

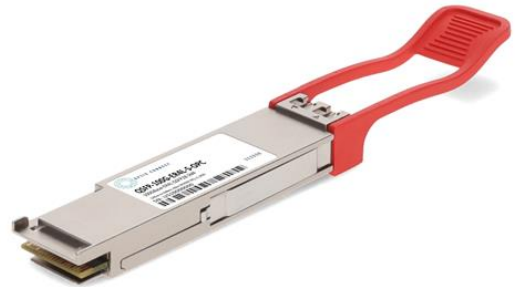


### **QSFP-100G-ER4L-S-OPC**

Cisco® QSFP-100G-ER4L-S Compatible TAA 100GBase-ER4L QSFP28 Transceiver (SMF, 1295nm to 1309nm, 40km w/host FEC, LC, DOM)

#### **Features**

- SFF-8665 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 100GBase Ethernet
- Access and Enterprise

#### **Product Description**

This Cisco® QSFP-100G-ER4L-S compatible QSFP28 transceiver provides 100GBase-ER4 throughput up to 40km w/host FEC over single-mode fiber (SMF) using a wavelength of 1295nm to 1309nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. 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.

## Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

## Absolute Maximum Ratings

| Parameter                  | Symbol | Min. | Typ.     | Max. | Unit |
|----------------------------|--------|------|----------|------|------|
| Storage Temperature        | Tstg   | -40  |          | 85   | °C   |
| Operating Case Temperature | Tc     | 0    | 25       | 70   | °C   |
| Power Supply Voltage       | Vcc    | -0.5 |          | 4.0  | V    |
| Relative Humidity          | RH     | 5    |          | 95   | %    |
| Data Rate Per Channel      |        |      | 25.78125 |      | Gbps |

## Electrical Characteristics

| Parameter                                  | Symbol              | Min.  | Typ. | Max.  | Unit  | Notes |
|--------------------------------------------|---------------------|-------|------|-------|-------|-------|
| Supply Voltage                             | Vcc                 | 3.135 | 3.3  | 3.465 | V     |       |
| Module Supply Current                      | Icc                 |       |      | 1350  | mA    |       |
| Power Dissipation                          | P <sub>DISS</sub>   |       |      | 4500  | mW    |       |
| Transmitter                                |                     |       |      |       |       |       |
| Single-Ended Input Voltage Tolerance       |                     | -0.3  |      | 4.0   | V     |       |
| Input Differential Impedance               | Z <sub>IN</sub>     |       | 100  |       | Ω     |       |
| Differential Data Input Swing              | V <sub>IN,pp</sub>  | 190   |      | 700   | mVp-p |       |
| AC Common-Mode Input Voltage Tolerance     |                     | 15    |      |       | mVp-p |       |
| Differential Input Voltage Swing Threshold |                     |       | 50   |       | mVp-p |       |
| Receiver                                   |                     |       |      |       |       |       |
| Single-Ended Output Voltage                |                     | -0.3  |      | 4.0   | V     |       |
| Output Differential Impedance              | Z <sub>OUT</sub>    | 90    | 100  | 110   | Ω     |       |
| Differential Data Output Swing             | V <sub>OUT,pp</sub> | 300   |      | 850   | mVp-p |       |
| AC Common-Mode Output Voltage              |                     |       |      | 7.5   | mVp-p |       |

## Optical Characteristics

| Parameter                          | Symbol           | Min.                               | Typ.    | Max.    | Unit | Notes |
|------------------------------------|------------------|------------------------------------|---------|---------|------|-------|
| Transmitter                        |                  |                                    |         |         |      |       |
| Launch Optical Power Per Lane      | Po               | -2.9                               |         | +2.9    | dBm  | 1     |
| Total Launch Optical Power         | Po               |                                    |         | +8.9    | dBm  | 1     |
| Center Wavelength Range            | L1               | 1294.53                            | 1295.56 | 1296.59 | nm   |       |
|                                    | L2               | 1299.02                            | 1300.05 | 1301.09 | nm   |       |
|                                    | L3               | 1303.54                            | 1304.58 | 1305.63 | nm   |       |
|                                    | L4               | 1308.09                            | 1309.14 | 1310.19 | nm   |       |
| Extinction Ratio                   | ER               | 8.0                                |         |         | dB   | 2     |
| Spectral Width (-20dB)             | Δλ               |                                    |         | 1       | nm   |       |
| Side-Mode Suppression Ratio        | SMSR             | 30                                 |         |         | dB   |       |
| Optical Return Loss Tolerance      | ORLT             |                                    |         | 20      | dB   |       |
| Pout @Tx_Disable Asserted          | Poff             |                                    |         | -30     | dBm  | 1     |
| Eye Mask: (X1, X2, X3, Y1, Y2, Y3) |                  | (0.25, 0.4, 0.45, 0.25, 0.28, 0.4) |         |         |      |       |
| Receiver                           |                  |                                    |         |         |      |       |
| Center Wavelength                  | L1               | 1294.53                            | 1295.56 | 1296.59 | nm   |       |
|                                    | L2               | 1299.02                            | 1300.05 | 1301.09 | nm   |       |
|                                    | L3               | 1303.54                            | 1304.58 | 1305.63 | nm   |       |
|                                    | L4               | 1308.09                            | 1309.14 | 1310.19 | nm   |       |
| Sensitivity Per Channel (OMA)      | S                |                                    |         | -16.6   | dBm  | 3     |
|                                    | S                |                                    |         | -20.5   | dBm  | 4     |
| Overload Per Channel               | P <sub>max</sub> | -4.9                               |         |         | dBm  | 3     |
| Damage Threshold Per Channel       | THd              | -3.5                               |         |         | dBm  |       |
| Receiver Reflectance               | RL               |                                    |         | -26     | dB   |       |
| LOS De-Assert                      | LOSD             |                                    |         | -21.0   | dBm  |       |
| LOS Assert                         | LOSA             | -26.0                              |         |         | dBm  |       |
| LOS Hysteresis                     | LOSH             | 0.5                                |         |         | dB   |       |

### Notes:

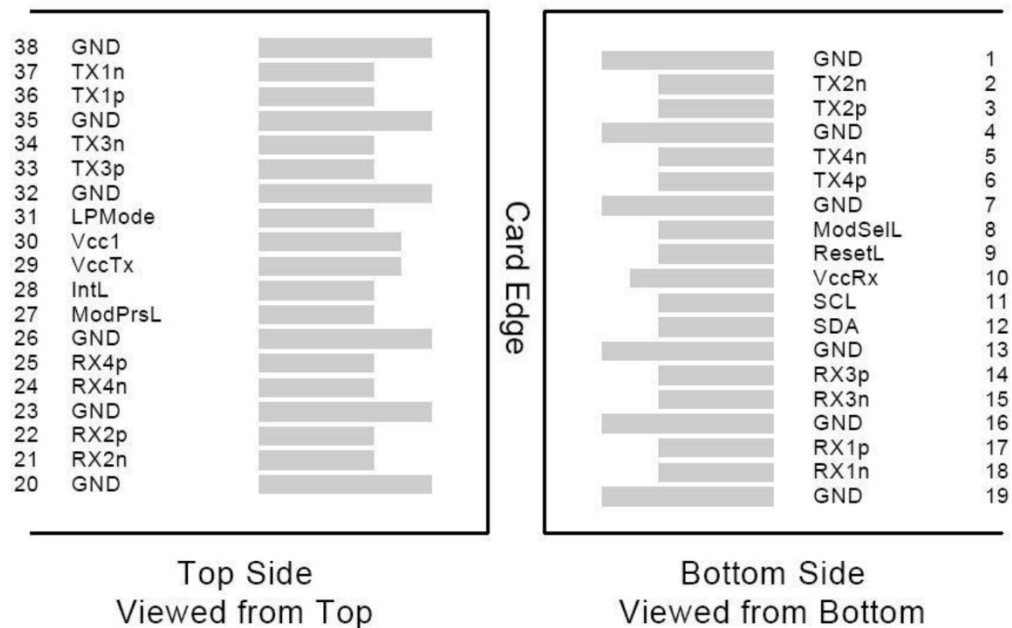
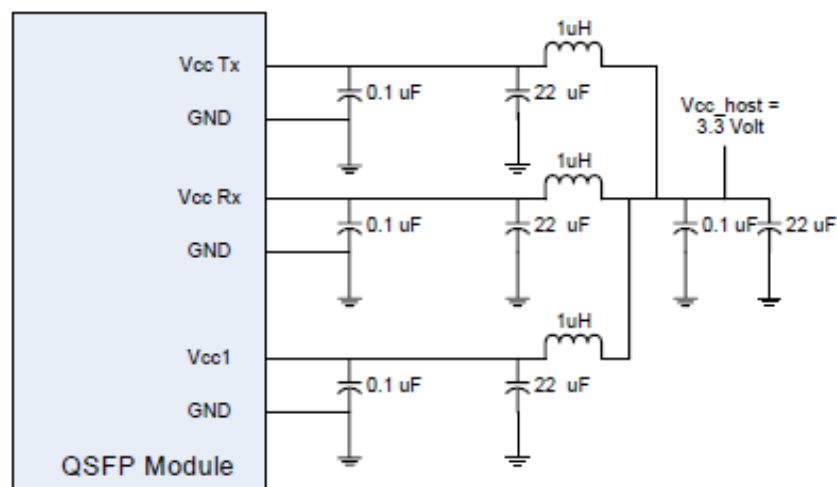
1. The optical power is launched into a single-mode fiber.
2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @25.78125Gbps.
3. Without FEC, measured with PRBS 2<sup>31</sup>-1 test pattern, 25.78125Gbps, and BER 1.0E<sup>-12</sup>.
4. With FEC, measured with PRBS 2<sup>31</sup>-1 test pattern, 25.78125Gb/s, and BER 5.0E<sup>-5</sup>.

## Pin Descriptions

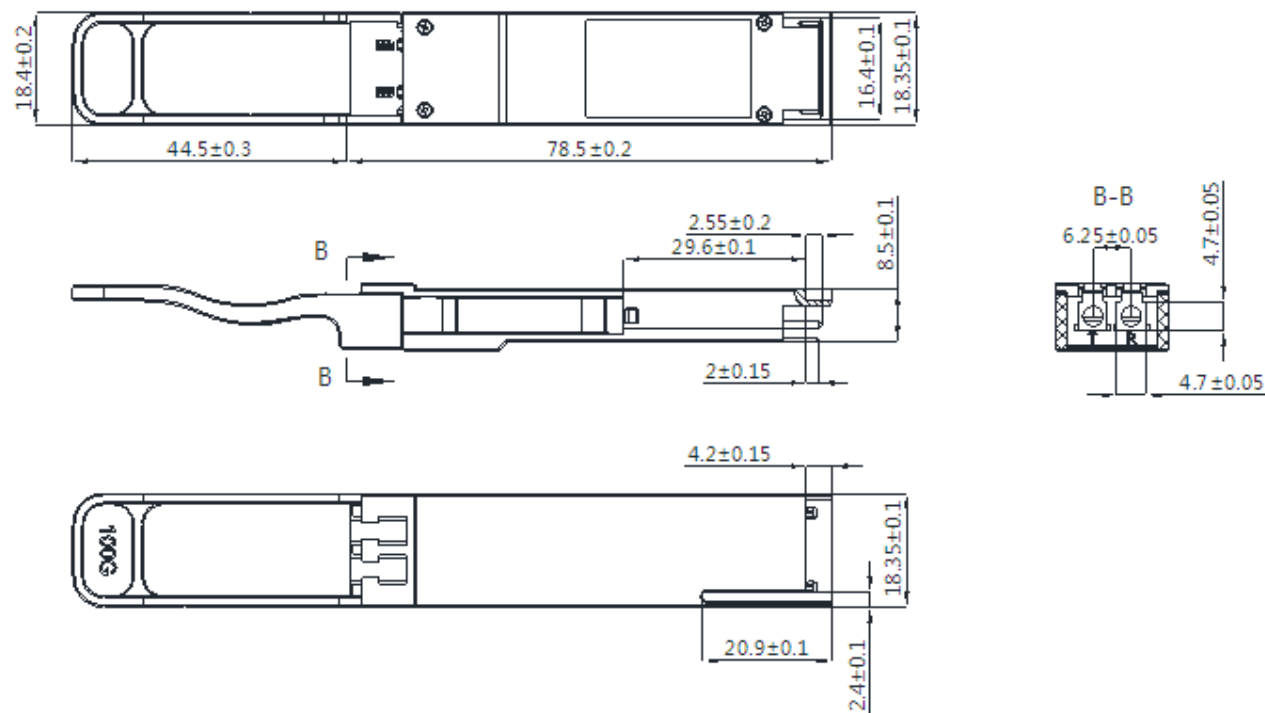
| Pin | Logic       | Symbol  | Name/Descriptions                                        | Ref. |
|-----|-------------|---------|----------------------------------------------------------|------|
| 1   |             | GND     | Module Ground.                                           | 1    |
| 2   | 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     | MODSEIL | 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.                           |      |
| 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. Module circuit ground is isolated from the module chassis ground within the module.
2. Open collector. Should be pulled up with 4.7k $\Omega$ -10k $\Omega$  on the host board to a voltage between 3.15V and 3.6V.

**Electrical Pin-Out Details****Recommended Host Board Power Supply Filter Network**

Mechanical Specifications



## **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.

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