



### **QSFP-40GB-ZR4-AR-OPC**

Arista Networks® Compatible TAA 40GBase-ZR4 QSFP+ Transceiver (SMF, 1295nm to 1309nm, 80km, LC, DOM)

#### **Features**

- Compliant with QSFP28 MSA
- 4 cooled 10.3125Gbps channels LAN WDM EML TOSA
- 4 channels SOA PIN photo detector
- Single +3.3V power supply
- Class 1 laser safety certified
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- RoHS Compliant and Lead Free



#### **Applications:**

- 40GBase Ethernet

#### **Product Description**

This Arista Networks® compatible QSFP+ transceiver provides 40GBase-ZR4 throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1295nm to 1309nm via an LC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Arista Networks®. 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. Additional product features include Digital Optical Monitoring (DOM) support which allows 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.

## Absolute Maximum Ratings

| Parameter                  | Symbol           | Min.    | Typ. | Max.  | Unit |
|----------------------------|------------------|---------|------|-------|------|
| Supply Voltage             | V <sub>CC</sub>  | -0.5    |      | 4.0   | V    |
| Supply Voltage             | V <sub>CC</sub>  | 3.135   | 3.3  | 3.465 | V    |
| Storage Temperature        | T <sub>stg</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 |

### Notes:

1. Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.
2. These are absolute stress ratings only.
3. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the datasheet.
4. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

## Electrical Characteristics

| Parameter                                  | Symbol              | Min. | Typ. | Max. | Unit  |
|--------------------------------------------|---------------------|------|------|------|-------|
| Module Supply Current                      | I <sub>CC</sub>     |      |      | 1650 | mA    |
| Power Dissipation                          | P <sub>DISS</sub>   |      |      | 5000 | 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   |      |      | mV    |
| 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  | mV    |

## Optical Characteristics

| Parameter                         | Symbol                             | Min.    | Typ.    | Max.    | Unit | Notes |
|-----------------------------------|------------------------------------|---------|---------|---------|------|-------|
| Transmitter                       |                                    |         |         |         |      |       |
| Launch Optical Power Per Lane     | Po                                 | 2.0     |         | 6.5     | dBm  | 1     |
| Total Launch Optical Power        | Po                                 |         |         | 12.5    | 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       |         |         | dB   | 1     |
| Spectral Width (-20dB)            | $\Delta\lambda$                    |         |         | 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)     | S1                                 |         |         | -26.9   | dBm  | 2     |
| Sensitivity Per Channel (Average) | S2                                 |         |         | -28     | dBm  | 2     |
| Overload (Per Channel)            | POL                                | 2       |         |         | dBm  |       |
| Damage Threshold (Per Channel)    | Pdmg                               | 4.5     |         |         | dBm  |       |
| Receiver Reflectance              | Rf                                 |         |         | -26     | dB   |       |
| LOS De-Assert                     | LOSD                               |         |         | -28     | dBm  |       |
| LOS Assert                        | LOSA                               | -35     |         |         | dBm  |       |
| LOS Hysteresis                    | LOSH                               | 0.5     |         | 5       | dB   |       |

### Notes:

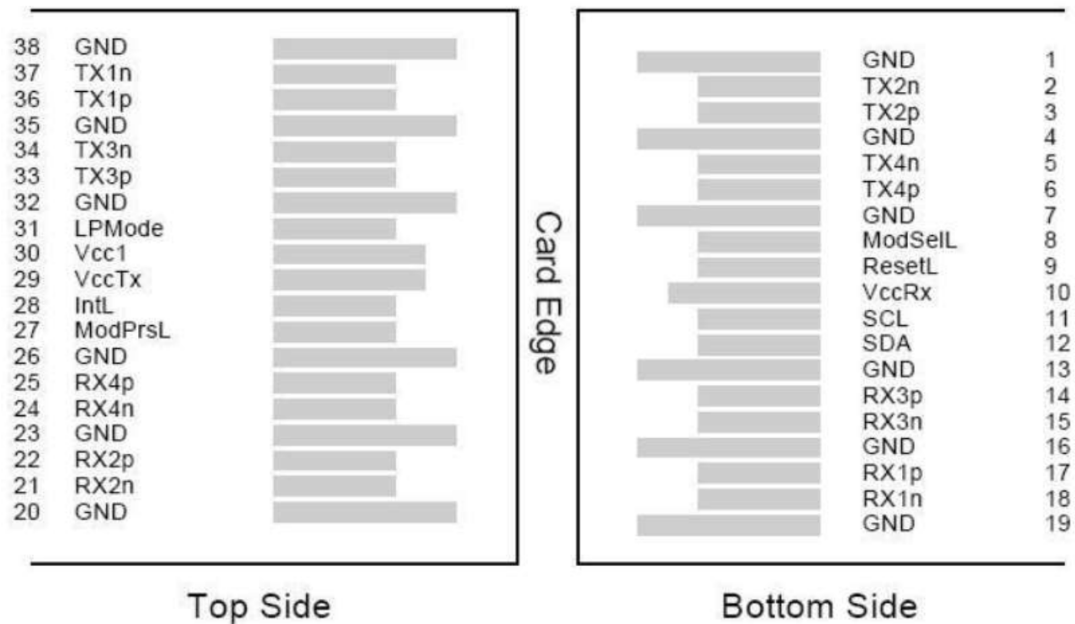
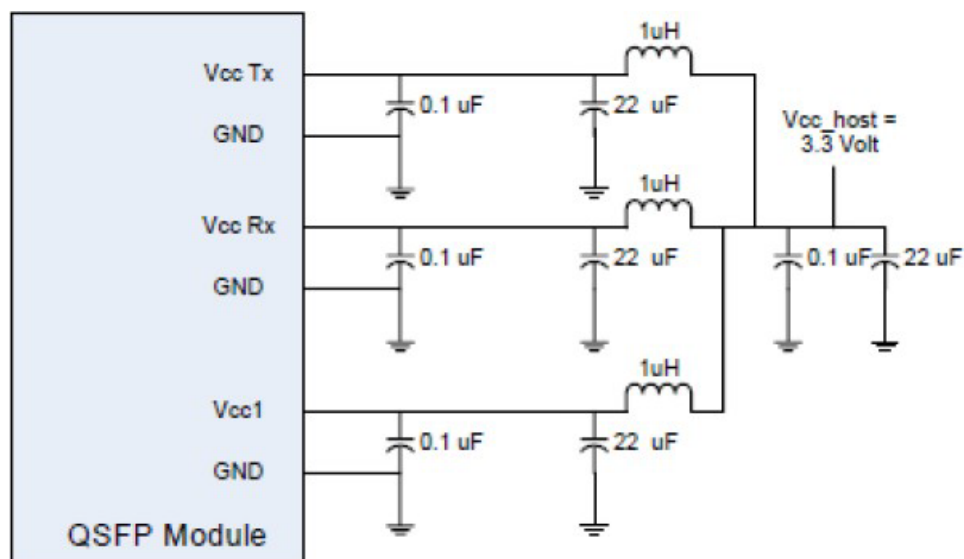
1. Measured with a PRBS  $2^{31}-1$  test pattern @10.3125Gbps.
2. Measured with a PRBS  $2^{31}-1$  test pattern, @10.3125Gbps, and BER  $5.0E^{-5}$ .

## Pin Description

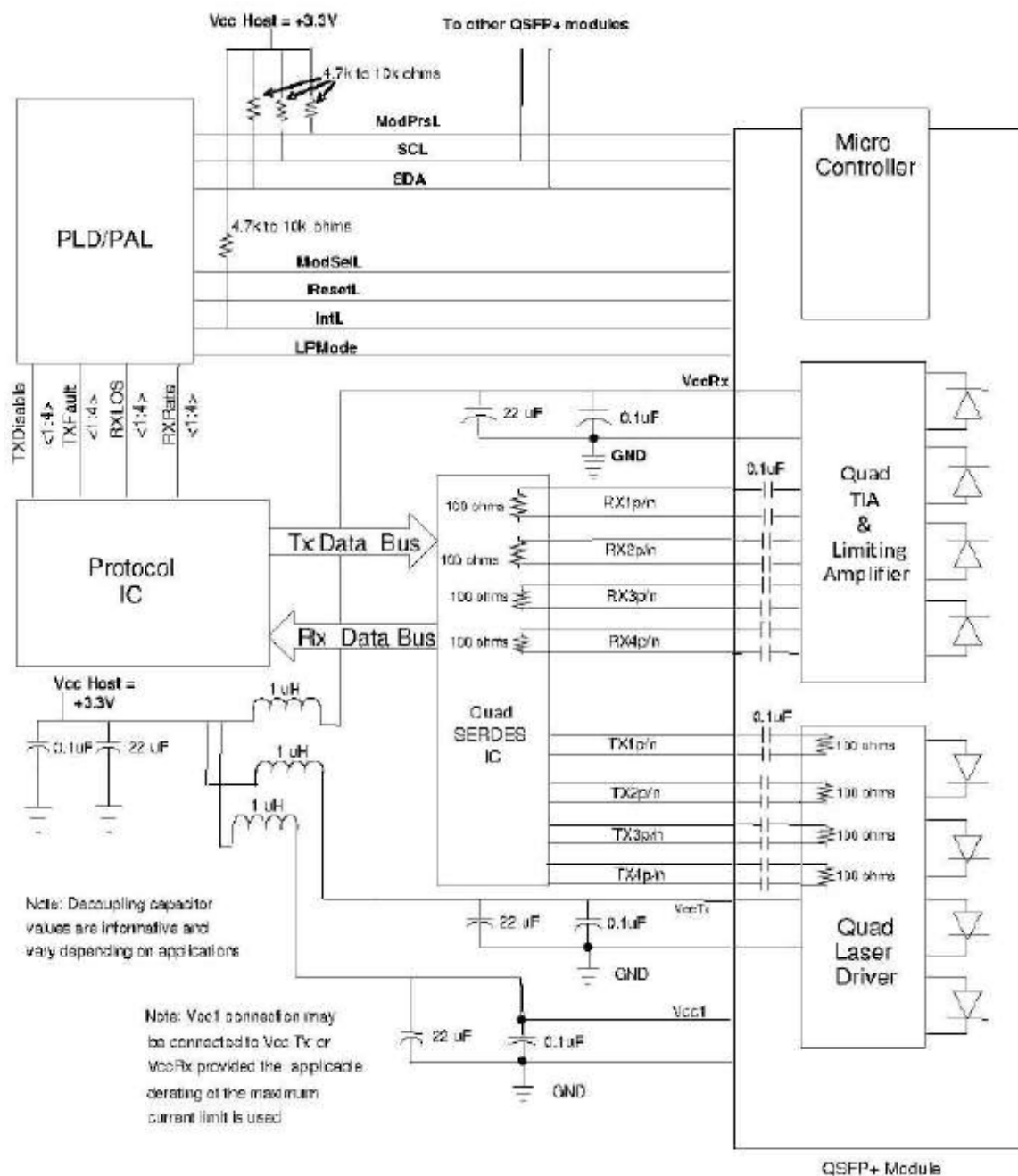
| Pin | Symbol  | Name/Description                                  | Note |
|-----|---------|---------------------------------------------------|------|
| 1   | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 2   | Tx2-    | Transmitter Inverted Data Input.                  |      |
| 3   | Tx2+    | Transmitter Non-Inverted Data Output.             |      |
| 4   | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 5   | Tx4-    | Transmitter Inverted Data Input.                  |      |
| 6   | Tx4+    | Transmitter Non-Inverted Data Output.             |      |
| 7   | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 8   | ModSelL | Module Select.                                    | 2    |
| 9   | ResetL  | Module Reset.                                     | 2    |
| 10  | VccRx   | +3.3V Power Supply Receiver.                      |      |
| 11  | SCL     | 2-Wire Serial Interface Clock.                    | 2    |
| 12  | SDA     | 2-Wire Serial Interface Data.                     | 2    |
| 13  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 14  | Rx3+    | Receiver Non-Inverted Data Output.                |      |
| 15  | Rx3-    | Receiver Inverted Data Output.                    |      |
| 16  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 17  | Rx1+    | Receiver Non-Inverted Data Output.                |      |
| 18  | Rx1-    | Receiver Inverted Data Output.                    |      |
| 19  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 20  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 21  | Rx2-    | Receiver Inverted Data Output.                    |      |
| 22  | Rx2+    | Receiver Non-Inverted Data Output.                |      |
| 23  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 24  | Rx4-    | Receiver Inverted Data Output.                    |      |
| 25  | Rx4+    | Receiver Non-Inverted Data Output.                |      |
| 26  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 27  | ModPrsL | Module Present.                                   |      |
| 28  | IntL    | Interrupt.                                        | 2    |
| 29  | VccTx   | +3.3V Transmitter Power Supply.                   |      |
| 30  | Vcc1    | +3.3V Power Supply.                               |      |
| 31  | LPMode  | Low-Power Mode.                                   | 2    |
| 32  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 33  | Tx3+    | Transmitter Non-Inverted Data Input.              |      |
| 34  | Tx3-    | Transmitter Inverted Data Output.                 |      |
| 35  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |
| 36  | Tx1+    | Transmitter Non-Inverted Data Input.              |      |
| 37  | Tx1-    | Transmitter Inverted Data Output.                 |      |
| 38  | GND     | Transmitter Ground (Common with Receiver Ground). | 1    |

**Notes:**

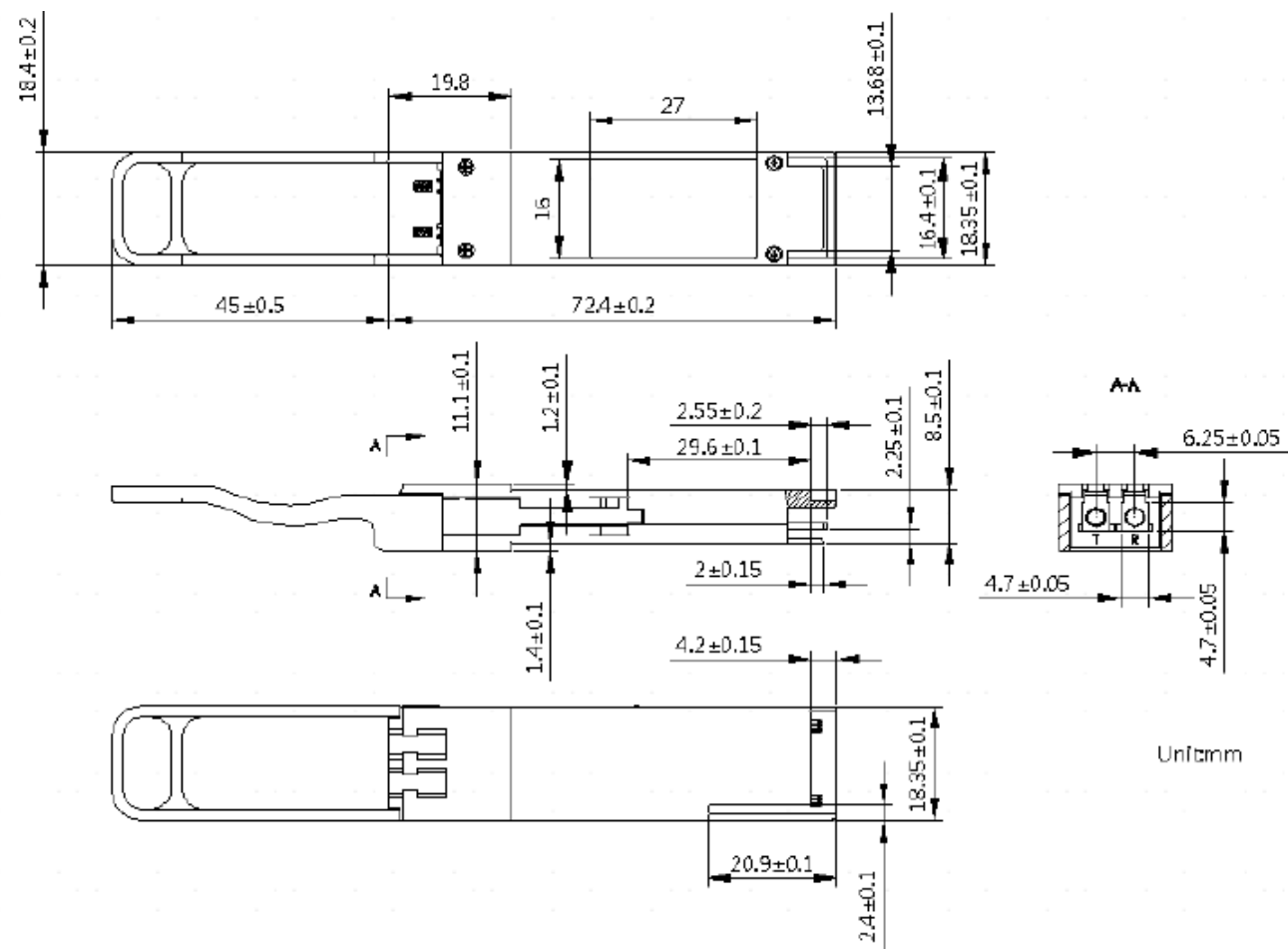
1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7k $\Omega$  to 10k $\Omega$  pull-up resistor to Host\_Vcc.

**Host PCB QSFP28 Pad Assignment Top View****Recommended Host Board Power Supply Filter Network**

## Recommended Application Interface Block Diagram



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.

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

