

AOC-QPQ2-XXM

100Gb/s QSFP28 TO 2*50G Active Optical Cable Datasheet

Widely used in 100GBASE-SR4 at 25.78125Gbps per lane, InfiniBand QDR, EDR, Other optical links.



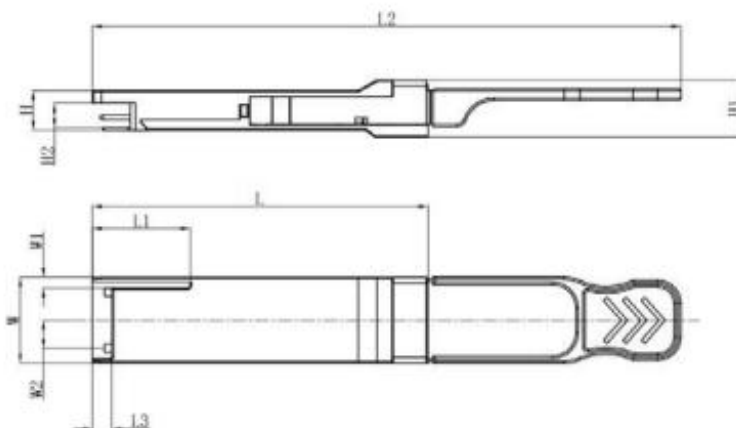
• Description

QSFP28 AOC (Active Optical Cable) consists of two QSFP28 modules and a fiber cable assembly, transmitting up to 25Gbps in each direction over a OM3 MMF with distance up to 70 meters or a OM4 MMF with distance up to 100 meters. SFP28 AOC can be used as an alternative solution to QSFP28 DAC, while providing improved signal integrity, longer distances, superior electromagnetic immunity and better bit error rate performance.

• Advantages

- Support 100GBASE-SR4/EDR application
- Compliant to QSFP28 Electrical MSA SFF-8636
- Multi rate of up to 25.78125Gbps
- +3.3V single power supply
- Low power consumption
- UL certification cables (optional)
- Operating case temp
- Commercial: 0°C to +70 °C
- RoHS 6/6 compliant

• Transmission Drawing(Unit: mm)



• **Absolute Maximum Ratings**

Table2- Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|---------------------|--------|------|---------|------|------|-------|
| Supply Voltage | Vcc3 | -0.5 | - | +5 | V | |
| Storage Temperature | Ts | -10 | - | +85 | °C | |
| Operating Humidity | RH | +5 | - | +85 | % | 1 |

• **Recommended Operating Conditions**

Table 3- Recommended operating Conditions

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|---|--------|------|----------|------|------|-------|
| Operating Case Temperature | TC | 0 | - | +70 | °C | |
| Power Supply Voltage | Vcc | 3.14 | 3.3 | 3.47 | V | |
| Power dissipation (100GbE retiming on all lanes) | Pd100G | - | 2.3 | 2.5 | W | 1 |
| Power dissipation (50GbE retiming on all lanes) | Pd50G | - | 1.5 | 1.7 | W | 1 |
| Supply noise tolerance (10 Hz – 10 MHz) | N | 66 | - | - | mVpp | |
| Bit Rate | BR | - | 25.78125 | - | Gbps | |

Note:

1. Specified without connectors
2. Add an additional 0.2dB loss including connectors

Tips:

Due to the COVID-19, sorry that you and our team couldn't visit face to face with each other. In order to make the customers know us more, please visit our VR factory, it is just like you were really standing in our factory.

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• **Electrical Characteristics**

Table 4- Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|--|---------|------|---------|---------|------|-------|
| Power Dissipation | Pd | - | - | 1.5 | W | 1 |
| Transmit turn-on time | TON | 2000 | - | - | ms | |
| Input Logic Level High | VIH | 2.5 | - | VCC+0.3 | V | |
| Input Logic Level Low | VIH | 0 | - | 0.8 | V | |
| Output Logic Level High | VOH | 2.4 | - | VCC | V | |
| Output Logic Level Low | VOH | 0 | - | 0.4 | V | |
| Electrical transmitter Characteristics | | | | | | |
| Differential Date Input Swing | Vout | 200 | - | 1600 | mV | |
| Output Differential Impedance | ZD | 90 | 100 | 110 | Ω | |
| Average Launch power Tx_off | POFF | dBm | - | - | -30 | |
| Electrical Receiver Characteristics | | | | | | |
| Differential Data Output Swing | Vin,P-P | 200 | - | 800 | mVPP | |
| Bit Error Rate | BER | | | E-12 | | 1 |
| Input Differential Impedance | ZIN | 90 | 100 | 110 | Ω | |

Note:

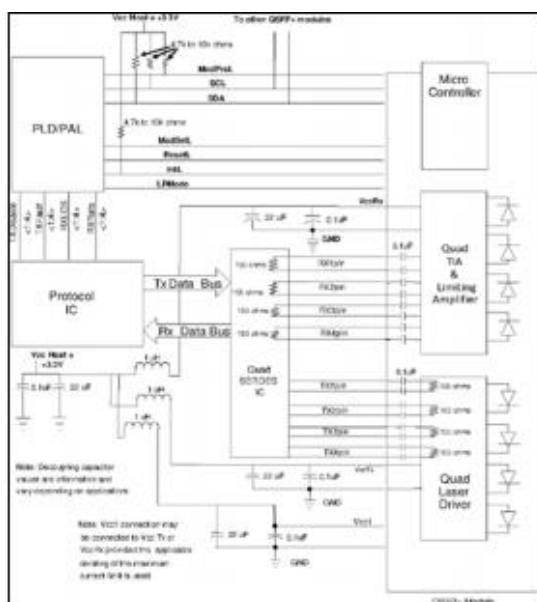
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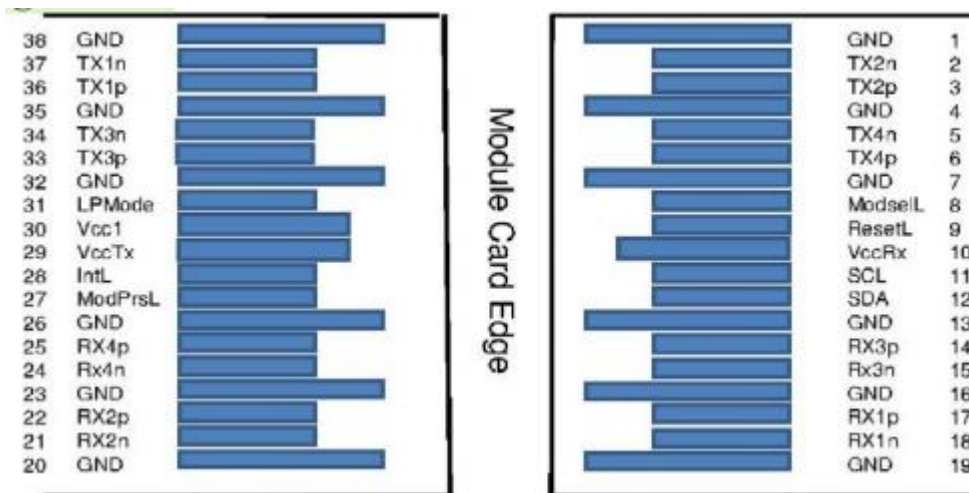
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- Recommended Circuit



- Recommended Circuit



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• Table 5-Pin Function Definitions

| Pin | Symbol | Name/Description | Notes |
|-----|---------|-------------------------------------|-------|
| 1 | GND | Ground | 1 |
| 2 | Tx2n | Transmitter Inverted Data Input | |
| 3 | Tx2p | Transmitter Non-Inverted Data Input | |
| 4 | GND | Ground | 1 |
| 5 | Tx4n | Transmitter Inverted Data Input | |
| 6 | Tx4p | Transmitter Non-Inverted Data Input | |
| 7 | GND | Ground | 1 |
| 8 | ModSelL | Module Select | |
| 9 | ResetL | Module Reset | |
| 10 | Vcc Rx | +3.3V Power Supply Receiver | |
| 11 | SCL | 2-wire serial interface clock | |
| 12 | SDA | 2-wire serial interface data | |
| 13 | GND | Ground | 1 |
| 14 | Rx3p | Receiver Non-Inverted Data Output | |
| 15 | Rx3n | Receiver Inverted Data Output | |
| 16 | GND | Ground | 1 |
| 17 | Rx1p | Receiver Non-Inverted Data Output | |
| 18 | Rx1n | Receiver Inverted Data Output | |
| 19 | GND | Ground | 1 |
| 20 | GND | Ground | 1 |
| 21 | Rx2n | Receiver Inverted Data Output | |
| 22 | Rx2p | Receiver Non-Inverted Data Output | |
| 23 | GND | Ground | 1 |
| 24 | Rx4n | Receiver Inverted Data Output | |

Note:

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Tips:

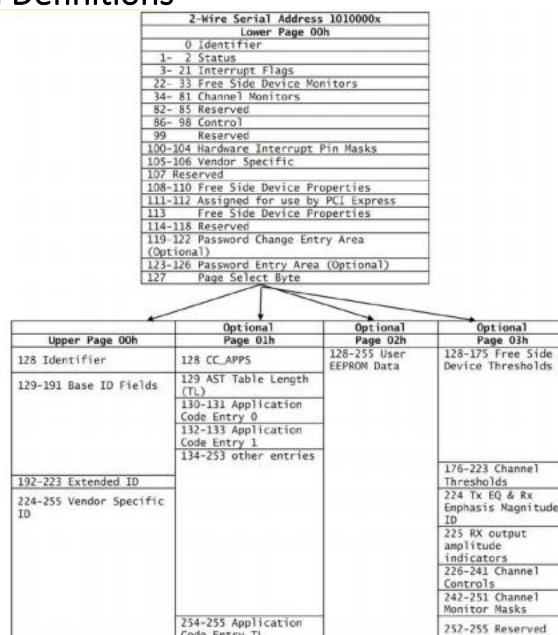
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| Pin | Symbol | Name/Description | Notes |
|-----|---------|-------------------------------------|-------|
| 25 | Rx4p | Receiver Non-Inverted Data Output | |
| 26 | GND | Ground | 1 |
| 27 | ModPrsL | Module Present | |
| 28 | IntL | Interrupt | |
| 29 | Vcc Tx | +3.3V Power supply transmitter | |
| 30 | Vcc1 | +3.3V Power supply | |
| 31 | LPMMode | Low Power Mode | |
| 32 | GND | Ground | 1 |
| 33 | Tx3p | Transmitter Non-Inverted Data Input | |
| 34 | Tx3n | Transmitter Inverted Data Input | |
| 35 | GND | Ground | 1 |
| 36 | Tx1p | Transmitter Non-Inverted Data Input | |
| 37 | Tx1n | Transmitter Inverted Data Input | |
| 38 | GND | Ground | 1 |

• Table 5-Pin Function Definitions

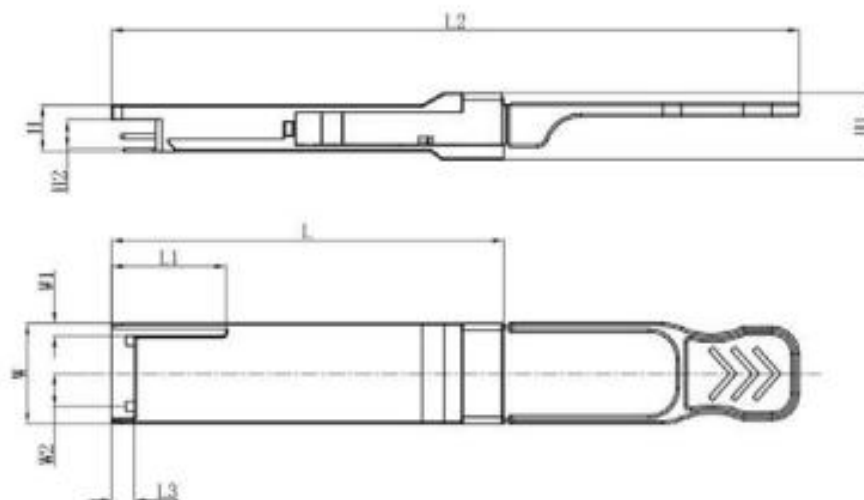


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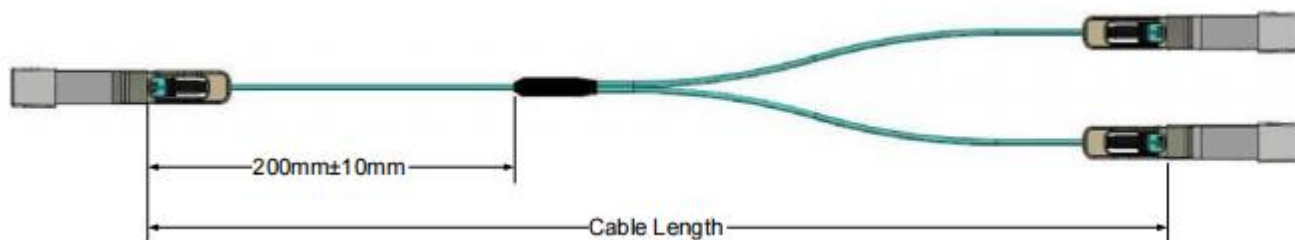
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• Mechanical



| | L | L1 | L2 | L3 | W | W1 | W2 | H | H1 | H2 |
|------|------|------|-----|------|-------|-----|-----|-----|------|------|
| Max | 72.2 | - | 128 | 4.35 | 18.45 | - | 6.2 | 8.6 | 12.0 | 5.35 |
| Type | 72.0 | - | - | 4.20 | 18.35 | - | - | 8.5 | 11.8 | 5.20 |
| Min | 68.8 | 16.5 | 124 | 4.05 | 18.25 | 2.2 | 5.8 | 8.4 | 11.6 | 5.05 |



Note:

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• Table 6- Cable Length

| Cable Length (Unit: m) | Tolerant (Unit: cm) |
|------------------------|---------------------|
| < 1.0 | +5/-0 |
| 1.0~4.5 | +15/-0 |
| 5.0~14.5 | +30/-0 |
| ≥15.0 | +2%/-0 |

• Table 7: Connectivity Schematic

| 100Gb/s Side | 50Gb/s Side |
|--------------|-------------|
| | Port 1 |
| TX1 | RX1 |
| RX1 | TX1 |
| TX2 | RX2 |
| RX2 | TX2 |
| | Port 2 |
| TX3 | RX1 |
| RX3 | TX1 |
| TX4 | RX2 |
| RX4 | TX2 |

• Revision history

| Version | Initiated | Reviewed | Revision | Release Date |
|---------|-----------|----------|-------------|--------------|
| A0 | Ling | Zhang | New Release | 2018-9-1 |

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