



### **MCP2104-X002B-OPC**

Mellanox® MCP2104-X002B Compatible TAA Compliant 10GBase-CU SFP+ Direct Attach Cable (Passive Twinax, 2m)

#### **Features**

- Up to 10 Gbps bi-directional data links
- Compliant with 10GFC
- Compliant with SFF-8431
- AC coupled inputs and outputs
- 100 Ohm differential impedance
- Enhanced EMI design
- Single 3.3V power supply
- Operating Temperature Range: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



#### **Applications:**

- 10G Ethernet
- 10G Fibre Channel
- Serial Data Transmission

#### **Product Description**

This is a Mellanox® MCP2104-X002B compatible 10GBase-CU SFP+ to SFP+ direct attach cable that operates over passive copper with a maximum reach of 2.0m (6.6ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

## General Specifications

| Parameter             | Symbol | Min. | Typ.    | Max.       | Unit | Notes |
|-----------------------|--------|------|---------|------------|------|-------|
| Data Rate             | DR     |      | 10.3125 |            | Gbps | 1     |
| Bit Error Rate        | BER    |      |         | $10^{-12}$ |      |       |
| Operating Temperature | Tc     | 0    |         | 70         | °C   | 2     |
| Storage Temperature   | Tstg   | -40  |         | 85         | °C   | 3     |
| Power Supply Voltage  | Vcc    | 3.14 | 3.30    | 3.46       | V    | 4     |

### Notes:

1. IEEE 802.3ae.
2. Case Temperature.
3. Ambient Temperature.
4. For the electrical power interface.

## Cable Specifications

| Parameter              | Symbol | Min. | Typ.  | Max. | Unit     |
|------------------------|--------|------|-------|------|----------|
| Wire Gauge             |        |      | 30AWG |      | AWG      |
| Cable Impedance        | Z      | 90   | 100   | 110  | $\Omega$ |
| Cable Diameter         | OD     |      | 4.2   |      | mm       |
| Minimum Bending Radius | R      |      | 25    |      | mm       |
| Tolerance Range $\pm$  |        |      | 2     |      | cm       |

## Pin Descriptions

| Pin | Symbol     | Name/Description                                                                   | Notes |
|-----|------------|------------------------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                                  | 1     |
| 2   | Tx_Fault   | Transmitter Failure Alarm. Not Used.                                               |       |
| 3   | Tx_Disable | Not Used. The signal turns off the module transmitter when it is "high" or "open." |       |
| 4   | SDA        | Data Line for Serial ID.                                                           | 2     |
| 5   | SCL        | Clock Line for Serial ID.                                                          | 2     |
| 6   | MOD_ABS    | Module Absent. Grounded within the module.                                         | 2     |
| 7   | RS0        | No Connection Required.                                                            |       |
| 8   | LOS        | Loss of Signal Indication. "Logic 0" indicates normal operation.                   |       |
| 9   | RS1        | No Connection Required.                                                            |       |
| 10  | VeeR       | Receiver Ground (Common with Transmitter Ground).                                  | 1     |
| 11  | VeeR       | Receiver Ground (Common with Transmitter Ground).                                  | 1     |
| 12  | RD-        | Receiver Inverted Data Out. AC Coupled.                                            |       |
| 13  | RD+        | Receiver Non-Inverted Data Out. AC Coupled.                                        |       |
| 14  | VeeR       | Receiver Ground (Common with Transmitter Ground).                                  | 1     |
| 15  | VccR       | Receiver Power Supply.                                                             |       |
| 16  | VccT       | Transmitter Power Supply.                                                          |       |
| 17  | VeeT       | Transmitter Ground (Common with Receiver Ground).                                  | 1     |
| 18  | TD+        | Transmitter Non-Inverted Data In. AC Coupled.                                      |       |
| 19  | TD-        | Transmitter Inverted Data In. AC Coupled.                                          |       |
| 20  | VeeT       | Transmitter Ground (Common with Receiver Ground).                                  | 1     |

### Notes:

1. The circuit ground is isolated from the chassis ground.
2. Should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and 3.6V.

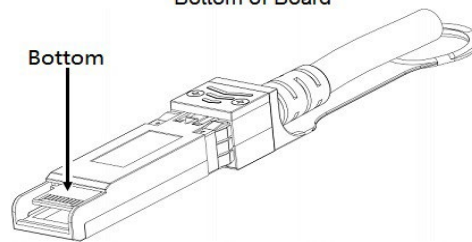
## Electrical Pad Layout



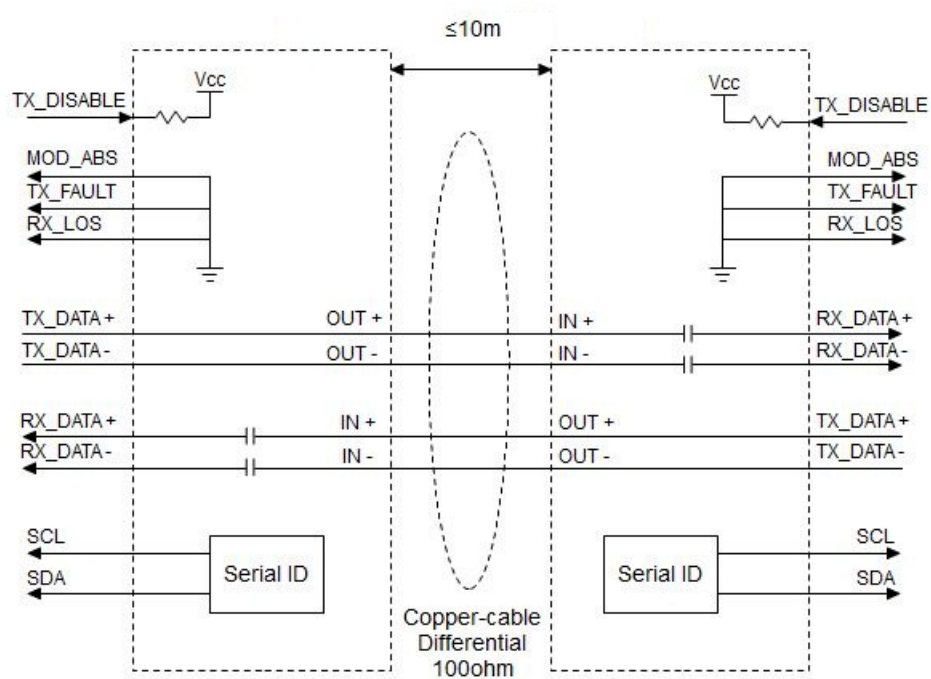
Top of Board



Bottom of Board



## Block Diagram of Transceiver



Weight

| Parameter            | Symbol | Typ. | Unit  | Notes |
|----------------------|--------|------|-------|-------|
| 30AWG Product Weight | GD30   | 72   | g/PCS | 1     |
| 30AWG Cable Weight   | GC30   | 26   | g/M   |       |
| Dust Cap Weight      | GS     | 0.80 | g/PCS |       |

Notes:

1. For example, the weight of a 6m cable with 30AWG is:  $72+26*(6-1) + 0.80*2=203.6g$ .

Mechanical Specifications



All Dimensions are  $\pm 0.2\text{mm}$  Unless Otherwise Specified  
Unit: mm

## **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.

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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**

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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**

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