

### **Q56-2Q56-200GB-AOC15MIBLZ-AO**

MSA and TAA Compliant 200G-AOC QSFP56 to 2xQSFP56 Infiniband HDR Active Optical Cable (850nm, MMF, 15m, LSZH)

#### **Features**

- Low Latency DSP-Free Electronics-Based CDR
- PAM4 Modulation
- Multi-Data Rate Up to 56.15Gbps Per Lane
- Low Power Consumption: 3.6W on 200G End With All CDRs Enabled
- Operating Case Temperature: 0 to 70 Celsius
- Single 3.3V Power Supply
- LSZH, Aqua Cable
- Hot Pluggable
- RoHS Compliant and Lead-Free



#### **Applications**

- IBTA InfiniBand HDR
- IEEE 802.3cd 200GBASE SR4

#### **Product Description**

This is a MSA Compliant 200GBase-AOC QSFP56 to 2xQSFP56 Infiniband HDR LSZH active optical cable that operates over active fiber with a maximum reach of 15m. 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."



## Absolute Maximum Ratings

| Parameter                     | Symbol  | Min. | Typ. | Max. | Unit  |
|-------------------------------|---------|------|------|------|-------|
| Supply Voltage                | VIN     | 0    |      | 4.0  | V     |
| Input Swing                   | VIN-MAX |      |      | 1500 | mVp-p |
| Storage Temperature (Ambient) | Tstg    | -40  |      | 85   | °C    |
| Relative Humidity             | RH      | 5    |      | 85   | %     |

## Recommended Operating Specifications

| Parameter                  | Symbol   | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|----------|------|------|------|------|-------|
| Operating Case Temperature | Tc       | 0    |      | 70   | °C   |       |
| Power Supply Voltage       | Vcc      | 3.15 | 3.30 | 3.47 | V    |       |
| Power Supply Current       | 200G End | Icc  | 1100 | 1250 | mA   | 1     |
|                            | 100G End | Icc  | 750  |      | mA   | 1     |
| Power Consumption          | 200G End | P    | 3.6  | 4.0  | W    | 1     |
|                            | 100G End | P    | 2.3  | 2.5  | W    | 1     |

### Notes:

1. Per end, all channel CDRs are enabled.

## Electrical Characteristics

| Parameter                      | Symbol   | Min. | Typ.    | Max.                 | Unit | Notes |
|--------------------------------|----------|------|---------|----------------------|------|-------|
| Data Rate (Per Channel)        | DR       |      | 26.5625 |                      | GBd  | 1     |
| Transmitter                    |          |      |         |                      |      |       |
| Input Differential Impedance   | RIN      |      | 100     |                      | Ω    |       |
| Differential Data Input Swing  | VIN,pp   | 300  |         | 900                  | mV   |       |
| Receiver                       |          |      |         |                      |      |       |
| Output Differential Impedance  | ROUT     |      | 100     |                      | Ω    |       |
| Differential Data Output Swing | VOOUT,pp | 300  | 700     | 900                  | mV   |       |
| Bit Error Ratio @26.5625GBd    |          |      |         | $2.4 \times 10^{-4}$ |      | 2     |

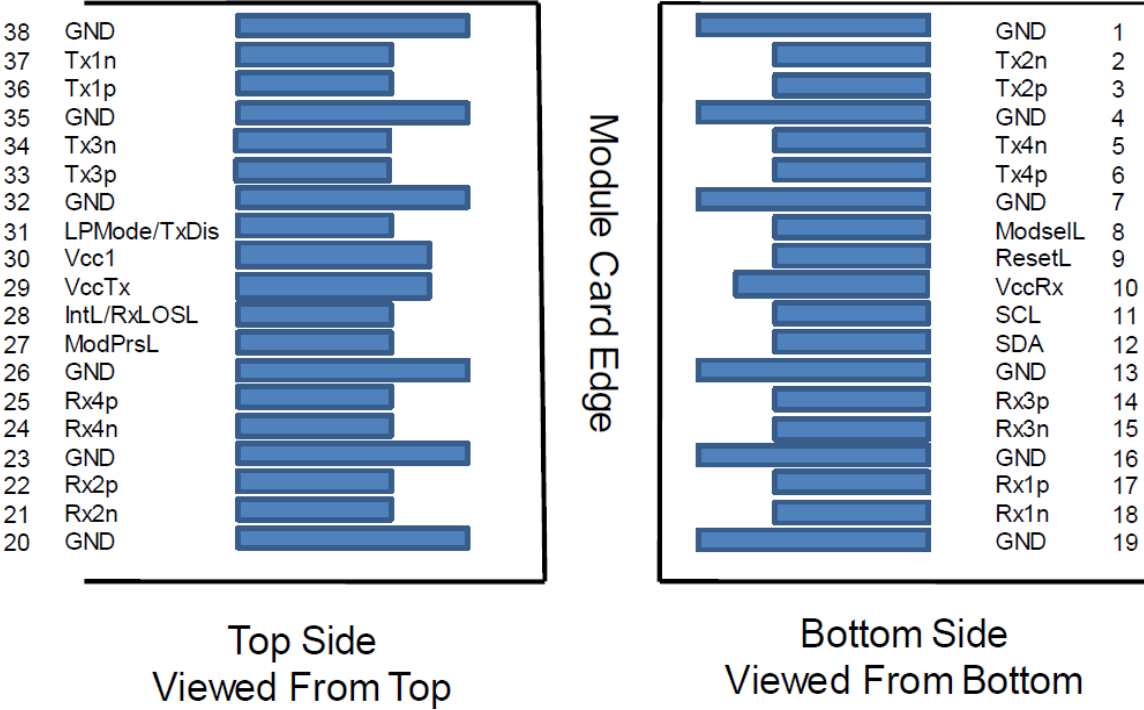
### Notes:

1. Dual data rate of 25.78125 and 28.07618 Gbaud are available upon request.
2. Pre-FEC Bit Error Ratio with a PRBS  $2^{31} - 1$  test pattern over a normal operating temperature range.

Active Optical Cable Specifications

| Parameter           | Value                            | Unit | Notes           |
|---------------------|----------------------------------|------|-----------------|
| Cable Diameter      | LSZH: $\varnothing 3.0 \pm 0.15$ | mm   |                 |
| Minimum Bend Radius | 30                               | mm   | Without Tension |
| Length Tolerance    | +300/-0                          | mm   |                 |
| Cable Jacket        | LSZH, Aqua                       |      |                 |

Electrical Pin-Out Details



## Pin Descriptions

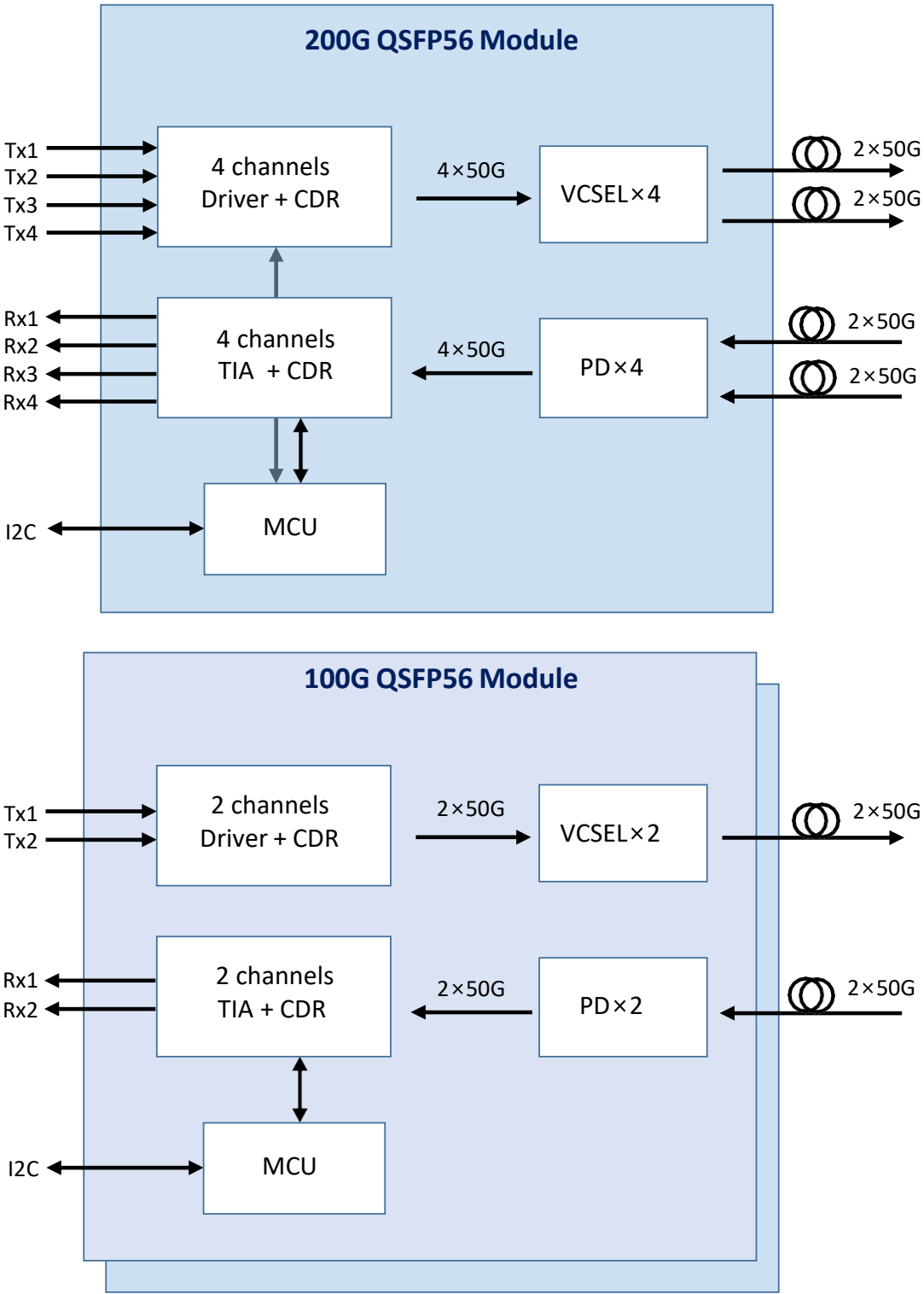
| Pin | Logic       | Symbol  | Name/Description                     | Notes |
|-----|-------------|---------|--------------------------------------|-------|
| 1   |             | GND     | Module Ground.                       | 1     |
| 2   | CML-I       | Tx2-    | Transmitter Inverted Data Input.     |       |
| 3   | CML-I       | Tx2+    | Transmitter Non-Inverted Data Input. |       |
| 4   |             | GND     | Module Ground.                       | 1     |
| 5   | CML-I       | Tx4-    | Transmitter Inverted Data Input.     |       |
| 6   | CML-I       | Tx4+    | Transmitter Non-Inverted Data Input. |       |
| 7   |             | GND     | Module Ground.                       | 1     |
| 8   | LVTTL-I     | ModSelL | Module Select.                       |       |
| 9   | LVTTL-I     | ResetL  | Module Reset.                        |       |
| 10  |             | VccRx   | +3.3V Receiver Power Supply.         | 2     |
| 11  | LVC MOS-I/O | SCL     | 2-Wire Serial Interface Clock.       |       |
| 12  | LVC MOS-I/O | SDA     | 2-Wire Serial Interface Data.        |       |
| 13  |             | GND     | Module Ground.                       | 1     |
| 14  | CML-O       | Rx3+    | Receiver Non-Inverted Data Output.   |       |
| 15  | CML-O       | Rx3-    | Receiver Inverted Data Output.       |       |
| 16  |             | GND     | Module Ground.                       | 1     |
| 17  | CML-O       | Rx1+    | Receiver Non-Inverted Data Output.   |       |
| 18  | CML-O       | Rx1-    | Receiver Inverted Data Output.       |       |
| 19  |             | GND     | Module Ground.                       | 1     |
| 20  |             | GND     | Module Ground.                       | 1     |
| 21  | CML-O       | Rx2-    | Receiver Inverted Data Output.       |       |
| 22  | CML-O       | Rx2+    | Receiver Non-Inverted Data Output.   |       |
| 23  |             | GND     | Module Ground.                       | 1     |
| 24  | CML-O       | Rx4-    | Receiver Inverted Data Output.       |       |
| 25  | CML-O       | Rx4+    | Receiver Non-Inverted Data Output.   |       |
| 26  |             | GND     | Module Ground.                       | 1     |
| 27  | LVTTL-O     | ModPrsL | Module Present.                      |       |
| 28  | LVTTL-O     | IntL    | Interrupt.                           |       |
| 29  |             | VccTx   | +3.3V Transmitter Power Supply.      | 2     |
| 30  |             | Vcc1    | +3.3V Power Supply.                  | 2     |
| 31  | LVTTL-I     | LPMode  | Low-Power Mode.                      |       |
| 32  |             | GND     | Module Ground.                       | 1     |
| 33  | CML-I       | Tx3+    | Transmitter Non-Inverted Data Input. |       |
| 34  | CML-I       | Tx3-    | Transmitter Inverted Data Input.     |       |

|    |       |      |                                      |   |
|----|-------|------|--------------------------------------|---|
| 35 |       | GND  | Module Ground.                       | 1 |
| 36 | CML-I | Tx1+ | Transmitter Non-Inverted Data Input. |   |
| 37 | CML-I | Tx1- | Transmitter Inverted Data Input.     |   |
| 38 |       | GND  | Module Ground.                       | 1 |

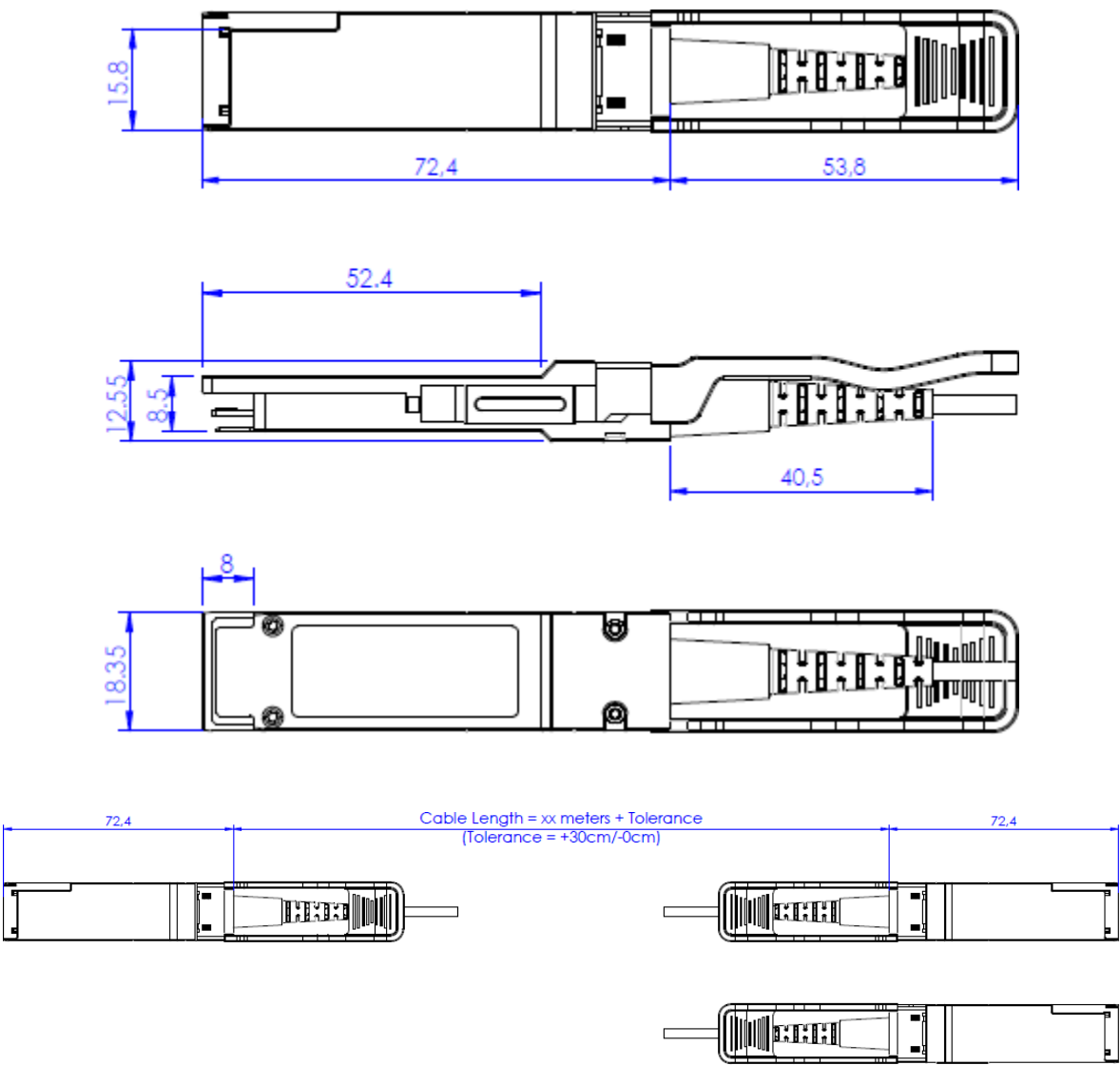
**Notes:**

1. GND is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP 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 the receiver and transmitter power supplies and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Block Diagram



Mechanical Specifications



## 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 ingrained 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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