



### **MCP7Y10-N01A-OPC**

Mellanox® MCP7Y10-N01A Compatible TAA 800GBase-CU OSFP to 2xQSFP112 Direct Attach Cable (Passive Twinax, 1.5m)

#### **Features**

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



#### **Applications:**

- 800GBase Ethernet

#### **Product Description**

This Mellanox® compatible OSFP to 2xQSFP112 transceiver provides 800GBase-CU throughput up to over a copper connection using a wavelength of via a 2xQSFP112 connector. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Mellanox®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## 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 |

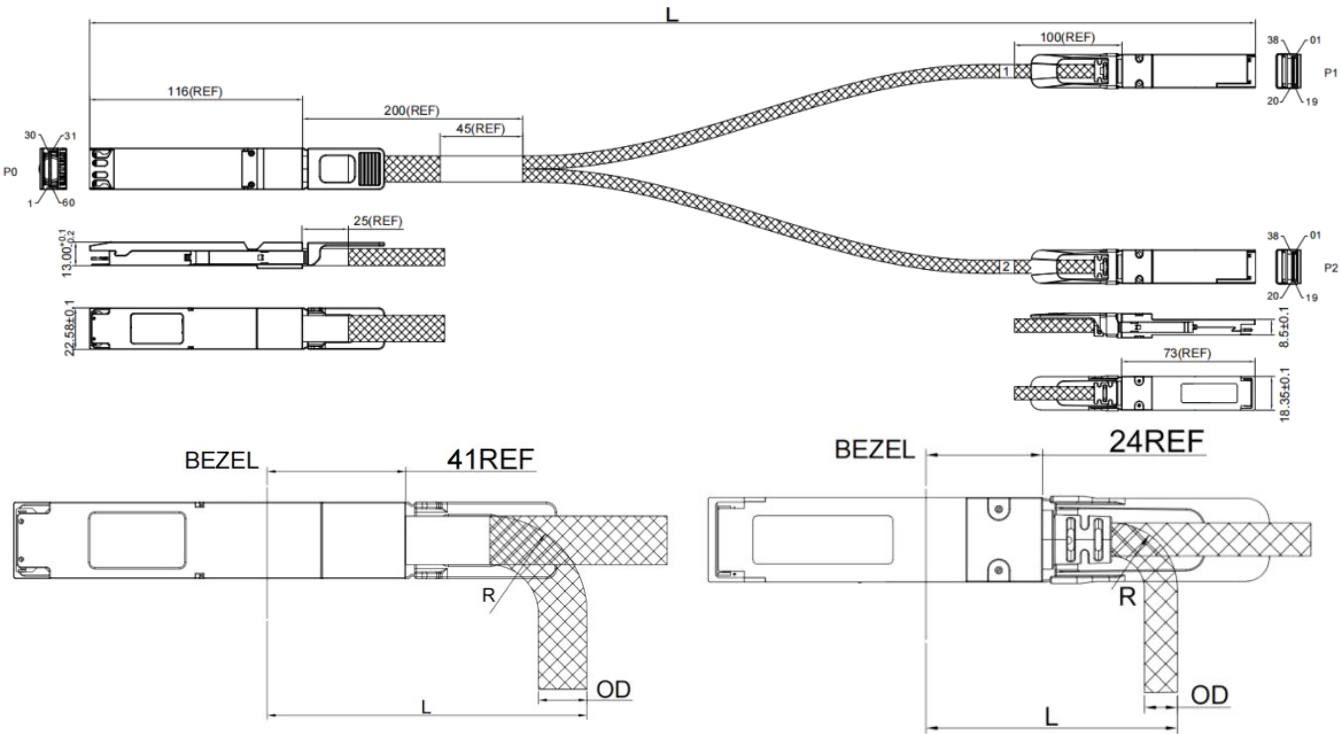
#### Notes:

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                 |

## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

[www.optioconnect.com](http://www.optioconnect.com) | [info@optioconnect.com](mailto:info@optioconnect.com)

