

QSFP28-100GB-SR4-LP-CX-AO

Calix® Compatible TAA 100GBase-SR4 QSFP28 Transceiver Low Power (MMF, 850nm, 100m, MPO, DOM, 0 to 70C)

Features

- Up to 28.05 Gbps data rate per channel
- High Reliability 850nm VCSEL technology
- Compliant with QSFP28 MSA
- Compliant to IEEE 802.3bm
- Standard 12-lane with MPO connector
- Digital diagnostic SFF-8636 compliant
- Commercial Temperature 0 to 70 Celsius
- Power Dissipation: <2.0W
- RoHS Compliant and lead-free
- Hot Pluggable



Applications

- 100GBase Ethernet
- Access and Enterprise

Product Description

This Calix® QSFP28 transceiver provides 100GBase-SR4 throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Calix® 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.

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

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



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 | Notes |
|----------------------------|--------|---------|----------|---------|------|------------------|
| Power Supply Voltage | Vcc | -0.3 | | 4 | V | |
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Case Operating Temperature | Tc | 0 | | 70 | °C | Without Air Flow |
| Relative Humidity | RH | 5 | | 95 | % | |
| Signal Input Voltage | | Vcc-0.3 | | Vcc+0.3 | V | |
| Data Rate | BR | | 25.78125 | 28.05 | Gbps | Each Channel |
| Transmission Distance | TD | | | 100 | m | 1 |

Notes:

1. OM4, or 70m on OM3.
2. 100GBase-SR4 and ITU-T OTU4 have different register settings not auto-negotiation.

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------------|----------|------|------|------|------|-------|
| Power Supply Voltage | Vcc | 3.14 | 3.3 | 3.46 | V | |
| Power Supply Current | Icc | | | 600 | mA | |
| Transmitter | | | | | | |
| Input Differential Impedance | RIN | | 100 | | Ω | 1 |
| Differential Data Input Swing | VIN,pp | 180 | | 1000 | mV | |
| Single-Ended Input Voltage Tolerance | VIN | -0.3 | | 4.0 | V | |
| Receiver | | | | | | |
| Differential Data Output Swing | VOOUT,pp | 300 | | 850 | mV | 2 |
| Single-Ended Output Voltage | | -0.3 | | 4.0 | V | |

Notes:

1. Connected directly to Tx data input pins. AC coupled thereafter.

2. Into 100Ω differential termination.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------------|-----------------------------|------|------|-------|------|-------|
| Transmitter | | | | | | |
| Center Wavelength | λ_C | 840 | | 860 | nm | |
| Average Launch Power Per Lane | | -8.4 | | 2.4 | dBm | |
| Spectral Width (RMS) | σ | | | 0.6 | nm | |
| Optical Extinction Ratio | ER | 2 | | | dB | |
| Optical Return Loss Tolerance | ORLT | | | 12 | dB | |
| Output Eye Mask | Compliant with IEEE 802.3bm | | | | | 1 |
| Receiver | | | | | | |
| Receiver Wavelength | λ | 840 | | 860 | nm | |
| Rx Sensitivity Per Lane | RSENS | | | -10.3 | dBm | 2 |
| LOS De-Assert | LOSD | -30 | | | dBm | |
| LOS Assert | LOSA | | | -12 | dBm | |
| Input Saturation Power (Overload) | Psat | 2.4 | | | dBm | |
| Receiver Reflectance | | | | -12 | dB | |

Notes:

1. Hit ratio 1.5×10^{-5} hits per sample.
2. Measured with a PRBS $2^{31}-1$ test pattern, @25.78Gbps, and $BER < 5.0 \times 10^{-5}$.

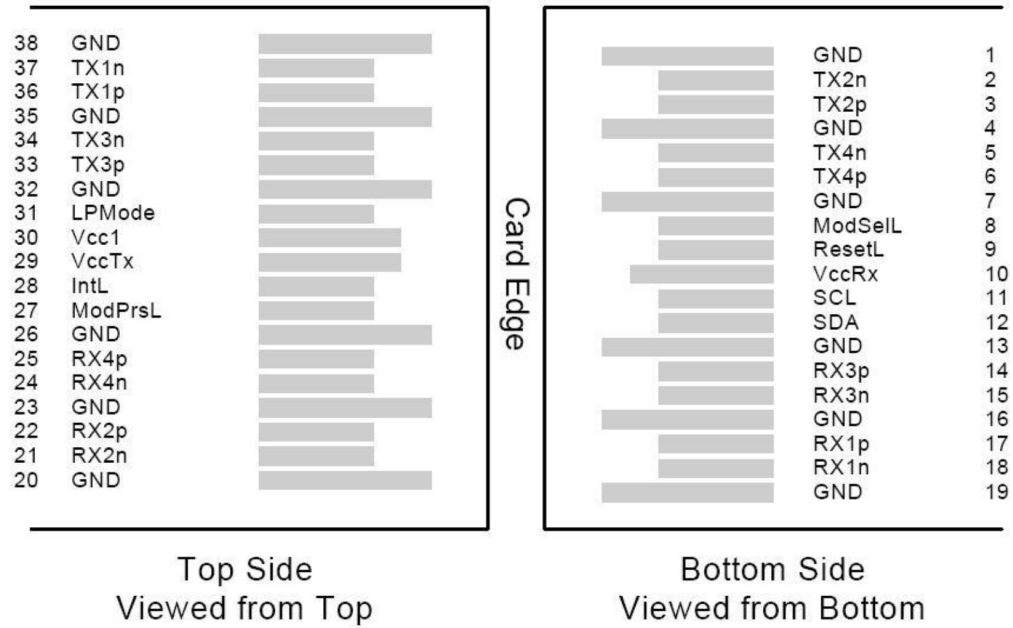
Pin Descriptions

| 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 |

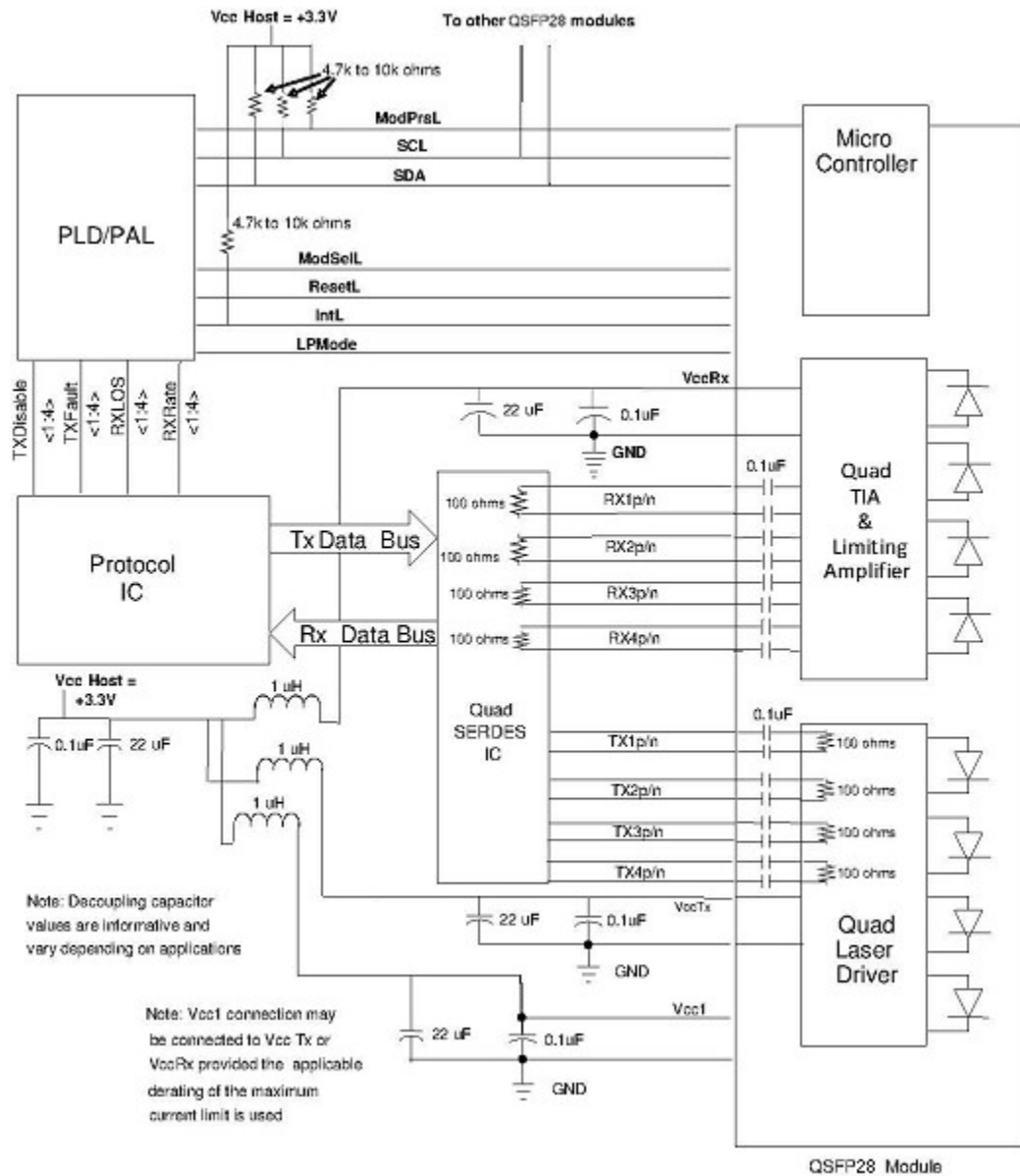
Notes:

- 1. Module circuit ground is isolated from module chassis ground within the module.
- 2. Open collector. Should be pulled up with 4.7kΩ-10kΩ on the host board to a voltage between 3.15V and 3.6V.

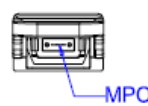
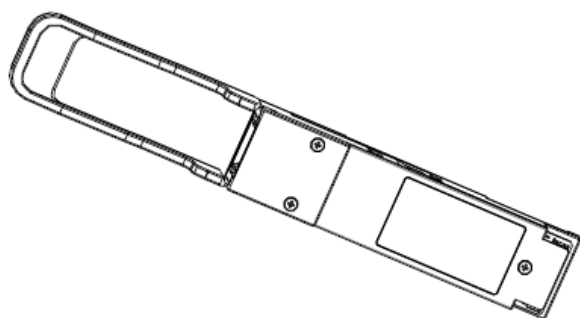
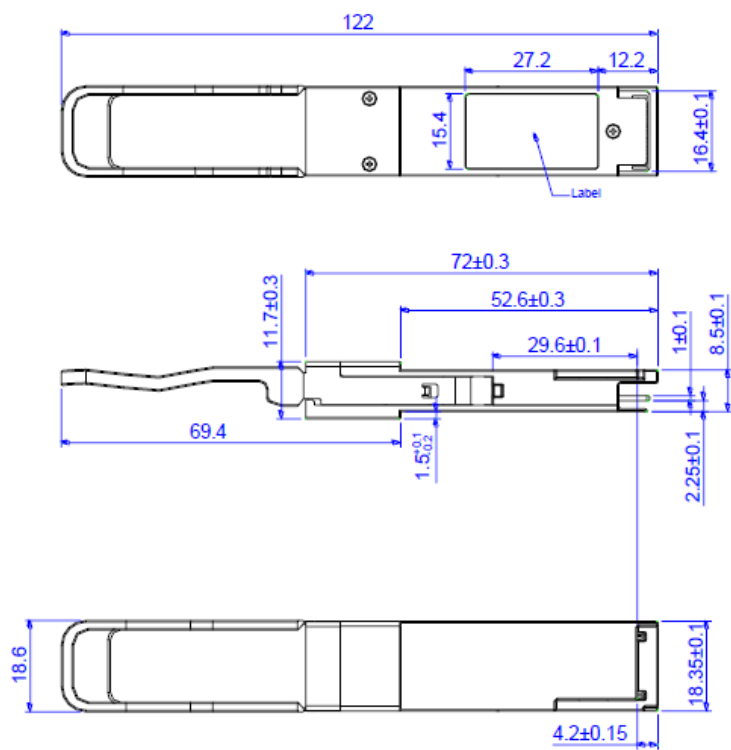
Electrical Pin-Out Details



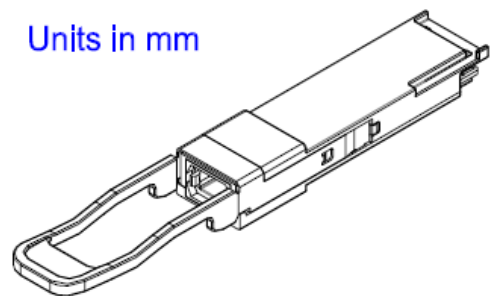
Transceiver Interface Block Diagram



Mechanical Specifications



Units in mm



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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