**QSFP28-100GB-PDAC1MLZ-MX-AC**

Mellanox® Compatible TAA 100GBase-CU QSFP28 to QSFP28 Direct Attach Cable (Passive Twinax, 1m, Infiniband EDR, 30AWG, LSZH)

**Features**

- Compliant to SFF-8661
- 100Gbps
- IEEE802.3bj/IB EDR Standard
- Passive copper
- Operating Temperature 0 to 70 Celsius
- 30AWG
- RoHS 2.0 compliant and lead-free

**Applications**

- Infiniband EDR
- 100GBase-CU

**Product Description**

This is a Mellanox® Compatible 100GBase-CU QSFP28 to QSFP28 Infiniband EDR 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.

AddOn's 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. 020223**

**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** | | | 100 | | Gbps |

**Physical Characteristics**

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| **Length** | L | | | 1 | M |
| **AWG** | | | | 30 | AWG |
| **Jacket Material** | LSZH, Black | | | | |

## 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 12.89GHz** | SDD21 | 8 | | 22.48 | dB |
| **Return Loss at 12.89GHz** | SDD11/22 | $\text{Return\_Loss(f)} \geq \begin{cases} 16.5 - 2\sqrt{f}, & 0.05 \leq \text{f} < 4.1 \\ 10.66 - 14\log10\left(\frac{\text{f}}{5.5}\right), & 4.1 \leq \text{f} \leq 19 \end{cases}$ | | | dB |
| **Differential to Common-Mode Return Loss** | SCD11/22 | $\text{Return\_Loss(f)} \geq \begin{cases} 22 - \left(\frac{20}{25.78}\right) f, & 0.01 \leq \text{f} < 12.89 \\ 15 - \left(\frac{6}{25.78}\right) \text{f}, & 12.89 \leq \text{f} \leq 19 \end{cases}$ | | | dB |
| **Differential to Common-Mode Conversion Loss** | SCD21-SDD21 | $\text{Conversion\_Loss(f)} - \text{IL(f)} \geq \begin{cases} 10, & 0.01 \leq \text{f} < 12.89 \\ 27 - \left(\frac{29}{22}\right) f, & 12.89 \leq f < 15.7 \\ 6.3, & 15.7 \leq \text{f} \leq 19 \end{cases}$ | | | dB |
| **Minimum COM** | COM | 3 | | | dB |
| **Rise Time (20-80%)** | | | | 25 | ps |

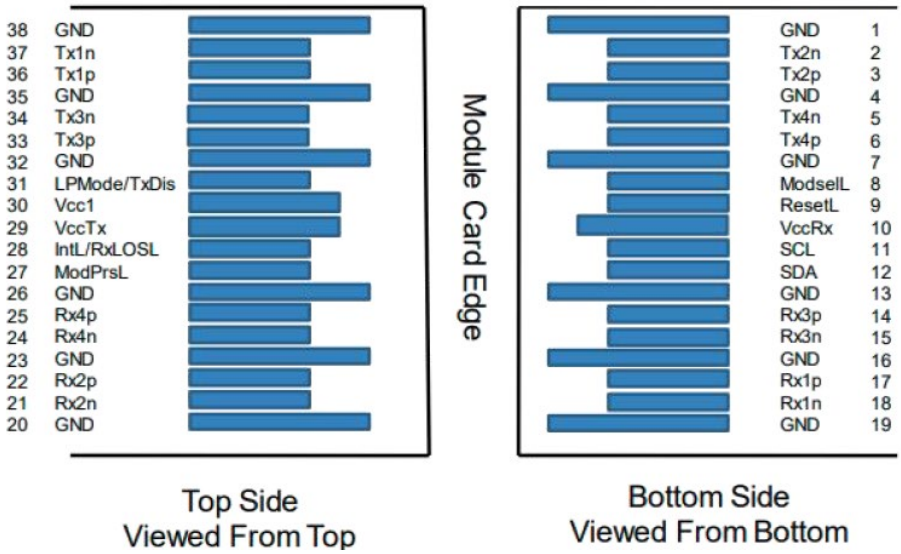
**Pin Descriptions**

| 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 | MODSEIL | Module Select. | 3 | |
| **9** | LVTTL-I | ResetL | Module Reset. | 3 | |
| **10** | | VccRx | +3.3V Receiver Power Supply. | 2 | 2 |
| **11** | LVCMOS-I/O | SCL | 2-Wire Serial Interface Clock. | 3 | |
| **12** | LVCMOS-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 | Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636). | 3 | |
| **29** | | VccTx | +3.3V Transmitter Power Supply. | 2 | 2 |
| **30** | | Vcc1 | +3.3V Power Supply. | 2 | 2 |
| **31** | LVTTL-I | LPMode | Low-Power Mode. Optionally configurable as Tx_Disable 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 |

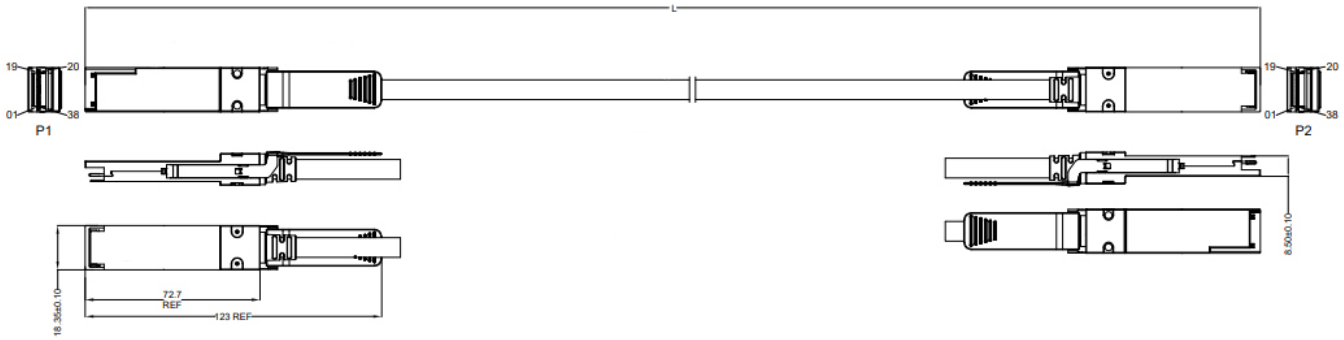
**Notes:**

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 10MΩ, and conduction resistance maximum of 3Ω.

**About AddOn Networks**

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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