbol   | Min.   | Typ. | Max.  | Unit |
|----------------------------|----------|--|------|-------|------|
| Resistance                 | Rcon     |  |      | 3     | Ω    |
| Insulation Resistance      | Rins     |  |      | 10    | MΩ   |
| Raw Cable Impedance        | Zca      | 95   | 100  | 110   | Ω    |
| Mated Connector Impedance  | Zmated   | 85   | 100  | 110   | Ω    |
| Insertion Loss at 12.89GHz | SDD21    |  |      | 17.04 | dB   |
| Return Loss at 12.89GHz    | SDD11/22 | $\text{Return\_Loss}(f) \geq \begin{cases} 12 - 2\sqrt{f}, & 0.05 \leq f < 4.1 \\ 6.3 - 13\log_{10}\left(\frac{f}{5.5}\right), & 4.1 \leq f \leq 10 \end{cases}$ |      |       | dB   |
| Rise Time (20-80%)         |          |  |      | 34    | ps   |

## Pin Descriptions

| Pin | Logic     | Symbol     | Name/Description   | Plug Sequence | Note |
|-----|-----------|------------|--|---------------|------|
| 1   |           | VeeT       | Module Transmitter Ground.   | 1             | 3    |
| 2   | LVTTL-O   | Tx_Fault   | Module Transmitter Fault.  | 3             | 4    |
| 3   | LVTTL-I   | Tx_Disable | Transmitter Disable. Turns off transmitter laser output.   | 3             | 5    |
| 4   | LVTTL-I/O | SDA        | 2-Wire Serial Interface Data. Same as MOD_DEF2 in INF-8074i.   | 3             |      |
| 5   | LVTTL-I/O | SCL        | 2-Wire Serial Interface Clock. Same as MOD_DEF1 in INF-8074i.  | 3             |      |
| 6   |           | MOD_ABS    | Module Absent. Connected to VeeT or VeeR in the module.  | 3             |      |
| 7   | LVTTL-I   | RS0        | Rate Select 0. Optionally controls the SFP+ module receiver.   | 3             | 6    |
| 8   | LVTTL-O   | Rx_LOS     | Receiver Loss of Signal indication. In FC, designated as Rx_LOS. In Ethernet, designated as Signal Detect. | 3             | 4    |
| 9   | LVTTL-I   | RS1        | Rate Select 1. Optionally controls SFP+ module transmitter.  | 3             | 6    |
| 10  |           | VeeR       | Module Receiver Ground.  | 1             | 3    |
| 11  |           | VeeR       | Module Receiver Ground.  | 1             | 3    |
| 12  | CML-O     | RD-        | Receiver Inverted Data Output.   | 3             |      |
| 13  | CML-O     | RD+        | Receiver Non-Inverted Data Output.   | 3             |      |
| 14  |           | VeeR       | Module Receiver Ground.  | 1             | 3    |
| 15  |           | VccR       | Module Receiver 3.3V Supply.   | 2             |      |
| 16  |           | VccT       | Module Transmitter 3.3V Supply.  | 2             |      |
| 17  |           | VeeT       | Module Transmitter Ground.   | 1             | 3    |
| 18  | CML-I     | TD+        | Transmitter Non-Inverted Data Input.   | 3             |      |
| 19  | CML-I     | TD-        | Transmitter Inverted Data Input.   | 3             |      |
| 20  |           | VeeT       | Module Transmitter Ground.   | 1             | 3    |

### Notes:

1. Labeling as inputs (I) and outputs (O) are from the perspective of the module.
2. The case makes electrical contact to the cage before any of the board edge contacts are made.
3. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
4. This contact is an open collector/drain output contact and shall be pulled up on the host. Pull-ups can be connected to one of several power supplies; however, the host board design shall ensure that no module contact has a voltage exceeding module VccT/R+0.5V.
5. Tx\_Disable is an input contact with a 4.7kΩ to 10kΩ pull-up to the VccT inside the module.
6. If implementing SFF-8079, contacts 7 and 9 in SFF-8431 are used for AS0 and AS1, respectively.

## Electrical Pin-Out Details



## Mechanical Specifications



### Notes:

1. 2 pairs.
2. 100% conductor test conditions: 5V, insulation resistance of 10MΩ, and conduction resistance maximum of 3Ω.

## 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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