

## **OSFP-2XQ112-800GB-PDAC1-5M-AO**

MSA and TAA 800GBase-CU OSFP to 2xQSFP112 Direct Attach Cable (Passive Twinax, 1.5m)

### **Features**

- OSFP Module Compliant to MSA Standards
- Transmission Data Rate Up to PAM4 106.25Gbps Per Channel
- QSFP112 Module Compliant to MSA Standards
- Built-In EEPROM Functions with Write Protection
- Operating Temperature Range: 0 to 70 Celsius
- Enable 800Gbps to 2x400Gbps Transmission
- RoHS Compliant and Lead-Free



### **Applications**

- 800GBase Ethernet

### **Product Description**

This is a MSA Compliant 800GBase-CU OSFP to 2xQSFP112 direct attach cable that operates over passive copper with a maximum reach of 1.5m. 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."



## 1General Specifications

| Parameter                   | Symbol | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|------|------|------|------|
| Storage Temperature         | Tstg   | -40  |      | 85   | °C   |
| Operating Case Temperature  | Tc     | 0    |      | 70   | °C   |
| Supply Voltage              | Vcc    | 3.13 | 3.3  | 3.47 | V    |
| Relative Operating Humidity | RH     | 5    |      | 85   | %    |
| Data Rate                   | DR     |      | 800  |      | Gbps |

## Physical Characteristics

| Parameter       | Symbol | Min.                                             | Typ. | Max. | Unit | Notes |
|-----------------|--------|--------------------------------------------------|------|------|------|-------|
| Length          | L      |                                                  |      | 1.5  | M    |       |
| AWG             |        |                                                  | 26   |      | AWG  |       |
| Jacket Material |        | Plastic Braided Mesh Technology Net, Silver Gray |      |      |      |       |

## Electrical Specifications

| Parameter                                    | Symbol      | Min.                                                                                                                         | Typ. | Max. | Unit | Notes |
|----------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------|------|------|------|-------|
| Resistance                                   | Rcon        |                                                                                                                              |      | 3    | Ω    |       |
| Insulation Resistance                        | Rins        |                                                                                                                              |      | 10   | MΩ   |       |
| Raw Cable Impedance                          | Zca         | 95                                                                                                                           |      | 110  | Ω    |       |
| Mated Connector Impedance                    | Zmated      | 85                                                                                                                           |      | 115  | Ω    |       |
| Maximum Insertion Loss @26.56GHz             | SDD21       | 11                                                                                                                           |      | 18   | dB   |       |
| Differential- to Common-Mode Return Loss     | SDD11/22    | $RL_{cd}(f) \geq \begin{cases} 22 - 10(f/26.56) & 0.05 \leq f < 26.56 \\ 15 - 3(f/26.56) & 26.56 \leq f \leq 40 \end{cases}$ |      |      | dB   | 1     |
| Differential- to Common-Mode Conversion Loss | SCD21-SDD21 | $Conversion\_loss(f) - \begin{cases} 10 & 0.05 \leq f < 12.89 \\ 14 - 0.3108f & 12.89 \leq f \leq 40 \end{cases}$            |      |      | dB   | 1     |
| Common-Mode to Common-Mode Return Loss       | SCC11-22    | $RL_{cc}(f) \geq 1.08$                                                                                                       |      |      | dB   | 1     |
| Minimum COM                                  | COM         | 3                                                                                                                            |      |      | dB   |       |

### Notes:

1. For  $0.05 \leq f \leq 40$ GHz, where f is the frequency in GHz.

## Pin Descriptions for OSFP

| Pin | Symbol    | Name/Description               | Logic       | Plug Sequence | Direction        | Notes |
|-----|-----------|--------------------------------|-------------|---------------|------------------|-------|
| 1   | GND       | Module Ground.                 |             | 1             |                  |       |
| 2   | Tx2+      | Transmitter Data Non-Inverted. | CML-I       | 3             | Input from Host  |       |
| 3   | Tx2-      | Transmitter Data Inverted.     | CML-I       | 3             | Input from Host  |       |
| 4   | GND       | Module Ground.                 |             | 1             |                  |       |
| 5   | Tx4+      | Transmitter Data Non-Inverted. | CML-I       | 3             | Input from Host  |       |
| 6   | Tx4-      | Transmitter Data Inverted.     | CML-I       | 3             | Input from Host  |       |
| 7   | GND       | Module Ground.                 |             | 1             |                  |       |
| 8   | Tx6+      | Transmitter Data Non-Inverted. | CML-I       | 3             | Input from Host  |       |
| 9   | Tx6-      | Transmitter Data Inverted.     | CML-I       | 3             | Input from Host  |       |
| 10  | GND       | Module Ground.                 |             | 1             |                  |       |
| 11  | Tx8+      | Transmitter Data Non-Inverted. | CML-I       | 3             | Input from Host  |       |
| 12  | Tx8-      | Transmitter Data Inverted.     | CML-I       | 3             | Input from Host  |       |
| 13  | GND       | Module Ground.                 |             | 1             |                  |       |
| 14  | SCL       | 2-Wire Serial Interface Clock. | LVC MOS-I/O | 3             | Bi-Directional   | 1     |
| 15  | Vcc       | +3.3V Power.                   |             | 2             | Power from Host  |       |
| 16  | Vcc       | +3.3V Power.                   |             | 2             | Power from Host  |       |
| 17  | LPWn/PRSn | Low-Power Mode/Module Present. | Multi-Level | 3             | Bi-Directional   | 2     |
| 18  | GND       | Module Ground.                 |             | 1             |                  |       |
| 19  | Rx7-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 20  | Rx7+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 21  | GND       | Module Ground.                 |             | 1             |                  |       |
| 22  | Rx5-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 23  | Rx5+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 24  | GND       | Module Ground.                 |             | 1             |                  |       |
| 25  | Rx3-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 26  | Rx3+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 27  | GND       | Module Ground.                 |             | 1             |                  |       |
| 28  | Rx1-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 29  | Rx1+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 30  | GND       | Module Ground.                 |             | 1             |                  |       |
| 31  | GND       | Module Ground.                 |             | 1             |                  |       |
| 32  | Rx2+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 33  | Rx2-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 34  | GND       | Module Ground.                 |             | 1             |                  |       |
| 35  | Rx4+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 36  | Rx4-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |
| 37  | GND       | Module Ground.                 |             | 1             |                  |       |
| 38  | Rx6+      | Receiver Data Non-Inverted.    | CML-O       | 3             | Output from Host |       |
| 39  | Rx6-      | Receiver Data Inverted.        | CML-O       | 3             | Output from Host |       |

|    |          |                                |             |   |                  |   |
|----|----------|--------------------------------|-------------|---|------------------|---|
| 40 | GND      | Module Ground.                 |             | 1 |                  |   |
| 41 | Rx8+     | Receiver Data Non-Inverted.    | CML-O       | 3 | Output from Host |   |
| 42 | Rx8-     | Receiver Data Inverted.        | CML-O       | 3 | Output from Host |   |
| 43 | GND      | Module Ground.                 |             | 1 |                  |   |
| 44 | INT/RSTn | Module Interrupt/Module Reset. | Multi-Level | 3 | Bi-Directional   | 2 |
| 45 | Vcc      | +3.3V Power.                   |             | 2 | Power from Host  |   |
| 46 | Vcc      | +3.3V Power.                   |             | 2 | Power from Host  |   |
| 47 | SDA      | 2-Wire Serial Interface Data.  | LVCMOS-I/O  | 3 | Bi-Directional   | 1 |
| 48 | GND      | Module Ground.                 |             | 1 |                  |   |
| 49 | Tx7-     | Transmitter Data Inverted.     | CML-I       | 3 | Input from Host  |   |
| 50 | Tx7+     | Transmitter Data Non-Inverted. | CML-I       | 3 | Input from Host  |   |
| 51 | GND      | Module Ground.                 |             | 1 |                  |   |
| 52 | Tx5-     | Transmitter Data Inverted.     | CML-I       | 3 | Input from Host  |   |
| 53 | Tx5+     | Transmitter Data Non-Inverted. | CML-I       | 3 | Input from Host  |   |
| 54 | GND      | Module Ground.                 |             | 1 |                  |   |
| 55 | Tx3-     | Transmitter Data Inverted.     | CML-I       | 3 | Input from Host  |   |
| 56 | Tx3+     | Transmitter Data Non-Inverted. | CML-I       | 3 | Input from Host  |   |
| 57 | GND      | Module Ground.                 |             | 1 |                  |   |
| 58 | Tx1-     | Transmitter Data Inverted.     | CML-I       | 3 | Input from Host  |   |
| 59 | Tx1+     | Transmitter Data Non-Inverted. | CML-I       | 3 | Input from Host  |   |
| 60 | GND      | Module Ground.                 |             | 1 |                  |   |

#### Notes:

1. Open-drain with pull-up resistor on the host.
2. See below for required circuit.

#### Electrical Pin-Out Details for OSFP



## Pin Descriptions for QSFP112

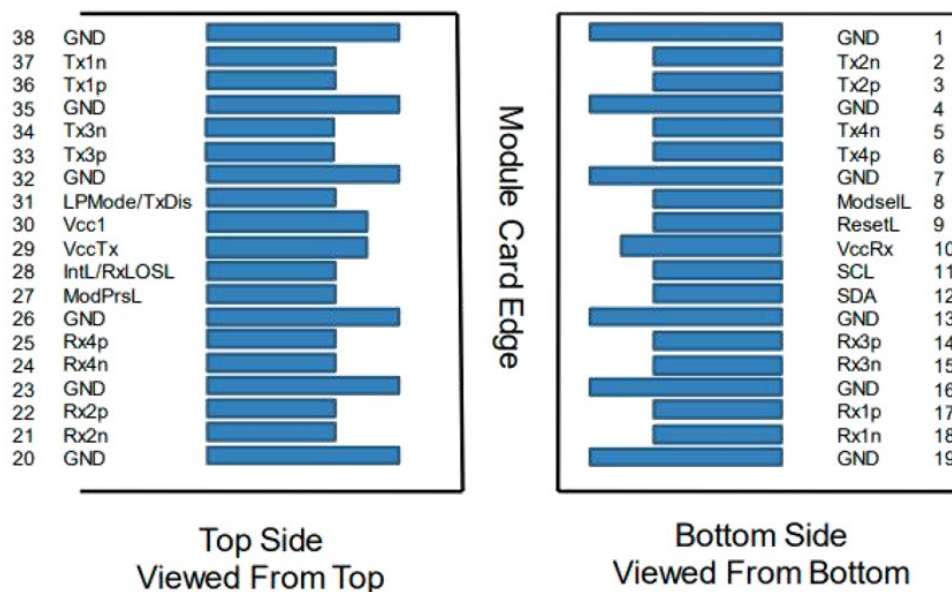
| Pin | Logic       | Symbol  | Name/Description                     | Plug Sequence | Notes |
|-----|-------------|---------|--------------------------------------|---------------|-------|
| 1   |             | GND     | Module Ground.                       | 1             | 1     |
| 2   | CML-I       | 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     | ModSelL | Module Select.                       | 3             |       |
| 9   | LVTTL-I     | ResetL  | Module Reset.                        | 3             |       |
| 10  |             | VccRx   | +3.3V Receiver Power Supply.         | 2             | 2     |
| 11  | LVC MOS-I/O | SCL     | 2-Wire Serial Interface Clock.       | 3             |       |
| 12  | LVC MOS-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.                           | 3             |       |
| 29  |             | Vcc     | +3.3V Transmitter Power Supply.      | 2             | 2     |
| 30  |             | Vcc     | +3.3V Power Supply.                  | 2             | 2     |
| 31  | LVTTL-I     | LPMODE  | Low-Power Mode.                      | 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 |

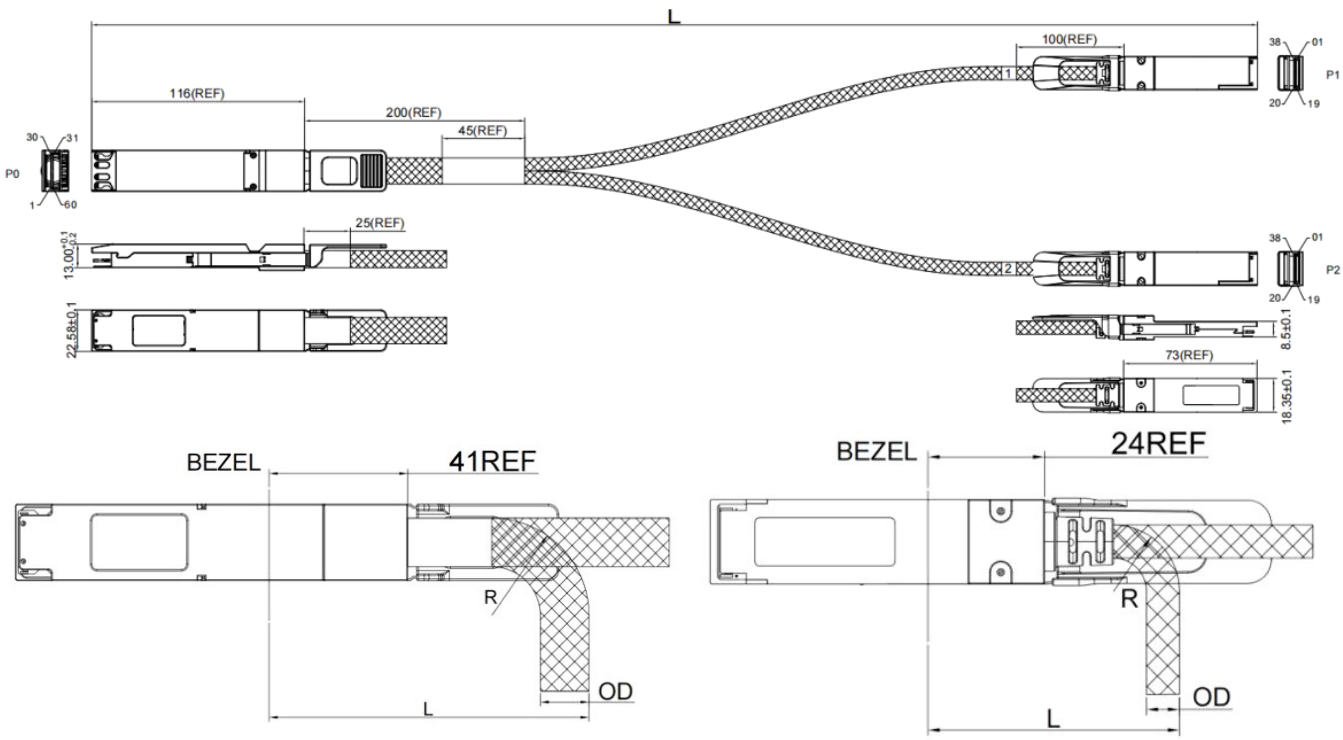
#### Notes:

1. GND is the symbol for signal and supply (power) common for the 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.

#### Electrical Pin-Out Details for QSFP112



Mechanical Specifications



| 800G OSFP |        |                 |                      | QSFP112 |       |                 |                      |
|-----------|--------|-----------------|----------------------|---------|-------|-----------------|----------------------|
| Gauge     | OD     | Bend Radius "R" | Min. Bend Radius "L" | Gauge   | OD    | Bend Radius "R" | Min. Bend Radius "L" |
| 26AWG     | 12.1MM | 25MM            | 70MM                 | 26AWG   | 8.3MM | 17MM            | 55MM                 |

## 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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