

CAB-Q-4S-100G-X.XM-C

Arista Networks® Compatible TAA Compliant 100GBase-CU QSFP28 to 4xSFP28 Direct Attach Cable (Passive Twinax, X.Xm)

Features

- Supporting 100 Gbps to 4 x 25 Gbps
- Support data rates: 25.78Gb/s (per channel)
- IEEE 802.3bj 100GEBASE-CR4 and P802.3 by compliant
- Compatible to SFP28 MSA and QSFP28 MSA
- Compatible to SFF-8402, SFF-8432 and SFF-8665
- Maximum aggregate data rate: 100 GB/s (4 x 25GB/s)
- High-Density QSFP28 38-PIN and 4x SFP28 20-PIN Connector
- Temperature Range: 0~ 70 °C
- Copper link length up to 3m
- Power Supply: +3.3V
- Low crosstalk
- I2C based 2-wire serial interface
- Operating Temperature: 0~ 70 °C
- ROHS Compliant

Applications

- 100GE/25 Gigabit Ethernet
- Switches, Routers, and HBAs
- Data Centers

Product Description

This is an Arista Networks® compatible 100GBase-CU QSFP28 to 4xSFP28 direct attach cable that operates over passive copper with a maximum reach of 7.0m (22.9ft). 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.

ProLab's QSFP28 and SFP28 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."



Recommended Operating Conditions

| Parameter | Symbol | Min | Typical | Max | Unit |
|-----------------------------|------------------|------|---------|------|------|
| Storage Ambient Temperature | | -40 | | +85 | °C |
| Operating Case Temperature | TC | 0 | | +70 | °C |
| Power Supply Voltage | V _{cc3} | 3.14 | 3.3 | 3.47 | V |

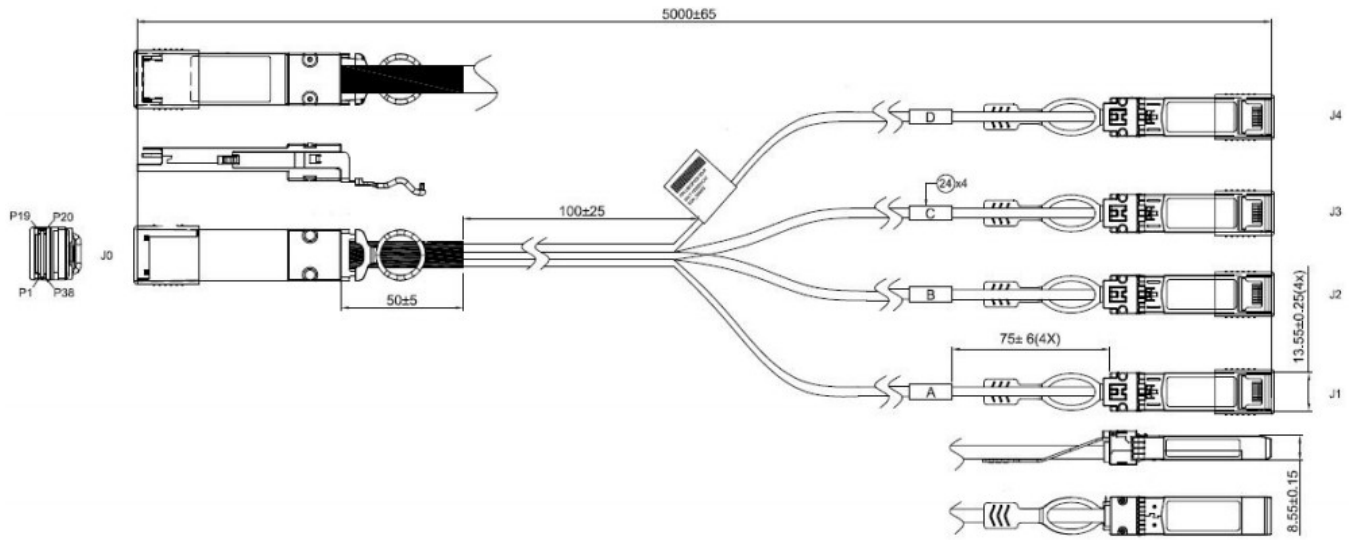
High Speed Characteristics

| Parameter | Symbol | Min | Typical | Max | Unit | Note |
|---|------------------------------|-------|---------|-------|------|----------------------|
| Differential Impedance | <i>RIN, P-P</i> | 90 | 100 | 110 | Ω | |
| Insertion Loss | <i>SDD21</i> | 8 | | 22.48 | dB | At 12.8906 GHz |
| Differential Return Loss | <i>SDD11</i> <i>SDD22</i> | 12.45 | | See 1 | dB | At 0.05 to 4.1 GHz |
| | | 3.12 | | See 2 | | |
| Common-mode to common-mode output return loss | <i>SCC11</i> <i>SCC22</i> | 2 | | | dB | At 0.2 to 19 GHz |
| Differential to Common Mode Return Loss | <i>SCD11</i> <i>SCD22</i> | 12 | | See 3 | dB | At 0.01 to 12.89 GHz |
| | | 10.58 | | See 4 | | At 12.89 to 19 GHz |
| Differential to Common Mode Conversion Loss | <i>SCD21-IL</i> | 10 | | | dB | At 0.01 to 12.89 GHz |
| | | | | See 5 | | At 12.89 to 15.7 GHz |
| | | 6.3 | | | | At 15.7 to 19 GHz |
| Channel Operating Margin | <i>COM</i> | 3 | | | dB | |

Notes:

1. Reflection Coefficient given by equation $SDD11 \text{ (dB)} < 16.5 - 2 \times \text{SQRT}(f)$, with f in GHz
2. Reflection Coefficient given by equation $SDD11 \text{ (dB)} < 10.66 - 14 \times \log_{10}(f/5.5)$, with f in GHz
3. Reflection Coefficient given by equation $SCD11 \text{ (dB)} < 22 - (20/25.78) \cdot f$, with f in GHz
4. Reflection Coefficient given by equation $SCD11 \text{ (dB)} < 15 - (6/25.78) \cdot f$, with f in GHz
5. Reflection Coefficient given by equation $SCD21 \text{ (dB)} < 27 - (29/22) \cdot f$, with f in GHz

Mechanical Dimensions



QSFP28 Pin Descriptions

| Pin | Logic | Symbol | Name Description | Notes |
|-----|-----------|---------|-------------------------------------|-------|
| 1 | | GND | Ground | 1 |
| 2 | CML-I | Tx2n | Transmitter Inverted Data Input | |
| 3 | CML-I | Tx2p | Transmitter Non-Inverted Data Input | |
| 4 | | GND | Ground | 1 |
| 5 | CML-I | Tx4n | Transmitter Inverted Data Input | |
| 6 | CML-I | Tx4p | Transmitter Non-Inverted Data Input | |
| 7 | | GND | Ground | 1 |
| 8 | LVTTTL-I | ModselL | Module Select | |
| 9 | LVTTTL-I | ResetIL | Module Reset | |
| 10 | | Vcc Rx | +3.3V Power Supply Receiver | 2 |
| 11 | LVCMO5I/O | SCL | 2-wire serial interface clock | |
| 12 | LVCMO5I/O | SDA | 2-wire serial interface data | |
| 13 | | GND | Ground | 1 |
| 14 | CML-O | Rx3p | Receiver Non-Inverted Data Output | |
| 15 | CML-O | Rx3n | Receiver Inverted Data Output | |
| 16 | | GND | Ground | 1 |
| 17 | CML-O | Rx1p | Receiver Non-Inverted Data Output | |
| 18 | CML-O | Rx1n | Receiver Inverted Data Output | |
| 19 | | GND | Ground | 1 |
| 20 | | GND | Ground | 1 |
| 21 | CML-O | Rx2n | Receiver Inverted Data Output | |
| 22 | CML-O | Rx2p | Receiver Non-Inverted Data Output | |
| 23 | | GND | Ground | 1 |
| 24 | CML-O | Rx4n | Receiver Inverted Data Output | |
| 25 | CML-O | Rx4p | Receiver Non-Inverted Data Output | |
| 26 | | GND | Ground | 1 |
| 27 | LVTTTL-O | ModPrsL | Module Present | |
| 28 | LVTTTL-O | IntL | Interrupt | |
| 29 | | Vcc Tx | +3.3V Power supply transmitter | 2 |
| 30 | | Vcc1 | +3.3V Power supply | 2 |
| 31 | LVTTTL-I | LPMoDe | Low Power Mode | |
| 32 | | GND | Ground | 1 |
| 33 | CML-I | Tx3p | Transmitter Non-Inverted Data Input | |
| 34 | CML-I | Tx3n | Transmitter Inverted Data Input | |
| 35 | | GND | Ground | 1 |
| 36 | CML-I | Tx1p | Transmitter Non-Inverted Data Input | |
| 37 | CML-I | Tx1n | Transmitter Inverted Data Input | |
| 38 | | GND | Ground | 1 |

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP28 Module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground lane.
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figure 4. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connection pins are each rated for a maximum current of 500 mA.

SFP28 Pin Descriptions

| Pin | Logic | Symbol | Name Description | Notes |
|-----|-----------|----------|---------------------------------|-------|
| 1 | | VeeT | Transmitter Ground | |
| 2 | LV-TTL-O | TX_Fault | N/A | 1 |
| 3 | LV-TTL-I | TX_DIS | Transmitter Disable | 2 |
| 4 | LV-TTL-/O | SDA | Tow Wire Serial Data | |
| 5 | LV-TTLV-I | SCL | Tow Wire Serial Clock | |
| 6 | | MOD_DEF0 | Module present, connect to VeeT | |
| 7 | LV-TTL-I | RS0 | N/A | 1 |
| 8 | LV-TTL-O | LOS | LOS of Signal | 2 |
| 9 | LV-TTL-I | RS1 | N/A | 1 |
| 10 | | VeeR | Receiver Ground | |
| 11 | | VeeR | Receiver Ground | |
| 12 | CML-O | RD- | Receiver Data Inverted | |
| 13 | CML-O | RD+ | Receiver Data Non-Inverted | |
| 14 | | VeeR | Receiver Ground | |
| 15 | | VccR | Receiver Supply 3.3V | |
| 16 | | VccT | Transmitter Supply 3.3V | |
| 17 | | VeeT | Transmitter Ground | |
| 18 | CML-I | TD+ | Transmitter Data Non-Inverted | |
| 19 | CML_I | TD- | Transmitter Data Inverted | |
| 20 | | VeeT | Transmitter Ground | |

Notes:

1. Signals not supported in SFP28 Copper pulled-down to VeeT with 30K ohms resistor
2. Passive cable assemblies do not support LOS and TX_DIS