

Alpha Bridge AQS56-T-03-PEV

Datasheet



Features

- Up to 200Gb/s data rate
- 4x25Gb/s PAM4 modulation
- Compliant with SFF-8665 and SFF-8436
- Compliant with IEEE802.3cd / Infiniband HDR
- Hot-pluggable
- Power consumption <0.1W
- RoHS compliant
- Operating temperature range: 0°C to 70°C

Application

- 200G / 100G Ethernet
- Infiniband HDR

Description

The AQS56-T-xx-PxL QSFP56 passive cable assemblies are high performance, cost effective I/O solutions for 200G Ethernet. QSFP56 copper cables allow hardware manufactures to achieve high port density, configurability and utilization at a very low cost and reduced power budget.

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|--------------------------------------|--------|-------|------|-------|-------|
| Storage Temperature | TS | -40 | | 85 | °C |
| Operating Case Temperature | TOP | 0 | | 70 | °C |
| Supply Voltage | VCC3 | 3.135 | | 3.465 | V |
| Relative Humidity (non-condensation) | RH | 5 | | 85 | % |

Recommended Operating Conditions & Power Supply Requirements

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|----------------------------|--------|-------|------|-------|-------|
| Operating Case Temperature | TOP | 0 | | 70 | °C |
| Power Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V |
| Power Consumption | | | | 0.01 | W |
| Power Supply Current | Icc3 | 0.001 | | | mA |

Frequency Domain

| S.no | Test Parameter | IEEE802.3cd Specification |
|------|---|--|
| 1 | Differential Insertion Loss (SDD21) Differential Return Loss (SDD22) | Maximum insertion loss at 13.28Ghz -17.16dB Minimum insertion loss at 13.28Ghz -8dB -16.5+2xSQRT(f) @ 0.01 to 4.1GHz -10.66+14xLog10(f/5.5) @4.1 to 19GHz |

| | | |
|---|---|--|
| 2 | Differential Return Loss (SDD11) | -16.5+2xSQRT(f) @ 0.01 to 4.1GHz -10.66+14xLog10(f/5.5) @ 4.1 to 19GHz |
| 3 | Common Mode Reflection (SCC22) | -2dB @ 0.01 to 19GHz |
| 4 | Common Mode Reflection (SCC11) | -2dB @ 0.01 to 19GHz |
| 5 | Common Mode Conversion (SCD22) | -22+(20/25.78)*(f) @ 0.01 to 12.89GHz -15+(6/25.78)*(f) @ 12.9 to 19GHz |
| 6 | Common Mode Conversion (SCD11) | -22+(20/25.78)*(f) @ 0.01 to 12.89GHz -15+(6/25.78)*(f) @ 12.9 to 19GHz |
| 7 | Differential to Common Mode Conversion Loss (SCD12) | -10dB @ 0.01 to 12.89GHz -27+(29/22)*(f) @ 12.9 to 15.7GHz -6.3dB @ 15.71 to 19GHz |
| 8 | Differential to Common Mode Conversion Loss (SCD21) | -10dB @ 0.01 to 12.89GHz -27+(29/22)*(f) @ 12.9 to 15.7GHz -6.3db @ 15.71 to 19GHz |
| 9 | Channel Operating Margin (COM) | 3db Minimum |

Time Domain

| Item | Test Parameter | IEEE802.3cd Specification |
|------|---|----------------------------------|
| 1 | Intra-Skew* 1M 1.5M-2M 2.5M-3M | 20ps Max 25ps Max 30ps Max |
| 2 | Impedance Rise time: 35ps (20%-80%) | 100 +/- 10 Ohm |
| 3 | Insertion Loss* (SDD21) for 1M 30awg | 13.28GHz - -12.5 dB Max |
| 4 | Insertion Loss* (SDD21) for 1.5M 30awg | 13.28GHz - -14.5 dB Max |
| 5 | Insertion Loss* (SDD21) for 2M 30awg | 13.28GHz - -16.5 dB Max |
| 6 | Insertion Loss* (SDD21) for 2.5M 28awg | 13.28GHz - -16.0 dB Max |
| 7 | Insertion Loss* (SDD21) for 3M 26awg | 13.28GHz - -16.8 dB Max |

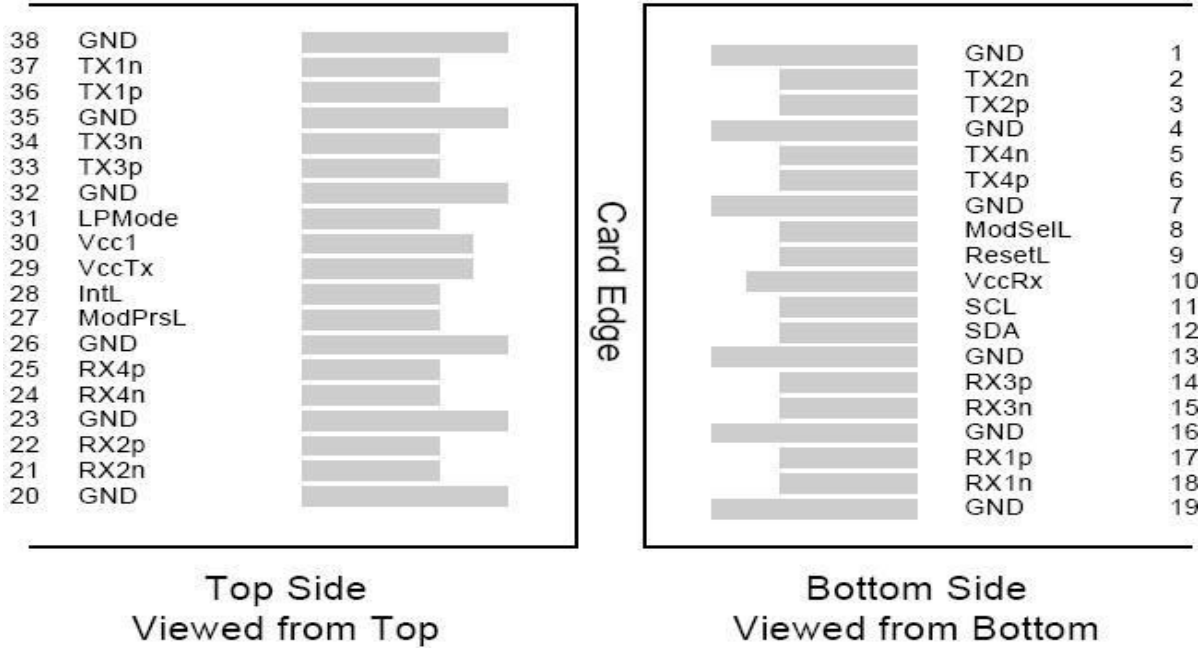
Pin Description

| Pin | Logic | Symbol | Description | Plug Sequenc | Notes |
|-----|-------|--------|------------------------------------|--------------|-------|
| 1 | | GND | Ground | 1 | 1 |
| 2 | CML-I | Tx2n | Transmitter Inverted Data Input | 3 | |
| 3 | CML-I | Tx2p | Transmitter Non-Inverted DataInput | 3 | |
| 4 | | GND | Ground | 1 | 1 |
| 5 | CML-I | Tx4n | Transmitter Inverted Data Input | 3 | |
| 6 | CML-I | Tx4p | Transmitter Non-Inverted DataInput | 3 | |

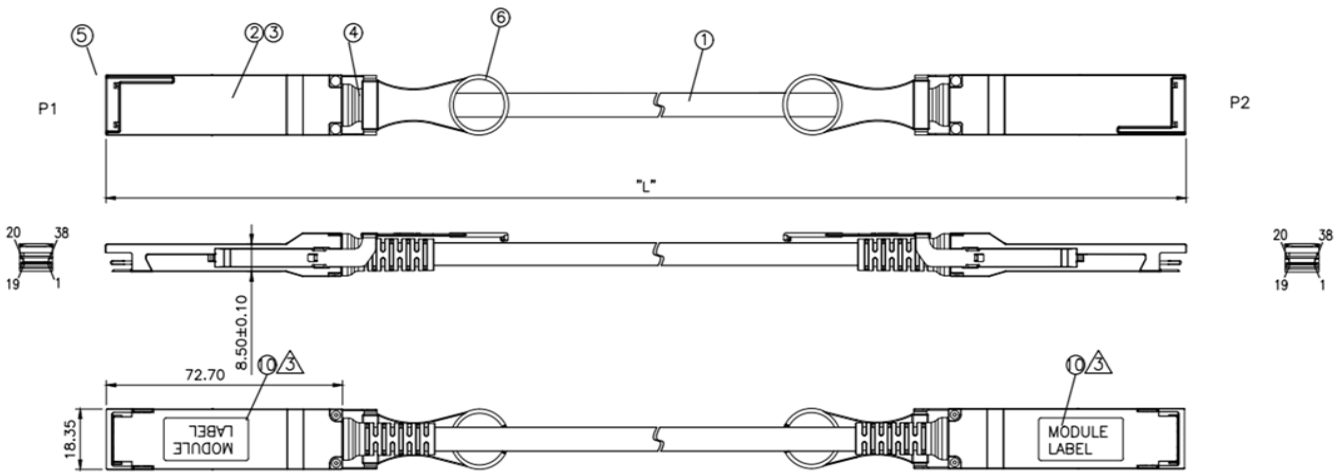
| | | | | | |
|----|------------|---------|-------------------------------------|---|---|
| 7 | | GND | Ground | 1 | 1 |
| 8 | LVTTTL-I | ModSelL | Module Select | 3 | |
| 9 | LVTTTL-I | ResetL | Module Reset | 3 | |
| 10 | | Vcc Rx | +3.3V Power Supply Receiver | 2 | |
| 11 | LVC MOSI/O | SCL | 2-wire serial interface clock | 3 | 2 |
| 12 | LVC MOSI/O | SDA | 2-wire serial interface data | 3 | 2 |
| 13 | | GND | Ground | 1 | 1 |
| 14 | CML-O | Rx3p | Receiver Non-Inverted Data Output | 3 | |
| 15 | CML-O | Rx3n | Receiver Inverted Data Output | 3 | |
| 16 | | | Ground | 1 | 1 |
| 17 | CML-O | Rx1p | Receiver Non-Inverted Data Output | 3 | |
| 18 | CML-O | Rx1n | Receiver Inverted Data Output | 3 | |
| 19 | | GND | Ground | 1 | 1 |
| 20 | | GND | Ground | 1 | 1 |
| 21 | CML-O | Rx2n | Receiver Inverted Data Output | 3 | |
| 22 | CML-O | Rx2p | Receiver Non-Inverted Data Output | 3 | |
| 23 | | GND | Ground | 1 | 1 |
| 24 | CML-O | Rx4n | Receiver Inverted Data Output | 3 | |
| 25 | CML-O | Rx4p | Receiver Non-Inverted Data Output | 3 | |
| 26 | | GND | Ground | 1 | 1 |
| 27 | LVTTTL-O | ModPrsL | Module Present | 3 | 2 |
| 28 | LVTTTL-O | IntL | Interrupt | 3 | 2 |
| 29 | | Vcc Tx | +3.3V Power Supply transmitter | 2 | |
| 30 | | Vcc1 | +3.3V Power Supply | 2 | |
| 31 | LVTTTL-I | LPMODE | Low Power Mode | 3 | |
| 32 | | GND | Ground | 1 | 1 |
| 33 | CML-I | Tx3p | Transmitter Non-Inverted Data Input | 3 | |
| 34 | CML-I | Tx3n | Transmitter Inverted Data Input | 3 | |
| 35 | | GND | Ground | 1 | 1 |
| 36 | CML-I | Tx1p | Transmitter Non-Inverted Data Input | 3 | |
| 37 | CML-I | Tx1n | Transmitter Inverted Data Input | 3 | |
| 38 | | GND | Ground | 1 | 1 |

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. Vcc Rx, Vcc1 and Vcc Tx shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in SFF-8679 Table5-6. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the module in any combination. The connector pins are each rated for a maximum current of 1000 mA.

Pin Assignment



Dimensions



Ordering Information

| Model Number | Part Number | AWG | Length | Temperature |
|-------------------|----------------|-----|--------|-------------|
| 200G QSF56 DAC-3M | AQS56-T-03-PBV | 26 | 3M | 0°C to 70°C |

Note: All information contained in this document is subject to change without notice.

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