



### **QSFP-40GBASE-4LC-2M-OPC**

MSA and TAA 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 2m, MPO, DOM)

#### **Features**

- SFF-8436 Compliance
- MPO Connector
- Multi-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 40GBase Ethernet
- Access and Enterprise

#### **Product Description**

This MSA compliant QSFP+ transceiver provides 40GBase-SR4 throughput up to 2m over multi-mode fiber (MMF) using a wavelength of 850nm via a 4xLC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. 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.

## Transceiver Specifications

### Absolute Maximum Ratings

| Parameter                  | Symbol          | Min. | Typ.    | Max. | Unit |
|----------------------------|-----------------|------|---------|------|------|
| Supply Voltage             | V <sub>CC</sub> | -0.5 |         | 4.0  | V    |
| Storage Temperature        | T <sub>s</sub>  | -40  |         | 85   | °C   |
| Operating Case Temperature | T <sub>c</sub>  | 0    | 25      | 70   | °C   |
| Relative Humidity          | RH              | 5    |         | 95   | %    |
| Data Rate Per Channel      |                 |      | 10.3125 |      | Gbps |

### Electrical Characteristics

| Parameter                        | Symbol                          | Min.  | Typ. | Max.  | Unit              | Notes |
|----------------------------------|---------------------------------|-------|------|-------|-------------------|-------|
| Supply Voltage                   | V <sub>CC</sub>                 | 3.135 | 3.3  | 3.465 | V                 |       |
| Module Supply Current            | I <sub>CC</sub>                 |       |      | 430   | mA                |       |
| Power Dissipation                | PD                              |       |      | 1.5   | W                 |       |
| Transmitter                      |                                 |       |      |       |                   |       |
| Input Differential Impedance     | Z <sub>IN</sub>                 |       | 100  |       | Ω                 |       |
| Differential Data Input Swing    | V <sub>IN P-P</sub>             | 180   |      | 900   | mV <sub>p-p</sub> |       |
| Receiver                         |                                 |       |      |       |                   |       |
| Output Differential Impedance    | Z <sub>O</sub>                  |       | 100  |       | Ω                 |       |
| Differential Data Output Swing   | V <sub>OUT P-P</sub>            | 300   |      | 850   | mV <sub>p-p</sub> | 1     |
| Data Output Rise Time, Fall Time | t <sub>r</sub> , t <sub>f</sub> | 28    |      |       | ps                | 2     |

### Notes:

1. Internally AC coupled, but requires an external 100Ω differential load termination.
2. 20 – 80 %.

## Optical Characteristics

| Parameter                          | Symbol                      | Min. | Typ. | Max. | Unit | Notes |
|------------------------------------|-----------------------------|------|------|------|------|-------|
| Transmitter                        |                             |      |      |      |      |       |
| Launch Optical Power               | Po                          | -7.6 |      | +2.4 | dBm  | 1     |
| Center Wavelength Range            | λc                          | 830  | 850  | 860  | nm   |       |
| Extinction Ratio                   | EX                          | 3    |      |      | dB   | 2     |
| Spectral Width (RMS)               | Δλ                          |      |      | 0.65 | nm   |       |
| Transmitter and Dispersion Penalty | TDP                         |      |      | 3.2  | dB   |       |
| Optical Return Loss Tolerance      | ORLT                        |      |      | 12   | dB   |       |
| Eye Diagram                        | IEEE Std 802.3ba compatible |      |      |      |      |       |
| Receiver                           |                             |      |      |      |      |       |
| Center Wavelength                  | λc                          | 830  | 850  | 860  | nm   |       |
| Receiver Sensitivity (Pavg)        | S                           |      |      | -9.5 | dBm  | 3     |
| Damage Threshold                   | POL                         | 2.5  |      |      | dBm  | 3     |
| Optical Return Loss                | ORL                         | 12   |      |      | dB   |       |
| LOS Assert                         | LOS <sub>A</sub>            | -30  |      |      | dBm  |       |
| LOS De-Assert                      | LOS <sub>D</sub>            |      |      | -11  | dBm  |       |
| LOS Hysteresis                     |                             | 0.5  |      |      | dB   |       |

### Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps.
3. Measured with PRBS 2<sup>31</sup>-1 test pattern, 10.3125Gb/s, BER<10<sup>-12</sup>.

## Pin Descriptions

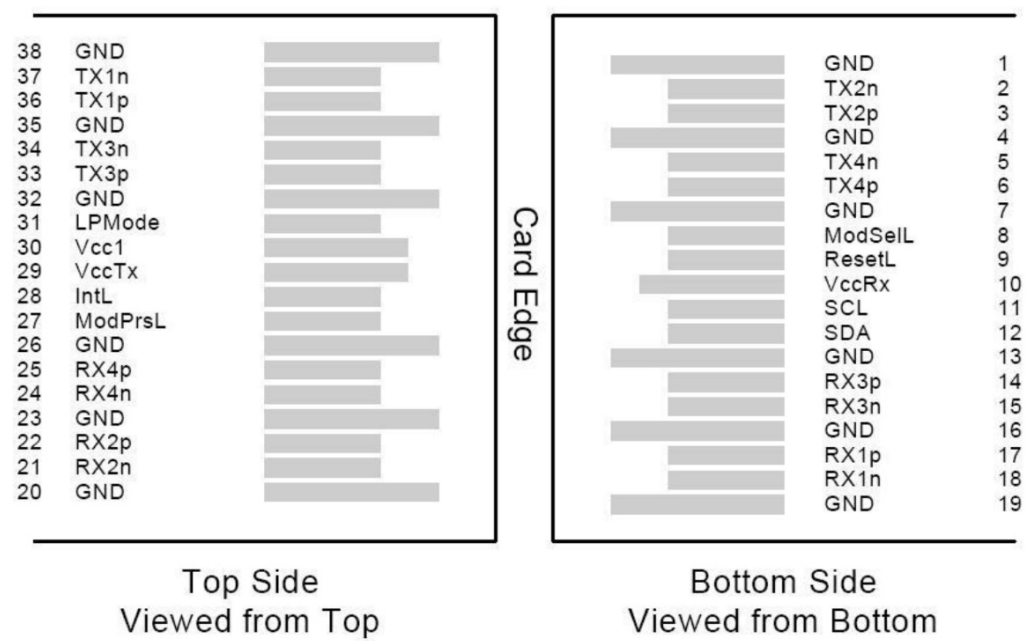
| Pin | Logic       | Symbol  | Name/Descriptions                    | Ref. |
|-----|-------------|---------|--------------------------------------|------|
| 1   |             | GND     | Module Ground.                       | 1    |
| 2   | CML-I       | Tx2-    | Transmitter Inverted Data Input.     |      |
| 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.                       | 2    |
| 9   | LVTTL-I     | ResetL  | Module Reset.                        | 2    |
| 10  |             | VccRx   | +3.3V Receiver Power Supply.         |      |
| 11  | LVC MOS-I   | SCL     | 2-Wire Serial Interface Clock.       | 2    |
| 12  | LVC MOS-I/O | SDA     | 2-Wire Serial Interface Data.        | 2    |

|    |         |         |                                                          |   |
|----|---------|---------|----------------------------------------------------------|---|
| 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.                           | 1 |
| 25 | CML-O   | Rx4+    | Receiver Non-Inverted Data Output.                       |   |
| 26 |         | GND     | Module Ground.                                           | 1 |
| 27 | LVTTL-O | ModPrsL | Module Present. Internally pulled down to GND.           |   |
| 28 | LVTTL-O | IntL    | Interrupt Output. Should be pulled up on the host board. | 2 |
| 29 |         | VccTx   | +3.3V Transmitter Power Supply.                          |   |
| 30 |         | Vcc1    | +3.3V Power Supply.                                      |   |
| 31 | LVTTL-I | LPMode  | Low-Power Mode.                                          | 2 |
| 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 |

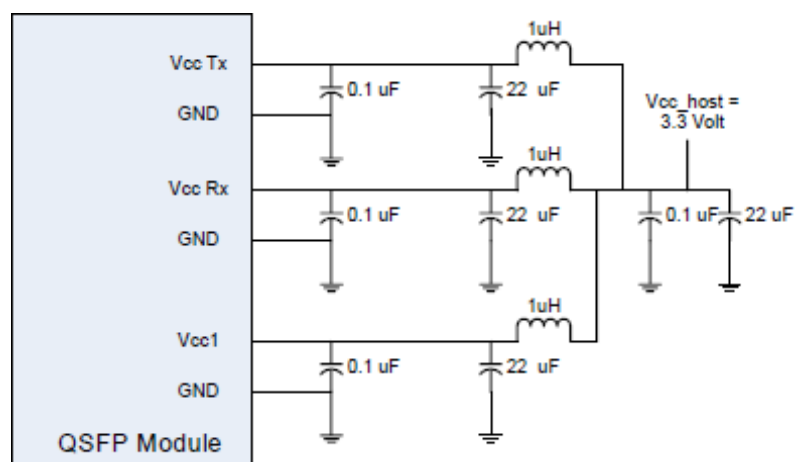
**Notes:**

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7k $\Omega$ -10k $\Omega$  pull-up resistor to the Host\_Vcc.

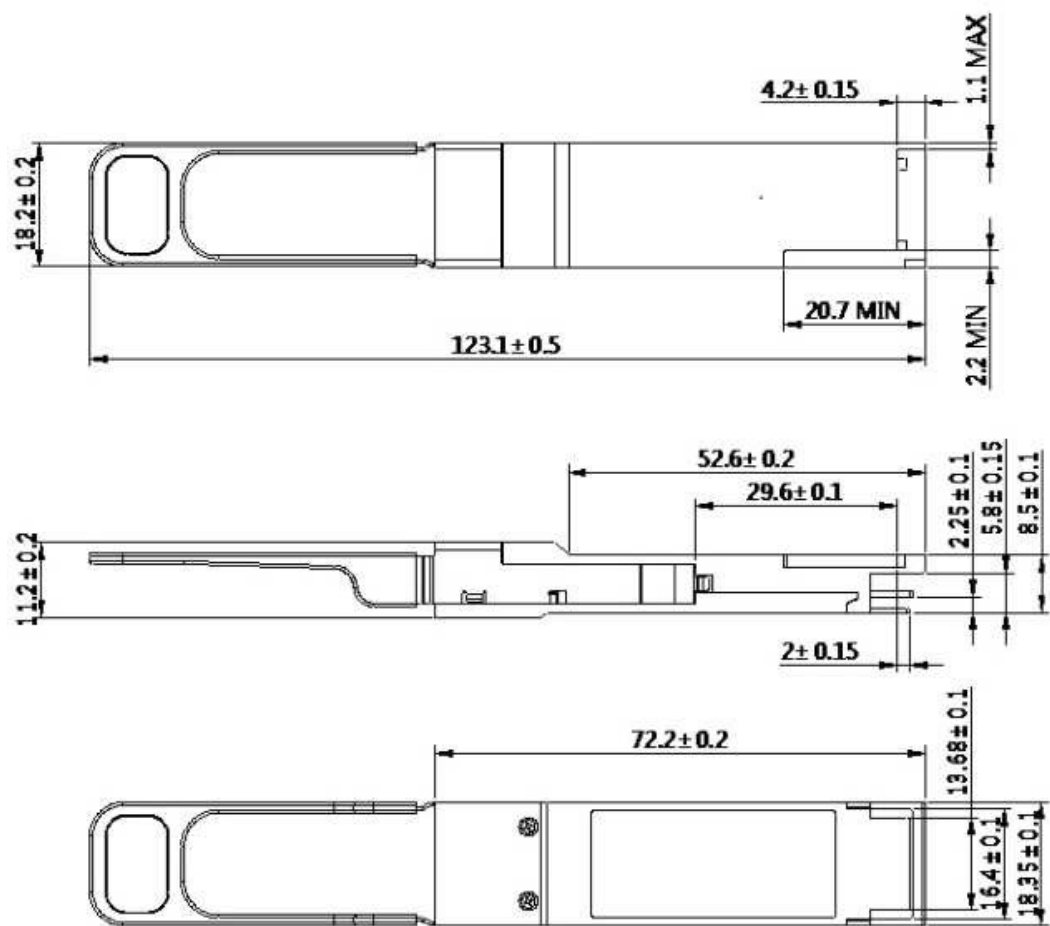
Electrical Pin-out Details



Recommended Host Board Power Supply Filter Network



Mechanical Specifications



**Cable Specifications**

**Technical Specifications**

| Parameter                  | Specification               |
|----------------------------|-----------------------------|
| Cable Type                 | Multimode                   |
| Connector                  | MPO (Female) to 8xLC (Male) |
| Core/Cladding              | 50/125μm                    |
| Strand Count               | 8                           |
| Length                     | 2m (6.6ft)                  |
| Polishing                  | PC                          |
| Insertion Loss             | ≤ 0.3dB/0.5dB (MTRJ)        |
| Return Loss (each channel) | ≥ 35dB                      |
| Durability (500 matings)   | ≤ 0.2dB increase (Max)      |
| Operating Temperature      | -40°C~+75°C                 |
| Storage Temperature        | -40°C~+75°C                 |

## **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)

