



### **QSFP-40GB-PDAC0-5MLZ-OPC**

MSA and TAA 40GBase-CU QSFP+ to QSFP+ Direct Attach Cable (Passive Twinax, 0.5m, Infiniband FDR10, 30AWG, LSZH)

#### **Features**

- QSFP module compliant to SFF-8661
- IEEE802.3bj
- QSFP MSA
- 40Gbps (4x10G Infiniband FDR10)
- 30AWG
- Passive copper
- Operating Temperature 0 to 70 Celsius
- RoHS 2.0 compliant and lead-free



#### **Applications:**

- 40GBase-CU
- Infiniband FDR10

#### **Product Description**

This is an MSA compliant 40GBase-CU QSFP+ to QSFP+ Infiniband FDR10 LSZH direct attach cable that operates over passive copper with a maximum reach of 50.0cm (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 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.

OptioConnect's transceivers are RoHS compliant and lead-free.

## 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 (FDR10)          |        |      | 40 (4x10) |      | Gbps |

## Physical Characteristics

| Parameter       | Symbol                                  | Min. | Typ. | Max. | Unit |
|-----------------|-----------------------------------------|------|------|------|------|
| Length          | L                                       |      |      | 0.5  | M    |
| AWG             |                                         |      |      | 30   | AWG  |
| Jacket Material | LSZH, Black                             |      |      |      |      |
| Top Shell       | Zinc Alloy, Nickel-Plated Over Copper   |      |      |      |      |
| Bottom Shell    | Zinc Alloy, Nickel-Plated Over Copper   |      |      |      |      |
| Pull Latch      | Stainless Steel + Pull Ring, PA66, Blue |      |      |      |      |

## Electrical Specifications

| 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 7.03125GHz            | SDD21    |                                                                                                                                                                                      |      | 15   | dB   |
| Return Loss                             | SDD11/22 | $\text{Return\_Loss}(f) \geq \begin{cases} -9.5 + 0.37(f), & 0.05 \leq f < 8 \\ -4.75 + 7.4 * \log_{10}\left(\frac{f}{14}\right), & 8 \leq f < 14.1 \end{cases}$                     |      |      | dB   |
| Differential to Common-Mode Return Loss | SCD11/22 | $\text{Return\_Loss}(f) \geq \begin{cases} -22 + 20\left(\frac{f}{25.78}\right), & 0.01 \leq f < 12.89 \\ -15 + 6\left(\frac{6}{25.78}\right), & 12.89 \leq f \leq 14.1 \end{cases}$ |      |      | dB   |
| Minimum COM                             | COM      | 3                                                                                                                                                                                    |      |      | dB   |
| Rise Time (20-80%)                      |          |                                                                                                                                                                                      |      | 34   | ps   |

## Pin Descriptions

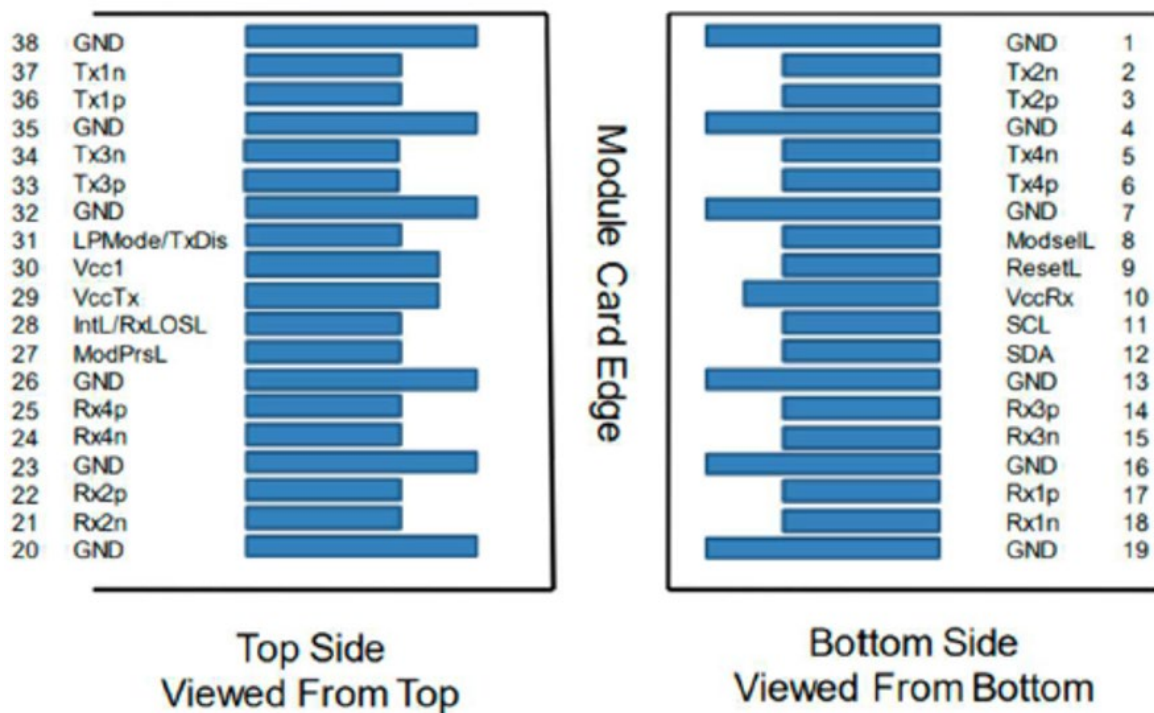
| Pin | Logic       | Symbol        | Name/Description                                                                          | Plug Sequence | Note |
|-----|-------------|---------------|-------------------------------------------------------------------------------------------|---------------|------|
| 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   | LVTTL-I     | ModSelL       | Module Select.                                                                            | 3             |      |
| 9   | LVTTL-I     | ResetL        | Module Reset.                                                                             | 3             |      |
| 10  |             | VccRx         | +3.3V Power Supply Receiver.                                                              | 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       | 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.                                                                            | 1             | 1    |
| 21  | CML-O       | Rx2-          | Receiver Inverted Data Output.                                                            | 3             |      |
| 22  | CML-O       | Rx2+          | Receiver Non-Inverted Data Output.                                                        | 3             |      |
| 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  | LVTTL-O     | ModPrsL       | Module Present.                                                                           | 3             |      |
| 28  | LVTTL-O     | IntL/RxLOSL   | Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636).     | 3             |      |
| 29  |             | VccTx         | +3.3V Power Supply Transmitter.                                                           | 2             | 2    |
| 30  |             | Vcc1          | +3.3V Power Supply.                                                                       | 2             | 2    |
| 31  | LVTTL-I     | LPMoDe/Tx Dis | Low-Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636). | 3             |      |
| 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 |

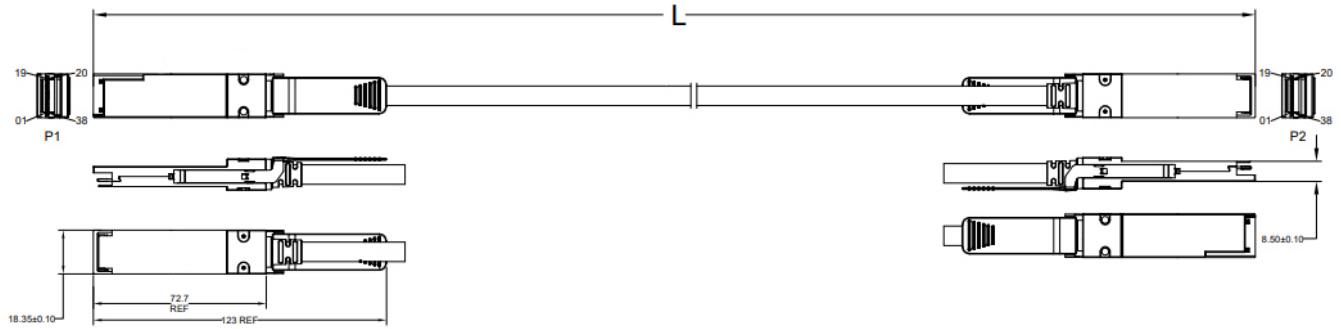
#### Notes:

1. GND is the symbol for signal and supply (power) common for the module. All are common within the 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 applied concurrently and may be internally connected within the module in any combination. Vcc contacts in SFF-8662 and SFF-8672 each have a steady state current rating of 1A.

#### Electrical Pin-Out Details



## Mechanical Specifications



### Notes:

1. 8 pairs.
2. 100% conductor test conditions: 5V, insulation resistance of 10M $\Omega$ , and conduction resistance maximum of 3 $\Omega$ . IEEE802.3ba/IB FDR10 standard.

## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

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At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
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